

Appendix I

**DRAFT
TRANSPORTATION MANAGEMENT PLAN**

for a

**New San Francisco 49^{ers} Stadium
in Santa Clara, CA**



TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
2.0 EXISTING TRANSPORTATION NETWORK	1
2.1 EXISTING ROADWAY NETWORK	1
2.2 EXISTING TRANSIT NETWORK	4
3.0 PROJECT DESCRIPTION AND BACKGROUND INFORMATION	9
3.1 HISTORICAL CANDLESTICK POINT OPERATIONS.....	9
3.2 TRIP ORIGINS AND DESTINATIONS	11
3.3 EMPLOYEES.....	13
3.4 OTHER NFL STADIUMS.....	14
4.0 STADIUM TRANSPORTATION MANAGEMENT PLAN.....	16
4.1 TRANSIT.....	16
4.1.1 TRANSIT SERVICES.....	16
4.1.2 FACILITIES AND OPERATION	19
4.2 MODAL SPLIT	24
4.3 PARKING.....	25
4.4 VEHICULAR ACCESS.....	29
4.4.1 POLICE STAFFING AND OPERATIONS	29
4.4.2 INGRESS (ARRIVAL).....	30
4.4.3 EGRESS (DEPARTURE).....	33
4.4.4 CAPACITY / DEPARTURE TIME	36
4.4.5 CAPACITY CONSTRAINTS	36
4.4.6 TRIP DISTRIBUTION.....	39
4.4.7 ADVANCE EVENT MESSAGE SIGNS.....	40
4.4.8 LOCAL FACILITIES	40
4.5 PEDESTRIANS.....	45

LIST OF TABLES

Table 1: Candlestick Point Site – Modal Split	10
Table 2: Candlestick Point Site – Time of Arrival by Mode for Attendees	10
Table 3: Candlestick Point Site – Time of Departure by Mode for Attendees	10
Table 4: Trip Origins and Destinations – Monster Park	11
Table 5: Existing Candlestick Point Site – Auto Distribution and Routes To/From Site for Attendees	13
Table 6: Summary of Mode Split and Vehicular Activity for Employees	13
Table 7: Candlestick Point Site – Time of Arrival by Mode for Employees	14
Table 8: Candlestick Point Site – Time of Departure by Mode for Employees	14
Table 9: NFL Stadium Modal Splits.....	15
Table 10: Santa Clara Site – Expected Modal Split	24
Table 11: Santa Clara Site – Time of Arrival by Mode for Attendees.....	24
Table 12: Santa Clara Site – Time of Departure by Mode for Attendees.....	24
Table 13: Proposed Game Day Parking Supply	26
Table 14: Game Day Parking Demand – Attendees	28
Table 15: Game Day Parking Demand – Employees	29
Table 16: Santa Clara Site – Auto Distribution and Routes To/From Site for Attendees	39
Table 17: Pedestrian Facility Summary	46

LIST OF FIGURES

Figure 1: Project Location	2
Figure 2: Existing Rail Service	6
Figure 3: Regional Rail Service.....	7
Figure 4: Existing Bus Service	8
Figure 5: Monster Park – Expected Origins and Destinations	12
Figure 6: Game Day Transit Operations	22
Figure 7: Pedestrian Connections to Transit.....	23
Figure 8: Parking Supply	27
Figure 9: Proposed Inbound Lane Configurations and Control.....	32
Figure 10: Proposed Outbound Lane Configurations and Control.....	34
Figure 11: Proposed Post Game Lane Assignments.....	35
Figure 12: Outbound Lane Capacity and Departure Time	37
Figure 13: Advance Event Message Signs	41
Figure 14: Local Facilities	44
Figure 15: Pedestrian Paths of Travel.....	47

1.0 INTRODUCTION

This report presents a transportation management plan for a proposed new San Francisco 49ers Stadium located in Santa Clara, California. The following topics are included in this report:

- Description of the Existing Transportation Network;
- Potential Project Description;
- Proposed Stadium Transportation Plan:
 - Transit Operations;
 - Modal Split Characteristics;
 - Parking Plan;
 - Vehicular Access; and
 - Pedestrian Operations.

2.0 EXISTING TRANSPORTATION NETWORK

The following section presents a summary of the existing roadway and transit networks in the vicinity of the project site.

2.1 EXISTING ROADWAY NETWORK

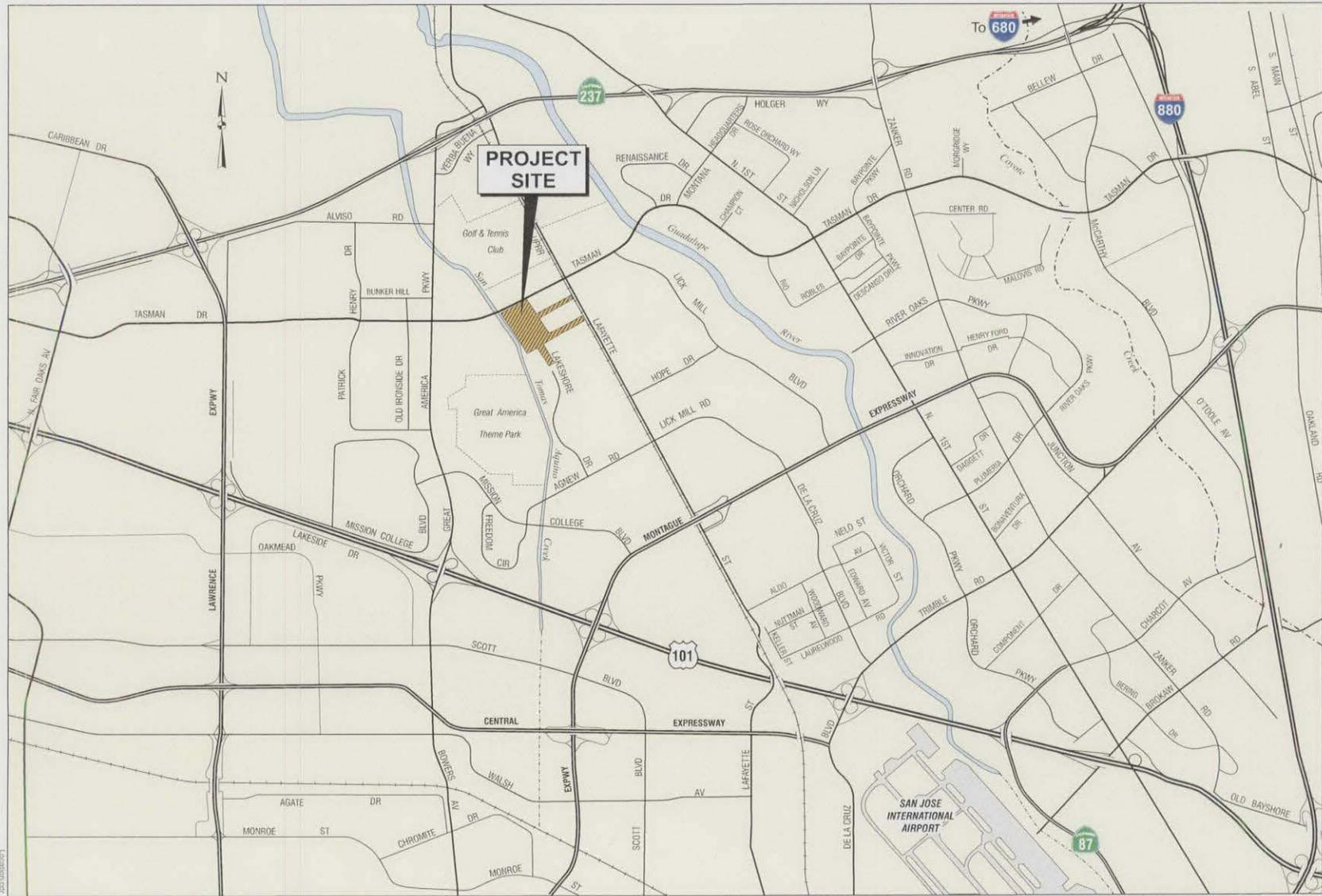
The Santa Clara Stadium site is primarily served by four regional freeways and two major local roadways. Figure 1 illustrates the existing roadway network that serves the project site. Direct roadway access to the project site is provided via the Great America Parkway interchanges at SR-237 and US-101.

Interstate 880 is a north/south freeway that runs between I-580 in Oakland and I-280 in San Jose. Adjacent to the project site, I-880 has six to ten lanes (three to five in each direction) with on- and off-ramps at Dixon Landing Road (to the north) and Great Mall Parkway (to the south). An improved full-movement interchange complete with HOV flyovers has recently been completed at the intersection of I-880 and SR-237.

Interstate 680 is a north/south freeway that runs between I-80 in Fairfield and US-101 in San Jose. Near the project site, I-680 has eight lanes (four in each direction). I-680 traffic would likely use SR-237 to reach the project site.

US-101 is a north/south highway that runs between Canada and Los Angeles. Near the project site, US-101 provides eight to ten lanes (four to five in each direction). US-101 traffic from the north could use SR-237 or US-101 to reach the study site. Traffic from the south would likely use US-101.

State Route 237 is an east/west facility extending between US-101 to the west and I-680 to the east. North of the project site, SR-237 is a grade separated six-lane freeway with a full interchange at Great America Parkway.



49ERS SANTA CLARA STADIUM SITE
Figure 1
PROJECT LOCATION

Great America Parkway is a north/south arterial that runs between US-101 to the south and SR-237 to the north. The roadway features three through lanes going southbound, and four through lanes northbound between the project site and US-101. North of the project site, the roadway features six lanes (three in each direction).

Lawrence Expressway is a major north/south arterial that runs through most of the western portion of Silicon Valley. The expressway runs from SR-237 in the north to west San Jose, with connections to US-101, SR-82 (El Camino Real), Central Expressway, and I-280 in between. The majority of the route is eight lanes (four in each direction).

Lafayette Street is a north/south road with access to SR-237 to the north and Montague Expressway to the south. The road features four lanes (two in each direction).

Montague Expressway is an east/west expressway that runs from US-101 to I-880. The expressway becomes San Tomas Expressway south of the US-101 interchange, and connects the project area with most of the western portions of the City of San Jose. The roadway features six to eight lanes (three to four lanes in each direction).

Tasman Drive is an east/west road that connects I-880 to the east with North Fair Oaks Avenue to the west. The roadway features four lanes (two lanes in each direction) west of Great America Parkway, and six lanes (three lanes in each direction) east of Great America Parkway. The VTA light rail runs down the median of Tasman Drive, with stations located at several locations, one of which is just north of and adjacent to the project site. East of I-880, the road becomes Great Mall Parkway, with direct access to the Great Mall, a potential pre-game or post-game destination.

Mission College Boulevard is an east/west road that connects the Montague Expressway in the east with Mission College in the west. The roadway features four lanes (two lanes in each direction). West of the Montague Expressway, Mission College Boulevard becomes Thomas Road.

As stated earlier, the Santa Clara Stadium site is centrally located between four regional freeways. As many as 13 freeway interchanges are available within five miles of the Stadium site. Each of these freeway interchanges is accessible via Great America Parkway or Tasman Drive, or by arterial roadways which connect with Great America Parkway or Tasman Drive.

The proposed stadium would be constructed on an approximately 22-acre site bounded on the north by Tasman Drive, on the east by the Santa Clara Youth Soccer Park (soccer park) and the existing Marie P. DeBartolo Sports Centre, on the south by Silicon Valley Power's Northern Receiving Station (receiving station) and the City of Santa Clara's North Side Water Storage Tanks (water storage tanks), and on the west by San Tomas Aquino Creek. Most of the stadium site is currently designated as an overflow parking lot for the nearby California's Great America theme park (Great America). Great America operates between March and October, generally each day of the week during the summer and on weekends during the spring and fall, opening at 10:00 AM and closing between 6:00 PM and 10:00 PM. Attendance on a typical Sunday in 2006 was

approximately 13,500 people. In general, Stadium-related traffic is expected to use the same major access routes to and from the site as Great America patrons.

The majority of the area surrounding the Stadium site is comprised of office uses, which are typically vacant on weekends and holidays. Of the total daily trips generated by these office uses, the majority will occur during the weekday AM and PM peak hours. As a result, the parking supply and surrounding roadway network was built to accommodate the associated traffic volumes.

2.2 EXISTING TRANSIT NETWORK

As discussed earlier, the existing uses within the Stadium area include an amusement park and office uses. To accommodate the transit needs of these uses, a considerable amount of transit service is required. As a result, bus, light rail, and heavy rail lines traverse the Stadium area, making the Santa Clara Stadium site well positioned from a regional transit access perspective. Figure 2 illustrates the existing rail connections near the project site. Figure 3 illustrates the regional rail service in Northern California.

Heavy Rail – The Union Pacific Railroad (UPRR) owns the heavy railroad corridor just east of the project site. This extremely important corridor connects directly into the regional rail network and currently serves freight, Altamont Commuter Express (ACE) and Capitol Corridor trains. ACE runs on weekdays only, excluding major holidays, and connects San Jose with Stockton via the Altamont Pass. The Capitol Corridor runs every day of the week and connects San Jose with Sacramento and a few cities beyond. Capitol Corridor service is operated by Amtrak and managed by the Capitol Corridor Joint Powers Authority. Both lines have a stop at Tasman Drive just west of Lafayette Street.

The Caltrain corridor runs from San Francisco to Gilroy along a separate rail line that connects with the ACE/Capitol Corridor line south of the project site. The closest station to the project site is the Lawrence Station that is located about two miles south of the project site. It should be noted that Caltrain patrons can transfer to the Santa Clara Valley Transportation Transit Authority light rail service at the Mountain View station or the San Jose Diridon station.

Light Rail – The Santa Clara Valley Transportation Transit Authority (VTA) currently operates a light rail service along Tasman Drive on the north edge of the project site. This service runs from Castro Street and Central Expressway in Mountain View to Alum Rock Avenue and Capitol Avenue in San Jose. There is also a transfer station at First Street (Baypointe Station) where another line runs south on First Street and continues to Santa Teresa just off of State Route 85 in south San Jose. VTA operates the light rail lines both on weekdays and weekends. The Great America station is located on the north edge of the Great America parking lot and also provides service to the convention center across the street. VTA light rail serves 56 stations and has excellent coverage of the populated portions of Santa Clara County. In addition, 21 of the stations have commuter park-and-ride lots, which provide a convenient alternative to parking in the vicinity of the stadium.

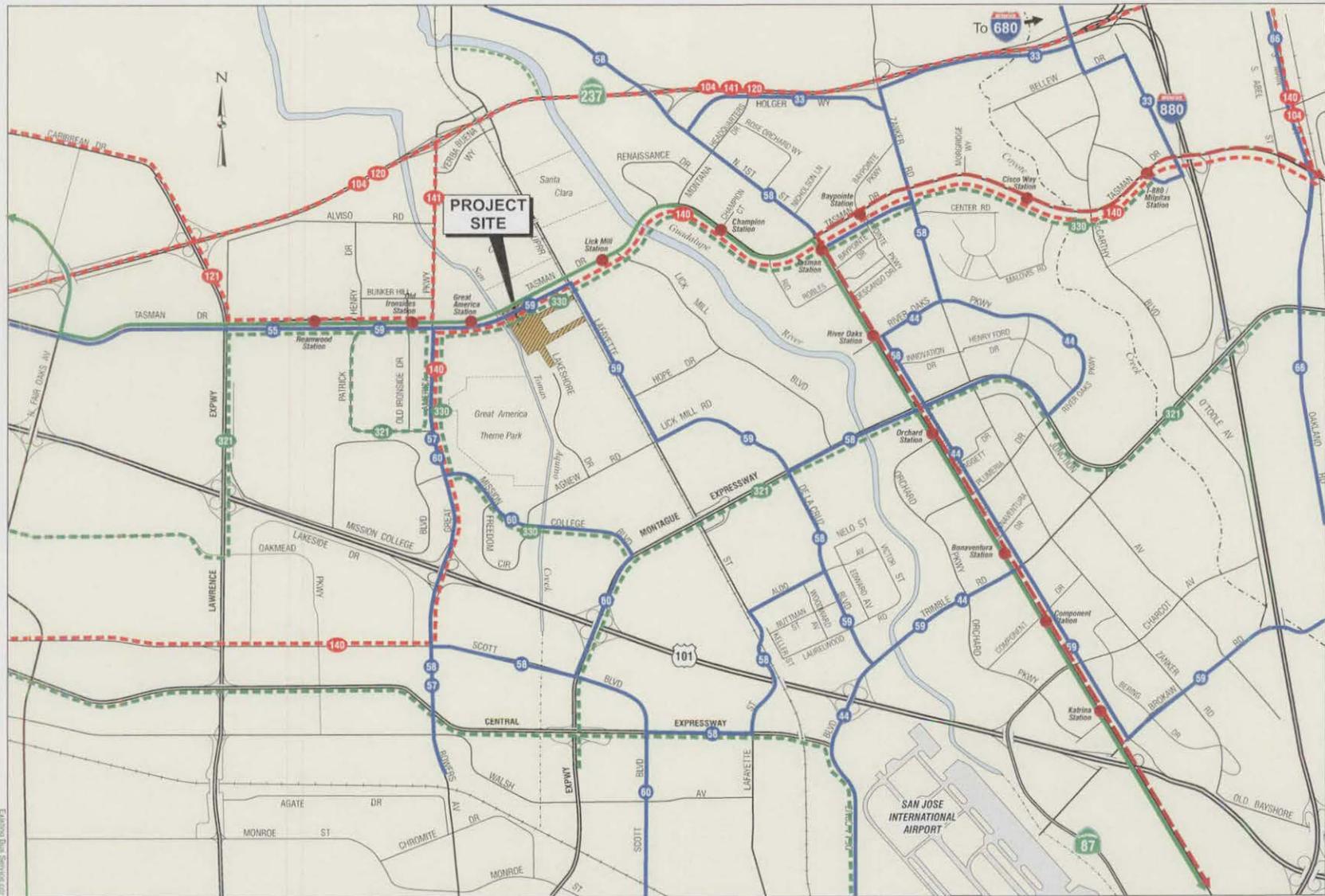
Bus Service – VTA operates a bus network with several lines that operate near the site. The lines that have scheduled stops at the site include VTA route 55, 57, 59, 60, 140, 321, and 330. Currently, only routes 55, 57, and 60 provide weekend service, but as demand increases, the other bus routes could expand service to weekends. Figure 4 illustrates the existing bus services in the study area.



Regional Rail Services.pdf

49ERS SANTA CLARA STADIUM SITE

Figure 3
REGIONAL RAIL SERVICE



- Local Bus Routes
- - - Express Bus Routes
- · - · - Limited Stop Bus Routes
- ↔ Light Rail: Mountain View to Winchester
- ↔ Light Rail: Alum Rock to Santa Teresa

49ERS SANTA CLARA STADIUM SITE

Figure 4

EXISTING BUS SERVICE

Existing Bus Service 08/11

3.0 PROJECT DESCRIPTION AND BACKGROUND INFORMATION

The proposed 49ers Santa Clara Stadium would be located on the existing Great America overflow parking lot at the southwest corner of the Great America Parkway / Centennial Boulevard intersection. The proposed Stadium would have a permanent seating capacity of 68,500 seats, would be designed to expand to approximately 75,000 seats for special events, such as a Super Bowl. In addition, an approved and funded parking structure for the Convention Center will be built across Tasman from the Stadium site. The parking structure would have up to 1,708 parking spaces. The Stadium is expected to employ approximately 2,900 people per game for game day operations.

The NFL is encouraging any franchise proposing a new stadium in a large market (i.e., capable of supporting more than one team in a relatively close geographic area), such as the Bay Area, to evaluate shared use of the stadium by a second NFL team. While there are currently no specific plans for use of the stadium by a second NFL team, the transportation plan described below could be implemented on game days whether one or two NFL teams plays their home games in the stadium. Given that NFL teams typically play half of all pre-season and regular season games at home, the use of the stadium by two NFL teams could result in one NFL event at the stadium every week from the beginning of pre-season in August through the end of December for a maximum of 20 NFL preseason and regular season games per year.

In addition to the pre-season and regular season games, there is also the possibility that either team could host up to two post-season playoff games. A maximum of four post-season games would only occur at the proposed stadium if 1) both teams were in separate divisions (AFC or NFC), 2) each team hosted and won either a first round wild-card play-off game or a second round divisional playoff game, and 3) each team then hosted a conference championship game.

Preseason football games would occur in August, regular season games would occur from September through December, and playoff games would occur in January. Football games will typically occur on Sunday at 1:00 PM, though some games may occasionally occur on Saturdays or in the evening on Thursday, Sunday, or Monday. Additionally, the Stadium is expected to be used for other events, such as concerts, festivals, college bowl games, and international soccer matches.

3.1 HISTORICAL CANDLESTICK POINT OPERATIONS

The information presented in Tables 1, 2, and 3 summarize the modal split, arrival patterns, and departure patterns for 49ers games at the existing Monster Park at Candlestick Point site.

Table 1: Candlestick Point Site – Modal Split

Mode	Percent	Attendees by Mode	Persons per Vehicle	Number of Vehicles
Auto	82%	57,150	3	19,050
Transit Buses	8%	5,450	45	121*
Charter Buses	10%	7,100	44	161
Total	100%	69,700	----	19,211

Source: DMJM Harris, 2007

Note: * Transit Buses do not factor in the parking demand total since they do not occupy parking stalls.

Table 2: Candlestick Point Site – Time of Arrival by Mode for Attendees

Arrival (Hours before Start)	Autos Percent	Autos by Hour	Charter Percent	Charter by Hour
> 5 Hour	6%	1,142	0%	0
4 – 5 Hours	8%	1,524	0%	0
3 – 4 Hours	14%	2,667	2%	3
2 – 3 Hours	14%	2,667	5%	8
1 – 2 Hours	19%	3,620	28%	45
< 1 Hour	39%	7,430	65%	105
Total	100%	19,050	100%	161

Source: San Francisco 49ers, 2006; DMJM Harris, 2007

Table 3: Candlestick Point Site – Time of Departure by Mode for Attendees

Depart (Hours after End)	Auto Percent	Autos by Hour	Charter Percent	Charter by Hour
During Game	10%	1,905	10%	16
< 1 Hour	50%	9,525	80%	129
1 – 2 Hours	35%	6,670	10%	16
> 2 Hours	5%	950	0%	0
Total	100%	19,050	100%	161

Source: San Francisco 49ers, 2006; DMJM Harris, 2007

As shown, for stadium attendees there is currently a peak demand for about 7,430 vehicles during the peak hour before games, and about 9,525 vehicles during the peak hour after games. Over half of the attendees arrive earlier than an hour before game time.

3.2 TRIP ORIGINS AND DESTINATIONS

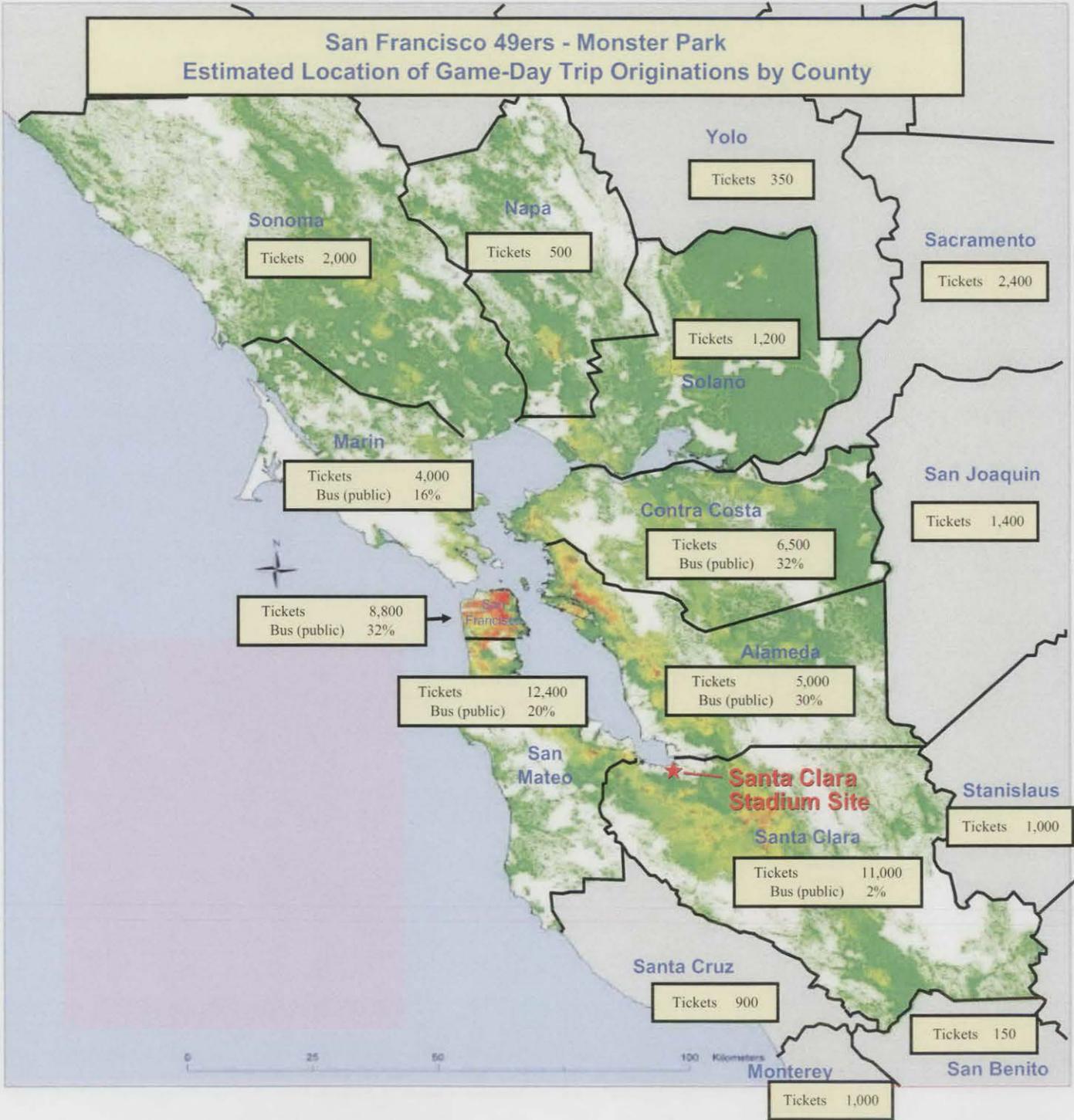
Table 4 summarizes the expected origins and destinations of trips for the San Francisco 49ers 2006 season. This information is also illustrated in Figure 5. Table 5 details the automobile trip distribution and specific routes used to get to and from the Candlestick Point site. As shown, origins and destinations are scattered somewhat evenly throughout the bay area. It should be noted that with a change in location for the 49ers from San Francisco to Santa Clara, the geographic location of attendees is likely to increase in the San Jose area, and decrease in areas further away.

Table 4: Trip Origins and Destinations – Monster Park

Place of Residence	Patron Origins	Transit ^a /Auto Modal Split	Transit ^a Ridership	Attendees Using Auto	Auto Trip Distribution
San Francisco	8,869	33% / 67%	2,918	5,951	11%
San Mateo	12,396	24% / 76%	3,029	9,367	17%
Santa Clara	11,006	6% / 94%	669	10,337	19%
Alameda	4,942	34% / 66%	1,700	3,242	6%
Contra Costa	6,444	36% / 64%	2,322	4,122	7%
Marin	3,971	20% / 80%	791	3,180	6%
Sonoma	2,041	4% / 96%	87	1,954	4%
Napa	511	4% / 96%	22	489	1%
Solano	1,165	4% / 96%	49	1,116	2%
Sacramento	2,436	4% / 96%	103	2,333	4%
Central Valley	3,222	4% / 96%	137	3,085	6%
South	1,843	4% / 96%	79	1,764	3%
Other	8,566	0% / 100%	0	8,566	15%
Total	67,412	18% / 82%	11,906	55,506	100%

Source: San Francisco 49ers, 2006; DMJM Harris, 2007

Notes: ^a Transit modal split and ridership includes charter buses.



Ticket Holders Location

Figure 5

MONSTER PARK - EXPECTED ORIGINS AND DESTINATIONS

Table 5: Existing Candlestick Point Site – Auto Distribution and Routes To/From Site for Attendees

Place of Residence	Percent	Direction	Percent	Access Route	Percent
San Francisco	11%	To/From North	24%	US-101 North	50%
San Mateo	17%	To/From South	39%	US-101 South	46%
Santa Clara	19%	To/From NE	20%	Local Roads	4%
Alameda	6%	To/From SE	3%		
Contra Costa	7%	Other	14%		
Marin	6%				
Sonoma	4%				
Napa	1%				
Solano	2%				
Sacramento	4%				
Central Valley	6%				
South	3%				
Other	14%				
Total	100%		100%		100%

Source: DMJM Harris, 2007

3.3 EMPLOYEES

Based on information obtained from previous assessments of the current stadium at Candlestick Point, it was estimated that the proposed project would have about 2,900 employees on site for game days (including cleaning, concessions, security, and others). The anticipated mode split, average auto occupancy, and arrival and departure patterns were estimated for the employees based on historical Candlestick Point operations. The following tables present a summary of the characteristics for the employees.

Table 6: Summary of Mode Split and Vehicular Activity for Employees

Mode	Percent	Employees by Mode	People per Vehicle	Vehicles
Auto	90%	2,610	1.5	1,740
Transit	10%	290		
Total	100%	2,900		1,740

Source: San Francisco 49ers, 2006; DMJM Harris, 2007

It should be noted that employee transit usage at the 49ers Santa Clara Stadium site may be higher than that of the Candlestick Point site since more public transportation will be readily available.

Table 7: Candlestick Point Site – Time of Arrival by Mode for Employees

Arrival (Hours before Start)	Total Percent	Total by Hour	Auto Percent	Autos by Hour
> 3 Hours	95%	2,755	95%	1,654
2 – 3 Hours	1%	30	1%	17
1 – 2 Hours	1%	30	1%	17
0 – 1 Hours	1%	30	1%	17
During Game	2%	55	2%	35
Total	100%	2,900	100%	1,740

Source: San Francisco 49ers, 2006; DMJM Harris, 2007

Table 8: Candlestick Point Site – Time of Departure by Mode for Employees

Depart (Hours after End)	Total Percent	Total by Hour	Auto Percent	Autos by Hour
During Game	0%	0	0%	0
< 1 Hour	65%	1,885	65%	1,130
> 1 Hours	35%	1,015	35%	610
Total	100%	2,900	100%	1,740

Source: San Francisco 49ers, 2006; DMJM Harris, 2007

For employees, it was estimated that there would be a peak demand for about 1,650 vehicles during the peak hour before games, and about 1,130 vehicles during the peak hour after games. Since most employees would arrive at the stadium more than 3 hours prior to the game start time, they would not substantially overlap with attendees. However, during the first hour after the game ends, many of the employees would also be departing the stadium, which would conflict with the attendees.

Although the location of residence for the stadium employees is not known, it is anticipated that employees will be comprised of local residents and will likely use local roadways to a greater extent than stadium patrons who would primarily rely on SR-237 and US-101.

3.4 OTHER NFL STADIUMS

As a point of information, modal splits for various stadiums across the country are presented in Table 9. As shown, the percentage of transit usage for the current 49ers Candlestick Point site is lower than the average for other stadiums across the country.

Table 9: NFL Stadium Modal Splits

Venue	% of Patrons Arriving By			Stadium Capacity	On-Site Stalls
	Auto	Transit	Other		
Bay Area:					
Candlestick Point	82%	18%	0%	69,865	19,099
AT&T Park (2000 Giants game)	46%	52%	2%	40,800	4,800
AT&T Park (per FHWA)		42-52%		40,800	
Elsewhere:					
Meadowlands (Jets game)	95%	5%	0%	80,000	25,000
Seattle Seahawks (Qwest Field)		25-30%			
Edward Jones Dome (Rams game)	70%	30%	0%	65,401	urban
Shea Stadium (Jets 1964-1983)	65%	34%	1%	55,775	7,700
Shea Stadium (Giants 1964-1983)	65%	34%	1%	55,775	7,700
Busch Stadium (Cardinals game)	65%	35%	0%	49,814	urban
Fenway Park (Red Sox game)	65%	34%	1%	33,871	urban
Shea Stadium (Mets 2001)	62%	37%	1%	55,775	7,700
Georgia Dome (Falcons game)	50%	50%	0%	71,228	urban
Toronto SkyDome (Blue Jays game)	43%	55%	2%	50,516	urban
Madison Square Garden (1987 weeknight Rangers)	36%	62%	2%	18,295	urban
Madison Square Garden (1987 weeknight concert)	32%	66%	2%	20,629	urban
Madison Square Garden (1987 weeknight Knicks)	28%	70%	2.5%	19,763	urban
Jets Westside Stadium (Traffic Study)	28.8%	68.7%	2.5%	75,000	urban

Source: DMJM Harris, 2007

4.0 STADIUM TRANSPORTATION MANAGEMENT PLAN

The following section presents a summary of the recommended access plan for a typical football game day at the 49ers Santa Clara Stadium site. Other scaled-down versions of this plan, adapted as appropriate in light of expected attendance, would be used for other stadium events, such as for concerts, festivals, college bowl games, and international soccer matches.

4.1 TRANSIT

As described below, transit access to the site is efficient and direct. Both heavy and light rail service already have stations within a few minute walk from the site. VTA Light Rail stops just north of the stadium site. One of the Union Pacific Railroad's main lines lies directly east of the site, allowing train service from Sacramento/Oakland, Stockton/Tracy and Gilroy/San Jose. Though Caltrain does not pass directly by the site, there are several options described below for either providing direct service or a convenient transfer. Special bus service operated by local transit agencies is anticipated to continue in a similar fashion to that now provided for games at Candlestick Point, and adequate bus parking and loading areas are available on the streets near the site. A system of exclusive pedestrian walkways can be developed using portions of existing streets and parking lots that would be closed to vehicles on game days. Such a system would minimize pedestrian/vehicle crossings after a game, and enhance the fan experience by making access to transit quicker and more convenient.

4.1.1 TRANSIT SERVICES

Altamont Commuter Express (ACE) – ACE currently runs on weekdays only, excluding major holidays. ACE already runs a few weekend specials to the Great America theme park, the San Jose Jazz Festival, and the Oakland A's games at the Coliseum. They would likely be receptive to the concept of running a special train to NFL football games. A game day ACE train would have five cars, each carrying 100 passengers (for a total of 500 passengers per train), and would stop at the existing Great America station on the UPRR tracks.

Capitol Corridor – Unlike ACE, the Capitol Corridor operates a full complement of service on weekends. They promote riding their regular trains to the Coliseum for A's games. They are likely to do the same for football games at the new stadium. The Capitol Corridor service has grown substantially over the years and as they grow, they add trains. This makes it difficult to develop a specific service scenario for a time period several years in the future. However, some of the ways Capitol Corridor can add service to the Stadium can be outlined. As with A's games, some of the regularly scheduled Capitol Corridor trains may arrive and depart the Great America station at times convenient for football fans. In this case, they could add cars to these trains if necessary to meet demand. If the regularly scheduled trains are not conveniently timed for football

games, they could either adjust the schedule or add a special train. To adjust the schedule, they would shift a train's departure time forward or backward one to two hours. In some cases, adding a train might be accomplished by simply extending a regular train that would normally terminate in Oakland. However it is done, it is expected that Capitol Corridor would provide one five-car train at times convenient for football fans, with an overall capacity of 500 passengers per train.

Caltrain – The Caltrain corridor serves an area with a number of current and potential 49ers ticket holders. However, as noted above, the Caltrain tracks do not run by the site and the closest station is two miles away. There are a number of options for linking Caltrain to the stadium site on game days.

Run Caltrain trains directly to the Great America Station – There are two major issues with this option. First, Caltrain does not currently have authority from Union Pacific to run on the tracks serving the Great America Station. ACE and Capitol Corridor have agreements with UPRR allowing a certain number of passenger trains to use their tracks. The agreements may have flexibility to allow Caltrain to “borrow” some of the ACE/Capitol slots, but this would require a three- or four-way discussion between Caltrain, UPRR, ACE and Capitol Corridor. However, it is more likely that operating special Caltrain service would exceed the limits of these agreements. If that is true, then a new agreement would need to be negotiated with Union Pacific for Caltrain to serve the station directly for football games. This could be done directly by Caltrain, by ACE or Capitol Corridor on behalf of Caltrain, or by another public agency such as VTA.

The second issue is that the track arrangement at the junction of the Caltrain route and the ACE/Capitol Corridor route does not allow for a direct movement. A Caltrain train traveling southbound would need to stop south of the junction at either Santa Clara or Diridon station and reverse direction to reach the stadium. Caltrain trains, like ACE and Capitol Corridor trains, are configured for push-pull operation, so reversing direction is well within their operational capability, although none of these operators typically reverse trains when passengers are on board. Caltrain may or may not be agreeable to reversing trains with passengers on board. In addition, the process to reverse a train takes several minutes because the engineer must shut down the operating controls at one end of the train, walk to the other end, and then activate the controls at that end. Finally, the need to travel south of the junction to make the reverse move adds time and out-of-direction travel to the passenger experience.

Despite these issues, providing Caltrain service directly to the Great America station is the best option from the customer's perspective and should be explored further with Caltrain and the other rail transit agencies.

Caltrain Passengers transfer to VTA Light Rail at Mountain View – The Caltrain and light rail platforms are adjacent at the Mountain View station. Caltrain passengers destined for the stadium could disembark at the Mountain View station, walk across the tracks to the light rail platform, and board light rail to complete their trip. A five-car Caltrain train carries about three times the

number of people as a three-car light rail train. Three light rail trains would need to be waiting at the station to accommodate the 1,000 passengers disembarking from Caltrain. There is sufficient track capacity at the Mountain View station to store three light rail trains simultaneously. There is only a single track for light rail serving the Mountain View Station. Therefore, when a Caltrain train arrives, VTA would need to dispatch the three outbound light rail trains one after the other, without allowing an inbound train to enter the single track segment until the last outbound train had cleared this section. VTA may or may not agree to this operating scenario.

Though this option is feasible with no changes to existing infrastructure, it introduces an extra transfer, making it less attractive from the customer's perspective. Customers would also experience delays during the transfer due to the mismatch between the capacity of a Caltrain train and a light rail train.

Caltrain Passengers transfer to shuttle buses at Lawrence Station – The Lawrence Caltrain station is about two air miles from the stadium site. A shuttle bus system could be developed to carry disembarking Caltrain passengers to the stadium. Such a shuttle system would only be acceptable if the buses were waiting at the station to meet the train. To do this, it would take 23 buses to load the 1,000 disembarking passengers. The buses would travel together to the stadium, unload and return to the station to meet the next train. After a game, the shuttle buses would circulate continuously between the stadium and the train station. Besides the operating cost of the shuttles, this option also has the drawback of introducing additional vehicles on the streets west of the stadium, which will already be congested before and after a game. Though it is possible to set up dedicated bus-only lanes, this takes away a lane of traffic that could otherwise serve fans arriving and departing in automobiles. For these reasons, this option is not recommended.

Whichever access option is finally selected, it is estimated that 3,000 fans would ride Caltrain, on three five-car trains carrying 1,000 passengers each.

VTA Light Rail – Light rail can be expected to carry a high number of fans to games. The station is extremely convenient to the stadium, and fans are likely to adopt park-and-ride strategies to avoid delays leaving the area after a game.

Light rail has a one-mile-long single track segment at Mountain View, which would constrain headways serving the Mountain View end of the line. Headways could be shortened for the one hour after games by adding an on-the-ground supervisor/dispatcher at the Mountain View end and possibly skipping the intermediate station at Evelyn. Double tracking this segment is highly unlikely because of constraints with Caltrain and the overall cost of such a project.

Since there are two tracks east of the Evelyn Station, shorter headways could be operated from east of the Bayshore/NASA station. (Though the double track starts between the Evelyn and Whisman stations, the first crossover that would allow turning trains back is between the Middlefield and Bayshore/NASA stations.) A possible

maximum service plan would be six minute headways to Mountain View and six minutes to Bayshore/NASA, for a combined three minute headway east of Bayshore/NASA. These headways could serve up to 6,000 riders in the peak hour. To achieve this frequency, special automatic or manual overrides of traffic signals may be necessary, but traffic volumes are low on Sunday afternoons in this area that is mostly made up of research parks.

Light rail is expected to carry 4,500 fans to the game. The VTA light rail system is 42 miles long, and provides good geographic coverage. Football fans in the areas of Milpitas, Berryessa, East San Jose, Downtown San Jose, Willow Glen, South San Jose, and Campbell are all within a short distance of a light rail station. Fans from other areas can easily drive to the light rail stations with parking lots.

Transit Buses – VTA, SamTrans, and other Bay Area transit agencies currently operate special routes to 49ers games at Candlestick Point. These agencies can be expected to redesign their routes to serve the new stadium site. VTA would likely direct most passengers to light rail, but would operate bus routes from areas not served by light rail. It is estimated that 4,500 fans would arrive by special transit bus.

4.1.2 FACILITIES AND OPERATION

The area around the stadium site offers many opportunities to provide transit facilities without significant investment in additional infrastructure. The following facility plan has been developed according to the following key principles:

- Separate pedestrians from vehicles wherever possible;
- Provide post-game staging areas for both pedestrians and transit vehicles;
- Provide separate staging areas for each transit mode: Heavy Rail, Light Rail, and Bus; and
- Provide pedestrian-only connections from the stadium to each staging area.

Pedestrian Connections –The primary pedestrian connections to the transit staging areas would be located:

- On Tasman Drive between Convention Circle and Centennial Boulevard. This segment of Tasman Drive would be closed to all vehicular traffic; and
- From the Stadium to a path along the North edge of the 49ers Training Facility to the cul-de-sac at Stars and Stripes Drive.

Light Rail – Light rail passengers would board at the Great America station. The closed section of Tasman Drive (between Convention Circle and Centennial Boulevard) would be used for passengers to stage while waiting to board the trains.

Heavy Rail – With a creative and well-managed operation plan, the Great America heavy rail station would be adequate to serve post-game passenger volumes, even if Caltrain directly served the station. The existing platform is approximately 800 feet long and varies in width from 10 to 20 feet. It provides about 11,100 square feet for

passengers to stand before boarding the train. At 6 square feet per passenger, the platform has capacity for 1850 passengers. The platform's length is sufficient to board two 4 or 5 car trains at the same time.

The following post-game operating concept has been developed to illustrate how heavy rail service could operate. The final operating plan will be developed by the railroads and the rail transit agencies. Note that the following operating concept may require switch and signal upgrades at the locations proposed for train storage during games.

- During the game, three Caltrain trains would be stored on the industrial lead north of Alviso. One ACE train would be stored on the industrial track south of the station between Martin Avenue and Reed Street;
- At the end of the game, two Caltrain trains would leave Alviso, travel south and enter the station. Fans would begin the 10 to 15 minute walk from the stadium to the station;
- A few minutes after the game is expected to end, one northbound Capitol Corridor train would be scheduled to leave Diridon Station, and would hold on the industrial track behind the ACE train until both trains could enter the station;
- Twenty minutes after the game ended, the two Caltrain trains would depart southbound. As soon as they passed Martin Avenue, the ACE and Capitol Corridor trains would start moving north into the station. They would arrive in the station about 35 minutes after the end of the game;
- Forty minutes after the game ended, the ACE and Capitol Corridor trains would depart northbound. As soon as they passed Alviso, the third Caltrain train would begin moving south into the station, where it would arrive about 55 minutes after the end of the game; and
- Sixty minutes after the end of the game, the last Caltrain train would depart southbound.

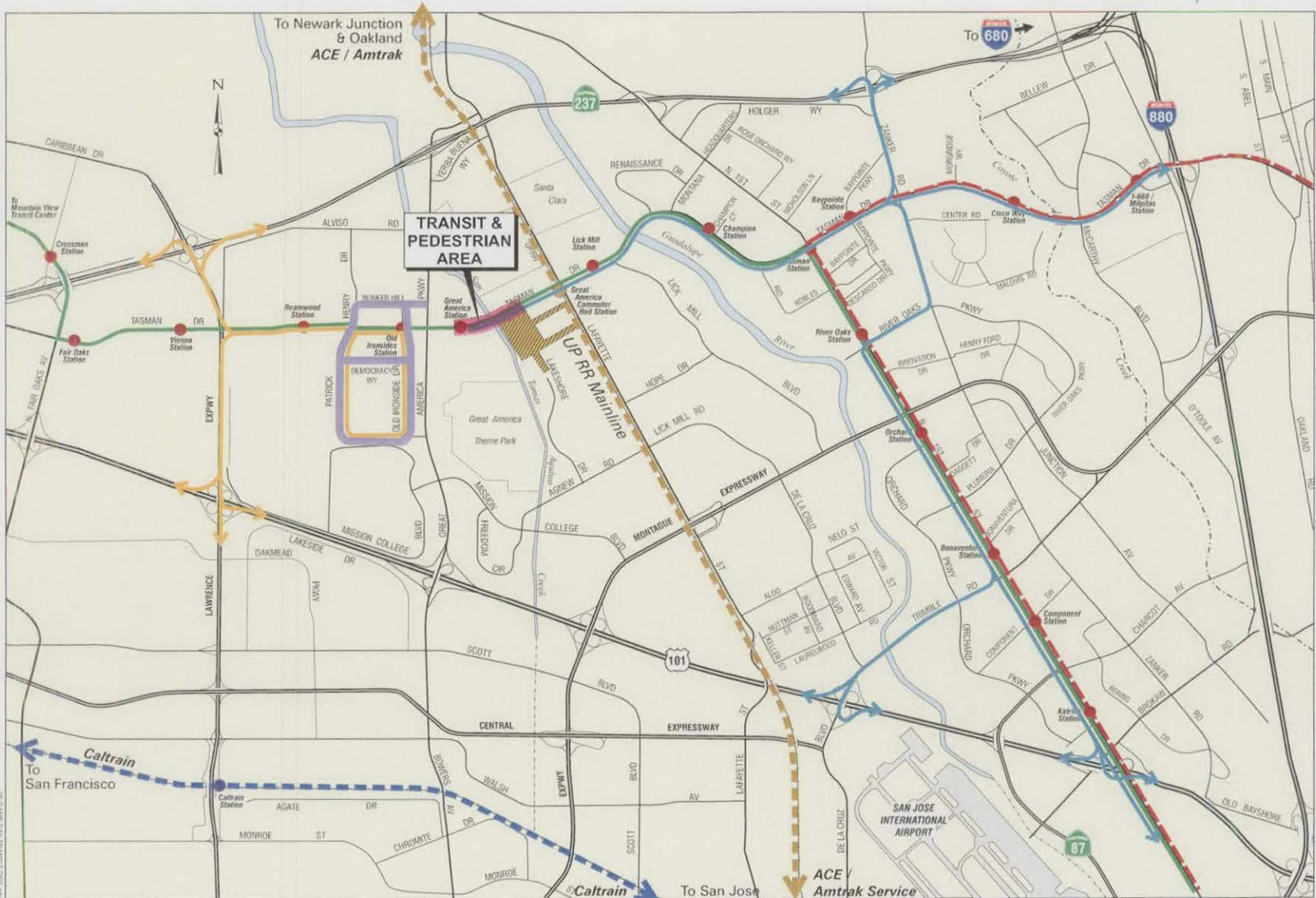
This operating plan assumes that the railroads involved would be agreeable to temporarily closing the single track line to normal rail traffic for about one hour, eight to ten times per year. This is not unreasonable, given that railroads occasionally shut down lines for regular or emergency maintenance, and successfully work around such closures. Since the game-related closure would be scheduled far in advance, there would be sufficient time for the railroads to plan operations around the closure.

Bus Area – Transit buses would be staged on Stars & Stripes Drive approaching the cul-de-sac. Buses would turn around in the cul-de-sac and exit towards Tasman Drive. As such, access to Golf and Tennis Club would not be obstructed by the staged buses, and existing parking for the Golf and Tennis Club would be preserved. Transit buses would also be staged on westbound Tasman Drive west of the bridge over Lafayette Street. There is room to store about 90 buses in this area. Transit buses would be provided an exclusive ingress and egress route from Lafayette Street via Calle de Luna, Calle Del Sol, the westbound lanes of Tasman Drive between Calle Del Sol and Centennial Boulevard, the northbound lanes of Centennial Boulevard, and Stars & Stripes Drive.

Pedestrians would access the buses from the sidewalks along Stars & Stripes Drive, Centennial Boulevard, and Tasman Drive. Traffic officers would control the pedestrian crossings at the intersection of Centennial Boulevard and Stars & Stripes Drive.

Auto access to and from the parking lots east of San Tomas Aquino Creek, including the proposed parking garage north of Tasman Drive would be via the westbound lanes of Tasman Drive. There are three westbound lanes on Tasman Drive. Two lanes would be dedicated to the major directional flow, and the third lane would be reserved for emergency access in the opposite direction. Similar arrangements would apply to Centennial Drive to provide access to Tasman Drive. All traffic to and from these lots would be directed to use Tasman Drive and North First Street. No auto connection would be available between Lafayette Street and Tasman Drive.

Charter Bus Staging Area – Charter buses would be staged on-street along the Old Ironsides loop. There would be enough space for approximately 195 buses to park. The charter buses would remain parked at this location for the duration of the event. All charter buses would enter and exit the staging area via Tasman Drive from the west.



- ▬▬▬▬▬ Caltrain Service
- ▬▬▬▬▬ ACE / Amtrak Service
- ▬▬▬▬▬ Light Rail: Mountain View to Winchester
- ▬▬▬▬▬ Light Rail: Alum Rock to Santa Teresa
- ▬▬▬▬▬ Charter Bus Parking/Loading Area
- ← Charter Bus Access Routes
- ← VTA Bus Access Routes
- ▭ Pedestrian and Transit Area

49ERS SANTA CLARA STADIUM SITE

Figure 6
GAME DAY TRANSIT OPERATIONS

06.04.08 DMJM HARRIS | AECOM



Newly constructed fence with gate limits pedestrian access.

Pedestrian Paths as

-  Pedestrian Path
-  VTA Bus
-  VTA Light Rail

49ERS SANTA CLARA STADIUM SITE

Figure 7

PEDESTRIAN CONNECTIONS TO TRANSIT

4.2 MODAL SPLIT

Based on the analysis discussed in the previous section, the modal split for an NFL game at the 49ers Santa Clara Stadium site was estimated to be approximately 26 percent. The modal split details are presented in Tables 10. The corresponding arrival and departure patterns are presented in Tables 11 and 12, respectively.

Table 10: Santa Clara Site – Expected Modal Split

Mode	Percent	Attendees by Mode	Persons per Vehicle	Number of Vehicles
Auto	74%	50,500	2.7	18,865
Transit Bus	6.5%	4,500	45	100*
Light Rail	6.5%	4,500	----	----
Heavy Rail	6%	4,000	----	----
Charter Bus	7%	5,000	45	111*
Total	100%	68,500	----	18,865

Source: DMJM Harris, 2007

Note: * Charter Buses and Transit Buses do not factor in the Number of Vehicles total since they will not occupy off-street parking stalls.

Table 11: Santa Clara Site – Time of Arrival by Mode for Attendees

Arrival (Hours before Start)	Autos Percent	Autos by Hour	Charter Percent	Charter by Hour
> 5 Hour	6%	1,090	0%	0
4 – 5 Hours	8%	1,630	0%	0
3 – 4 Hours	14%	2,650	2%	2
2 – 3 Hours	14%	2,595	5%	6
1 – 2 Hours	19%	3,635	28%	31
< 1 Hour	39%	7,265	65%	72
Total	100%	18,865	100%	111

Source: DMJM Harris, 2007

Table 12: Santa Clara Site – Time of Departure by Mode for Attendees

Depart (Hours after End)	Auto Percent	Autos by Hour	Charter Percent	Charter by Hour
During Game	10%	1,890	10%	11
< 1 Hour	64%	12,000	80%	89
1 – 2 Hours	26%	4,975	10%	11
Total	100%	18,865	100%	111

Source: DMJM Harris, 2007

As shown, for stadium attendees there is currently a peak demand for 7,265 vehicles during the peak hour before games, and 12,000+ vehicles during the peak hour after games. Over half of the attendees arrive earlier than an hour before game time.

4.3 PARKING

Numerous parking facilities lie within a 15-minute walking distance of the potential Stadium site. Many of these parking facilities serve weekday uses such as offices, Mission College, and the Santa Clara Convention Center. It should be noted that the 49ers are in the process of exploring agreements with the parking lot owners to use the various parking facilities on game days. Once agreements have been reached, the 49ers will assign parking spaces to season ticket holders. When tickets and parking passes are distributed, the 49ers will include specific directions to the assigned parking lots to allow vehicles to arrive at their assigned parking lots as quickly as possible, and minimize traffic congestion throughout the Stadium Area. It is recommended that rights to use off-site parking facilities should require City approval within a prescribed area around the stadium. Table 13 summarizes the off-site parking supply within a 15-minute and 20-minute walk of the Stadium. The locations of the off-site parking facilities are shown in Figure 8.

Table 13: Proposed Game Day Parking Supply

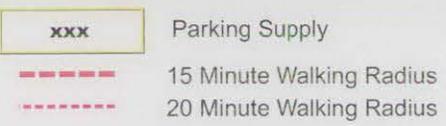
Facility	Number of Parking Spaces
Core Parking Supply:	
Main Lot	6,234*
Garage	1,708
Lots in the Immediate Vicinity of the Stadium	593
Substation Lot	380
Dirt Lots North of the Stadium	790
<i>Subtotal</i>	<i>9,705</i>
Parking Supply Off-Site (approximate values within a 15-minute walking distance):	
Northeast of Stadium Site	1,122
Northwest of Stadium Site	4,957
Southwest of Stadium Site	5,036
<i>Subtotal</i>	<i>11,115</i>
Parking Supply Off-Site (approximate values within a 20-minute walking distance):	
Northeast of Stadium Site	750
Northwest of Stadium Site	8,282
Southwest of Stadium Site	11,521
<i>Subtotal</i>	<i>20,553</i>
Total	41,373

Source: San Francisco 49ers, 2006; DMJM Harris, 2008 ; City of Santa Clara, 2009

Notes: * As many as 220 recreation vehicles (RV) are expected to park in the Main Parking Lot. Due to their size, each RV is expected to take up more than one parking space. As a result, the supply of 6,234 parking spaces will be somewhat reduced.



Parking Supply rev2 iii



49ERS SANTA CLARA STADIUM SITE
Figure 8
PARKING SUPPLY

The parking program proposed for game day conditions includes parking for automobiles, limousines, and recreational vehicles. Tables 14 and 15 summarize the parking demand established for game day conditions based on historical experience and the anticipated modal split. As shown, the parking demand on a typical game day of 18,865 paid attendee vehicles would be accommodated by the proposed supply shown in Table 13. The employee parking demand of 1,740 vehicles will be met by remote parking facilities outside of the parking supply within a 15-minute walk of the Stadium site.

Table 14: Game Day Parking Demand – Attendees

Facility Type	Number of Attendees	Number of Vehicles for Attendees
General Admission	37,687	12,562
Club Seat Parking	7,168	3,584
Suite Parking	3,400	1,133
Group Sales	75	38
Hospitality Sponsors	175	88
Disabled Parking	685	685
Transit Buses	4,500	0
Chartered Buses	5,000	111*
VTA Patrons	4,500	0
ACE/Caltrain Patrons	4,000	0
Limousines	150	50
Recreational Vehicles	1,100	220
Network Broadcast Teams	60	60
Players/Players Families/Staff	220	220
Owners and Guests	60	60
Media/Entertainment/Ticketing/Game Operations	330	165
Total	69,110	18,865

Source: San Francisco 49ers, 2006; DMJM Harris, 2007

Note: Though 610 attendees will be non-seated (players, broadcasters, etc.), their vehicles will factor in the parking demand totals.

* Charter buses do not factor in the parking demand total since they will not occupy off-street parking stalls (they will park on-street).

Table 15: Game Day Parking Demand – Employees

Mode of Travel	Number of Employees	Total Employee Vehicles
Automobile (90%)	2,610	1,740
Transit (10%)	290	0
Total	2,900	1,740

Source: San Francisco 49ers, 2006; DMJM Harris, 2007

The great majority of employees will arrive at the stadium before the attendees, and would park their vehicles in remote parking lots (potentially in the Cisco parking facilities), preferably lots accessible by VTA light rail. The employees would also leave the Stadium after most of the game day traffic has cleared out.

4.4 VEHICULAR ACCESS

The following topics are addressed as part of the game day traffic plan:

- Police Staffing and Operations;
- Pre-Game Access (Ingress);
- Post-Game Access (Egress);
- Exit Capacity / Departure Time;
- Capacity Constraints;
- Trip Distribution;
- Changeable Message Sign Plan; and
- Special User Groups.

4.4.1 POLICE STAFFING AND OPERATIONS

During stadium event days, the Santa Clara Police Department along with other local, county, and regional agencies will work together to ensure efficient and safe vehicular flow while minimizing the potential for pedestrian/vehicle conflicts throughout the Stadium area. The various law enforcement agencies will create a traffic flow pattern by adjusting the lane configuration of various intersections throughout the Stadium area. Each intersection, their respective jurisdiction, and the number of officers required to manage the game day traffic flow are listed below:

- Great America Parkway / SR-237 Ramps (requires two officers);
- Great America Parkway / Yerba Buena Way (no officers required);
- Great America Parkway / Old Mountain View Alviso Road (requires one officer);
- Great America Parkway / Bunker Hill Lane (requires one officer);
- Great America Parkway / Tasman Drive (requires three officers);

- Great America Parkway / Stadium North Driveway (requires one officer post-game only);
- Great America Parkway / Old Glory Lane (requires three officers);
- Great America Parkway / Patrick Henry Drive (requires two officers);
- Great America Parkway / Mission College Boulevard (requires three officers);
- Great America Parkway / Our Lady Way (no officers required);
- Lawrence Expressway / Tasman Drive (requires two officers);
- Lawrence Expressway / Sandia Avenue (requires two officers);
- Tasman Drive / Adobe Wells Mobile Home Park Access (requires one officer);
- Patrick Henry Drive / Tasman Drive (requires two officers);
- Old Ironsides Drive / Tasman Drive (requires two officers);
- Convention Circle / Tasman Drive (requires one officer);
- Centennial Boulevard / Tasman Drive (requires two officers);
- Calle Del Sol / Tasman Drive (requires two officers);
- Calle Del Sol / Calle De Luna (requires one officer);
- Lafayette Street / Calle De Luna (requires one officer);
- Lick Mill Road / Tasman Drive (requires one officer);
- North 1st Street / Tasman Drive (requires two officers);
- Lafayette Street / Hogan Drive (requires no officers required);
- Marriott Parking Access / Mission College Boulevard (requires one officer);
- Freedom Circle / Agnew Road / Mission College Boulevard (requires one officer);
and
- Montague Expressway / Mission College Boulevard (requires two officers).

The locations of the officer controlled intersection are illustrated in Figures 9 and 10.

In total, 39 officers would be required to manage game day traffic. It is expected that game Day officers would be drawn from a pool of available officers from the City of Santa Clara and surrounding communities (San Jose and Sunnyvale), from the California Highway Patrol, and from the Santa Clara County Sheriff's Department. The pre-game set-up of cones, signs, and officers at the necessary intersections must be in place four hours prior to the start of a football game. The post-game take-down of the cones and signs will occur two hours after the end of a football game. At this time, all traffic signals will be returned to normal operating conditions.

It should be noted that any traffic signal not under officer control on game days may be controlled remotely by the City of Santa Clara, City of Sunnyvale, and the City of San Jose traffic engineering departments. Each traffic engineering department is able to manage individual traffic signals via Intelligent Transportation Systems control. Using this tool, the amount of green time assigned to major game day routes can be adjusted in real time.

4.4.2 INGRESS (ARRIVAL)

During the period before events, traffic management by vehicle type is crucial to ensure efficient and safe vehicular flow while minimizing the potential for pedestrian/vehicle

conflicts. Figure 9 illustrates the proposed lane configuration and traffic control for pre-game traffic.

It should be noted that the majority of 49ers game attendees are season ticket holders, and will have assigned parking lots. When tickets and parking passes are distributed, the 49ers will include specific directions to the assigned parking lots to allow vehicles to arrive at their assigned parking lots as quickly as possible, and minimize traffic congestion throughout the Stadium Area.

Automobiles: Automobiles would be able to access the game day parking facilities in the following ways:

Great America Main Parking Facilities – Automobiles would be able to enter the Great America main parking facilities via Great America Parkway from both the north and the south.

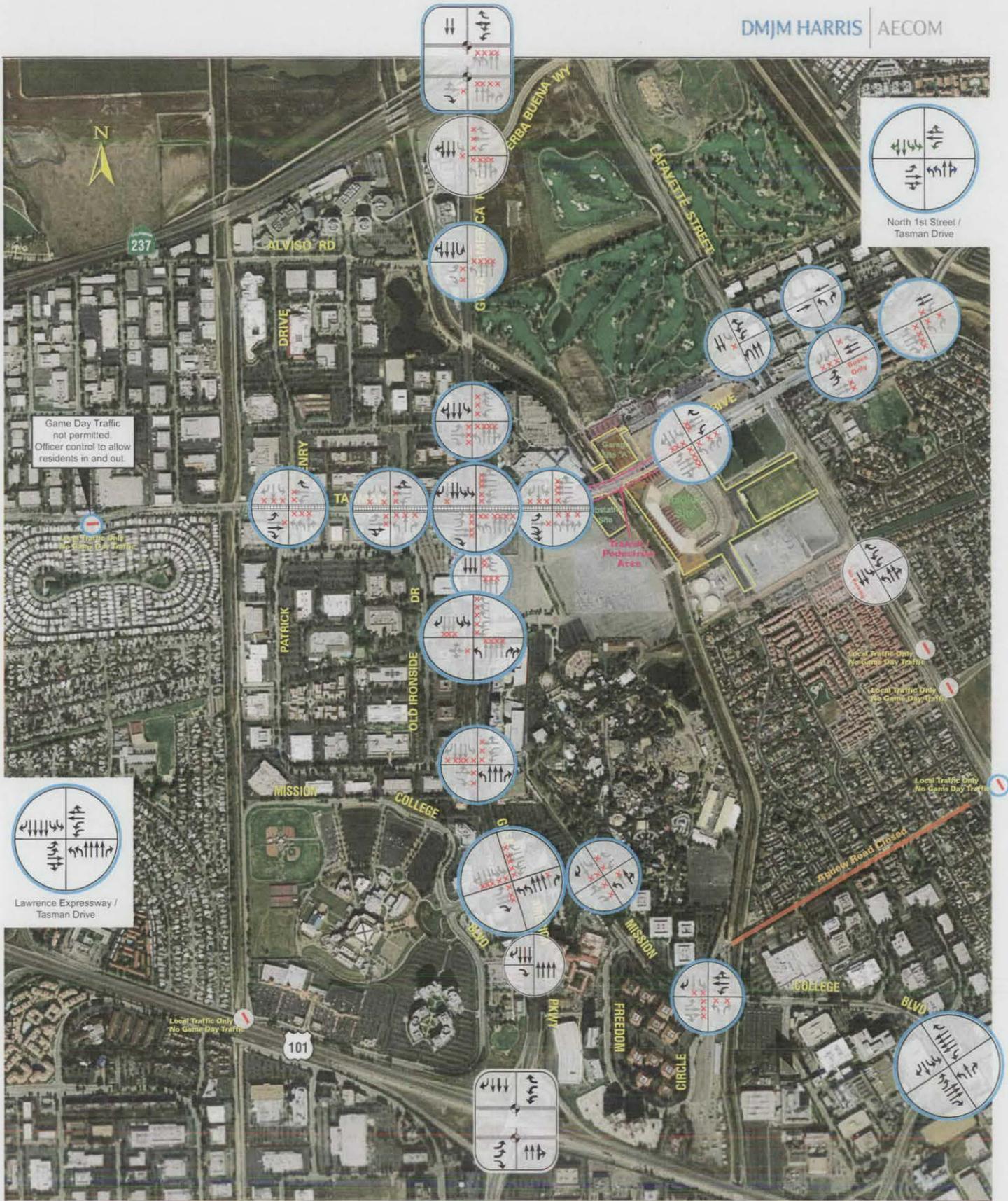
Off-Site Parking Northeast of Stadium – Automobiles parking northeast of the Stadium site (i.e. the industrial uses northeast of the Tasman Drive / Lafayette Street Overcrossing, and the Cisco Systems site) would access the parking facilities via Tasman Drive from the east.

Off-Site Parking Northwest of Stadium – Automobiles parking northwest of the Stadium site would access the parking facilities via Tasman Drive from the west and via Great America Parkway from the north.

Off-Site Parking South of Stadium – Automobiles parking in off-site parking facilities south of the Stadium site with driveways along Great America Parkway would access the parking facilities via Great America Parkway from the south. Automobiles parking in off-site parking facilities south of the Stadium site with driveways along Mission College Boulevard would access the parking facilities via Mission College Boulevard from the east.

Off-Site Parking Southwest of Stadium – Automobiles parking in off-site parking facilities southwest of the Stadium site would access the parking facilities via Great America Parkway from the south.

Bus: All non-charter bus unloading will occur on both sides of Stars & Stripes Drive. Transit buses would be provided an exclusive ingress route from Lafayette Street via Calle de Luna, Calle Del Sol, the westbound lanes of Tasman Drive between Calle Del Sol and Centennial Boulevard, the northbound lanes of Centennial Boulevard, and Stars & Stripes Drive.



49ERS SANTA CLARA STADIUM SITE

Figure 9
PROPOSED INBOUND LANE CONFIGURATIONS AND CONTROL

Officer Controlled

VTA Light Rail: Light rail patrons would enter the stadium area from the "Transit and Pedestrian Area" located north of the stadium site on Tasman Drive.

ACE / Capitol Corridor Service: ACE/ Capitol Corridor patrons would reach the stadium either walking along Tasman Drive, or by walking through the new pedestrian pathway along the north edge of the 49ers Training Facility east of the stadium.

Charter Bus: All charter buses would be brought to the site via Tasman Drive from the west. Charter buses would park on-street along the Old Ironsides loop. There would be enough space for approximately 195 buses to park. The charter buses would remain parked at this location for the duration of the event.

4.4.3 EGRESS (DEPARTURE)

Like the period before events, post-event traffic management by vehicle type is crucial to ensure efficient and safe vehicular flow while minimizing the potential for pedestrian/vehicle conflicts. The post-game intersection lane configuration and traffic control is shown in Figure 10, and an illustration of the proposed lane assignments is shown in Figure 11.

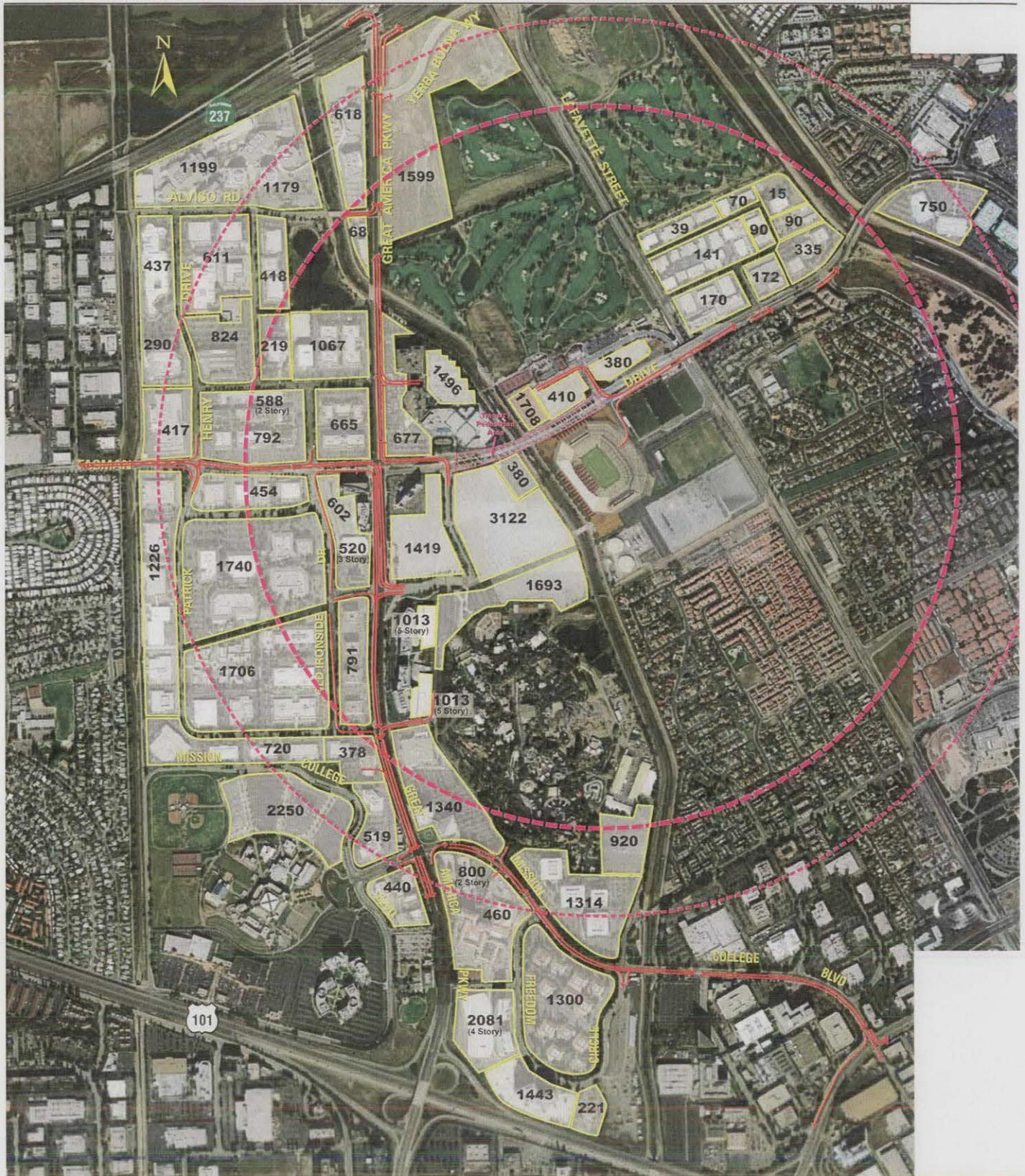
Automobiles: Automobiles would be able to exit the game day parking facilities in the following ways.

Great America Main Parking Facilities – Automobiles would be able to exit the Great America main parking facilities via driveways at the Great America Parkway / Old Glory Lane and Convention Circle / Tasman Drive intersections. Automobiles exiting from the Great America Parkway / Old Glory Lane intersection could exit (a) north along Great America Parkway to SR-237, (b) north along Great America Parkway then west along Tasman Drive towards the Lawrence Expressway, or (c) south along Great America Parkway to US-101. Automobiles exiting from the Convention Circle / Tasman Drive intersection would travel west along Tasman Drive then north along Great America Parkway to SR-237.

Off-Site Parking Northeast of Stadium – Automobiles exiting from parking facilities northeast of the Stadium site would be directed to leave via Tasman Drive to the east.

Off-Site Parking Northwest of Stadium – Automobiles exiting from parking facilities northwest of the Stadium site would be directed to leave via Tasman Drive to the west.

Off-Site Parking South of Stadium – Automobiles exiting from off-site parking facilities south of the Stadium site with driveways along Great America Parkway would be directed to exit south along Great America Parkway to US-101. Automobiles exiting from off-site parking facilities south of the Stadium site with driveways along Mission College Boulevard would be directed to exit east along Mission College Boulevard towards the Montague Expressway.



Post Game Lanes rev2.n

49ERS SANTA CLARA STADIUM SITE

Figure 11

- xxx Parking Supply
- 15 Minute Walking Radius
- 20 Minute Walking Radius

PROPOSED POST GAME LANE ASSIGNMENTS

Off-Site Parking Southwest of Stadium – Automobiles exiting from off-site parking lots southwest of the Stadium site would be directed to leave via Great America Parkway to the south.

Bus: All non-charter bus loading would occur on both sides of Stars & Stripes Drive, and along westbound Tasman Drive west of the bridge over Lafayette Street. Transit buses would be provided an exclusive egress route from Lafayette Street via Calle de Luna, Calle Del Sol, the westbound lanes of Tasman Drive between Calle Del Sol and Centennial Boulevard, the northbound lanes of Centennial Boulevard, and Stars & Stripes Drive.

VTA Light Rail: Light rail patrons would exit the stadium site from the “Transit and Pedestrian Area” located north of the stadium site on Tasman Drive.

ACE / Capitol Corridor: ACE and Capitol Corridor patrons would arrive at the Great America Commuter Rail Station by walking along Tasman Drive, or by walking through the pedestrian pathway at the north edge of the 49ers Training Facility.

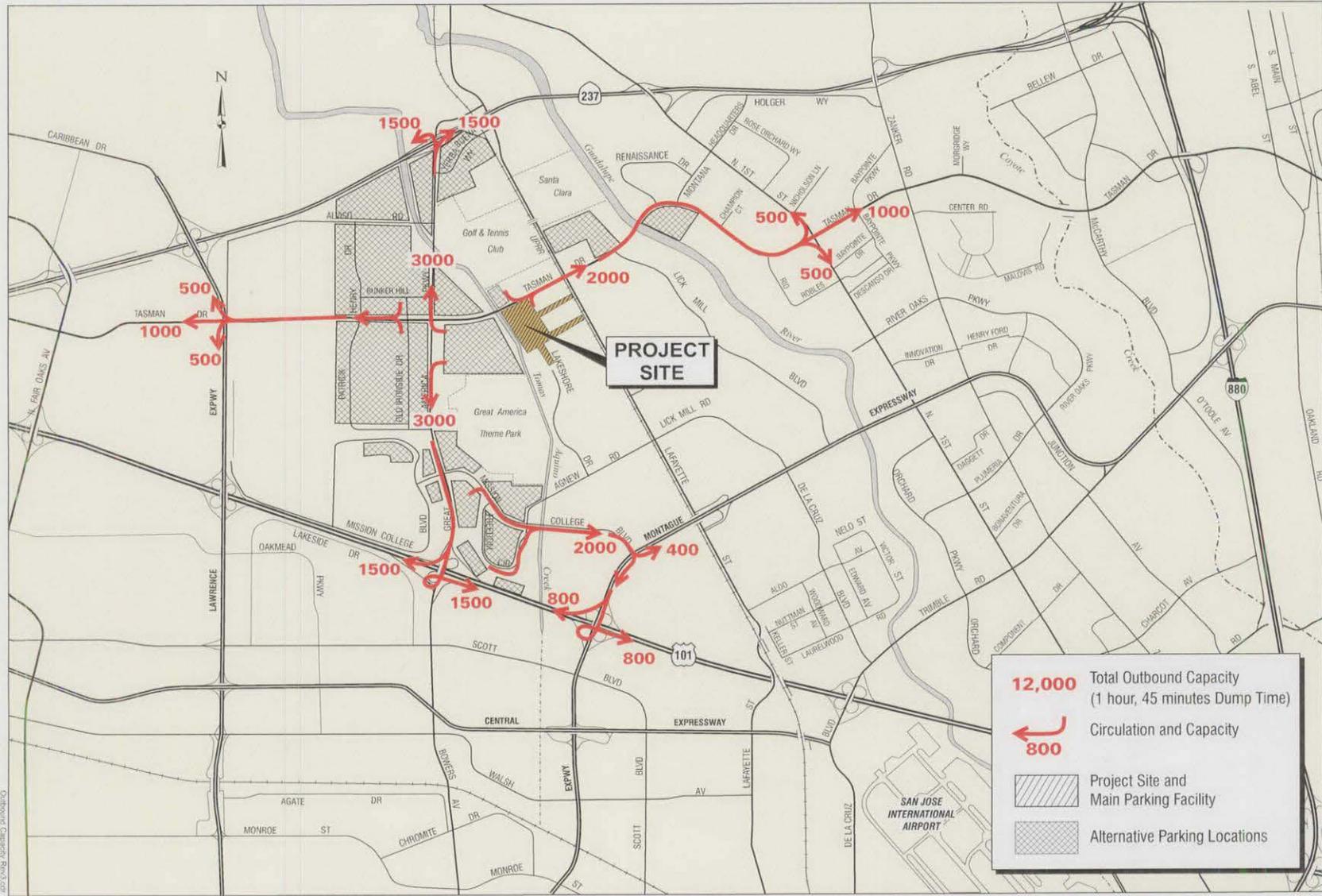
Charter Bus: Charter buses would exit their designated parking area via Tasman Drive to the west.

4.4.4 CAPACITY / DEPARTURE TIME

At the proposed Santa Clara Stadium site illustrated in Figure 12, the exit capacity would be approximately 12,000 vehicles per hour. Therefore, with the proposed game day configuration, the parking lots would empty in one hour and 43 minutes (departure time). However, it should be noted that this represents a worst case scenario where all vehicles would exit the Stadium at once. In fact, there are various other factors which affect the actual time it takes for vehicles to exit the Stadium area. For example, a small percentage of ticket holders can be expected to not attend the game entirely. Also, some attendees will leave the game late. As a result, the actual departure time for the Stadium on a typical game day will vary. In most cases, the Stadium area can be expected to be vacated one hour after the completion of the football game.

4.4.5 CAPACITY CONSTRAINTS

In the vicinity of the 49ers Santa Clara Stadium site, there are locations which limit the number of vehicles that can exit the area during post-game conditions. These locations, also referred to as “pinch points”, are as follows:



49ERS SANTA CLARA STADIUM SITE

Figure 12

OUTBOUND LANE CAPACITY AND DEPARTURE TIME

Great America Parkway (North): Vehicles exiting the Stadium area to the north will travel along Great America Parkway toward SR-237. Along Great America Parkway, three lanes of travel are provided in the northbound direction. Each lane is assumed to have a capacity of 1,000 vehicles per hour, totaling 3,000 vehicles per hour along Great America Parkway to the north.¹ At the Great America Parkway / SR-237 Ramps intersection, ample capacity is available on the on-ramps in either direction to accommodate the 3,000 vehicles per hour expected from Great America Parkway. Thus, the available capacity along Great America Parkway is considered a pinch point.

Great America Parkway (South): Vehicles exiting the Stadium area to the south will travel along Great America Parkway toward US-101. Along Great America Parkway, three lanes of travel are provided in the southbound direction approaching the Great America Parkway / Mission College Boulevard intersection. Each lane is assumed to have a capacity of 1,000 vehicles per hour, totaling 3,000 vehicles per hour along Great America Parkway to the south. Beyond the Great America Parkway / Mission College Boulevard intersection, and at the Great America Parkway / US-101 Ramps intersection, ample capacity is available to accommodate the 3,000 vehicles per hour expected from Great America Parkway. Thus, the available capacity along Great America Parkway is considered a pinch point.

Tasman Drive (West): Vehicles exiting the Stadium area to the west will travel along Tasman Drive toward the Lawrence Expressway. Along Tasman Drive, two lanes of travel are provided in the westbound direction. Each lane is assumed to have a capacity of 1,000 vehicles per hour, totaling 2,000 vehicles per hour along Tasman Drive to the west. At the Lawrence Expressway / Tasman Drive intersection, ample capacity is available to accommodate the 2,000 vehicles per hour expected from Tasman Drive. Thus, the available capacity along Tasman Drive is considered a pinch point.

Tasman Drive (East): Vehicles exiting the Stadium area to the east will travel along Tasman Drive toward North 1st Street. Along Tasman Drive, two lanes of travel are provided in the eastbound direction. Each lane is assumed to have a capacity of 1,000 vehicles per hour, totaling 2,000 vehicles per hour along Tasman Drive to the east. At the North 1st Street / Tasman Drive intersection, ample capacity is available to accommodate the 2,000 vehicles per hour expected from Tasman Drive. Thus, the available capacity along Tasman Drive is considered a pinch point.

Mission College Boulevard: Vehicles exiting from south of the Stadium site with driveways along Mission College Boulevard will travel along Mission College Boulevard toward the Montague Expressway. Along Mission College Boulevard, two lanes of travel are provided in the eastbound direction approaching the Agnew Road / Mission College Boulevard intersection. Each lane is assumed to have a capacity of 1,000 vehicles per hour, totaling 2,000 vehicles per hour along Mission College Boulevard to the east. Beyond the Agnew Road / Mission College Boulevard intersection, ample capacity is available to accommodate the 2,000 vehicles per hour expected from Mission College

¹ 1,000 vehicles per hour per lane is a common planning capacity. Theoretically, under free-flow conditions, as many as 1,800 vehicles can travel in one lane per hour. However, due to interactions with crossing pedestrians, 1,000 is a much more realistic value.

Boulevard. Thus, the available capacity along Mission College Boulevard is considered a pinch point.

4.4.6 TRIP DISTRIBUTION

The projected trip distribution for a typical NFL game at the Santa Clara Stadium site is based on historic trip origin and destination data. The geographic location of attendees is likely to increase in the San Jose area, and decrease in areas further away.

Table 16: Santa Clara Site – Auto Distribution and Routes To/From Site for Attendees

Place of Residence	Percent	Direction	Percent	Access Route	Percent
San Francisco	11%	To/From NE	36%	SR-237 East	41%
San Mateo	17%	To/From NW	28%	US-101 North	36%
Santa Clara	19%	To/From S	3%	Local Roads	23%
Alameda	6%	Local	19%		
Contra Costa	7%	Other	14%		
Marin	6%				
Sonoma	4%				
Napa	1%				
Solano	2%				
Sacramento	4%				
Central Valley	6%				
South	3%				
Other	14%				
Total	100%		100%		100%

Source: DMJM Harris, 2007

As compared to the distribution of trips at the current Candlestick Point site (where motorists primarily use US-101), trips to and from the Santa Clara Stadium site would be evenly distributed between the available roadways. Additionally, it should be noted that with three regional roadways and 13 freeway interchanges within approximately five miles of the project site, automobiles exiting the stadium could easily reach their preferred regional roadway from any parking facility.

4.4.7 ADVANCE EVENT MESSAGE SIGNS

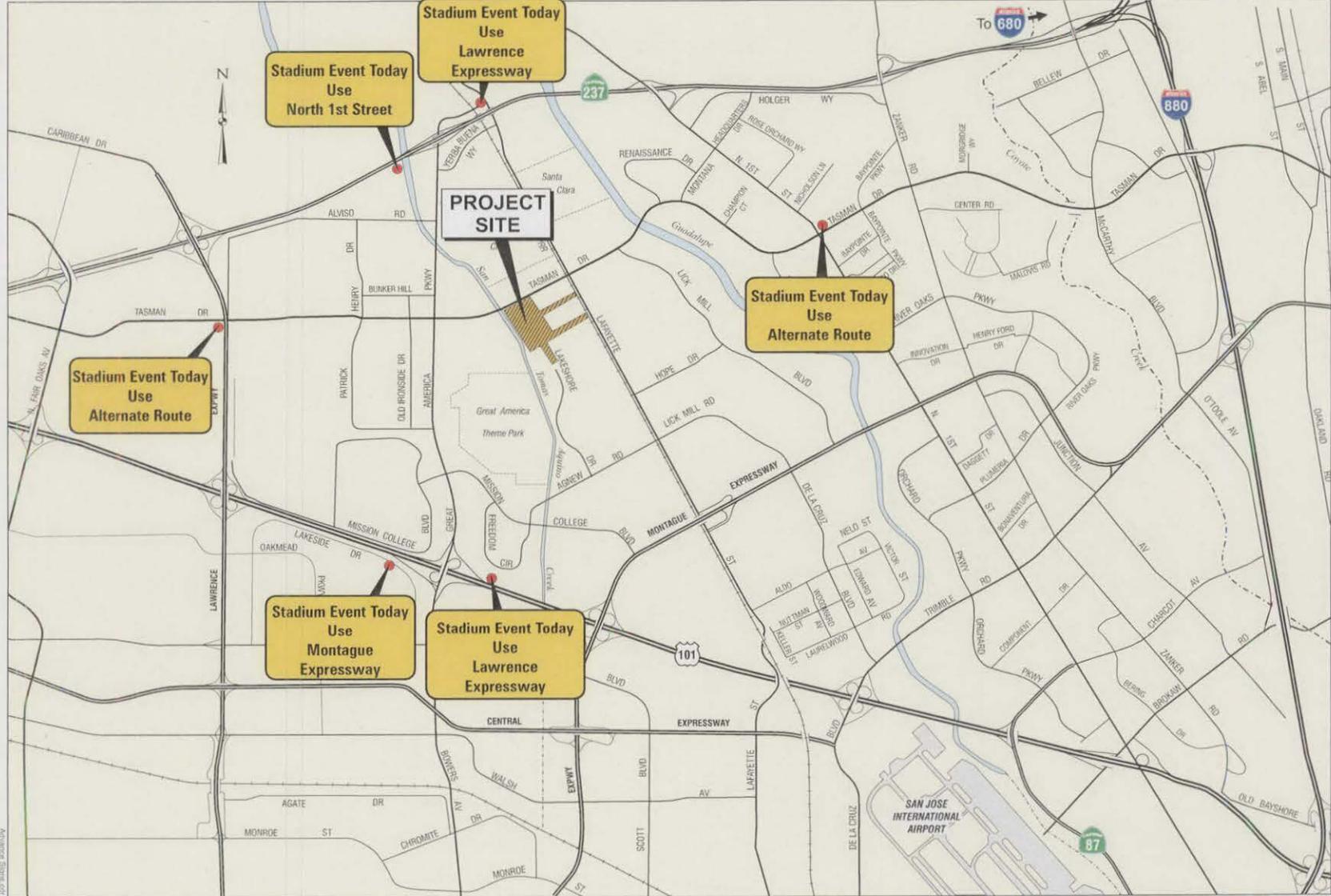
In order to notify traffic approaching the study area of game day roadway changes, changeable message signs are to be used. The changeable message signs would be posted at each of the major access roadways. Each sign will indicate that there is a "STADIUM EVENT TODAY", and direct non-stadium related traffic to alternate routes. The changeable message signs are to be located at the following six locations (illustrated in Figure 13):

- SR-237 (Eastbound) prior to the Great America Parkway exit;
- SR-237 (Westbound) prior to the Great America Parkway exit;
- Tasman Drive (Eastbound) prior to the Lawrence Expressway / Tasman Drive intersection;
- Tasman Drive (Westbound) prior to the North 1st Street / Tasman Drive intersection;
- US-101 (Southbound) prior to the Great America Parkway exit; and
- US-101 (Northbound) prior to the Great America Parkway exit.

4.4.8 LOCAL FACILITIES

In the vicinity of the 49ers Santa Clara Stadium site, there are several locations which could be affected by vehicles entering and exiting the Stadium area during game days. These locations are as follows:

Our Lady of the Peace Shrine is a Roman Catholic Church located southeast of the Our Lady Way / Mission College Boulevard intersection. The church is open 24 hours a day, seven days a week, with Mass services provided eight times each Sunday (7:30 AM, 9:00 AM, 10:30 AM, 12:00 PM, 2:30 PM, 5:00 PM, 6:30 PM, and 8:00 PM), and three to four times Monday through Saturday (8:00 AM, 12:00 PM, and 5:15 PM on Monday, Thursday, and Saturday). Game day traffic for a typical Sunday game may conflict with church patrons attending 12:00 PM, 2:30 PM, and 5:00 PM masses. Games occurring in the evening on Thursday, Sunday, or Monday may conflict with church patrons attending 5:15 PM mass. Church patrons currently enter the church's parking lot from either northbound or southbound Great America Parkway, and from Mission College Boulevard. To exit the parking lot, patrons exit south along Great America Parkway via Our Lady Way, north along Great America Parkway via Mission College Boulevard, or east along Mission College Boulevard. The church is reportedly busiest during weekends and special holidays, with approximately 4,000 persons attending weekend Masses. To enter the church parking lot during game day conditions, patrons would travel northbound along Great America Parkway, turn left onto Mission College Boulevard, then left onto Our Lady Way. To exit the church parking lot during game day conditions, patrons would be required to turn right from Our Lady Way onto Great America Parkway towards US 101.



49ERS SANTA CLARA STADIUM SITE

Figure 13

ADVANCE EVENT MESSAGE SIGNS

AMC Mercado 20 is a 20-screen movie theater located immediately south of Mission College on Mission College Boulevard. The theater operates seven days a week, with movies playing from 11:00 AM to midnight on weekends, and from 1:00 PM to midnight on weekdays. The theater is most busy on weekends during the autumn, which coincides with the NFL football season. Since the theater's hours of operation span all the times that a football game can occur, game day traffic for Thursday (night), Sunday (day or night), or Monday (night) games may conflict with movie patrons. Patrons currently enter and exit the movie theater parking lot from either northbound or southbound Great America Parkway, and from Mission College Boulevard. To enter the movie theater parking lot during game day conditions, patrons would be required to travel northbound along Great America Parkway, then turn left onto Mission College Boulevard. To exit the movie theater parking lot during game day conditions, patrons would be required to turn right from Our Lady Way onto Great America Parkway towards US 101. Wildwood Avenue would be closed on game days to prevent game day traffic from traveling through the residential neighborhood west of Mission College.

Adobe Wells Mobile Home Park is a 613-site mobile home subdivision located southeast of the Lawrence Expressway / Tasman Drive intersection. Access to the mobile home park is provided by a main (all-movement) driveway, and a right-turn-in / right-turn-out driveway. During game day conditions, residents entering the mobile home park would be required to do so from eastbound Tasman Drive. Residents exiting the mobile home park would be required to turn left from the main driveway, which would be officer-controlled.

Santa Clara Golf & Tennis Club and Santa Clara Youth Soccer Park are located east of the Stadium site. Each local facility is accessed by traveling eastbound or westbound on Tasman Drive, turning north on Centennial Boulevard, and then turning east on Stars and Stripes Drive. During game day conditions, Tasman Drive would be closed between Convention Circle and Centennial Boulevard, so these local facilities would have to be accessed via westbound Tasman Drive only. It should be noted that with the buildout of the Stadium, a new private drive along the former Centennial Boulevard alignment would be added to provide direct access to the Soccer Park from Tasman Drive.

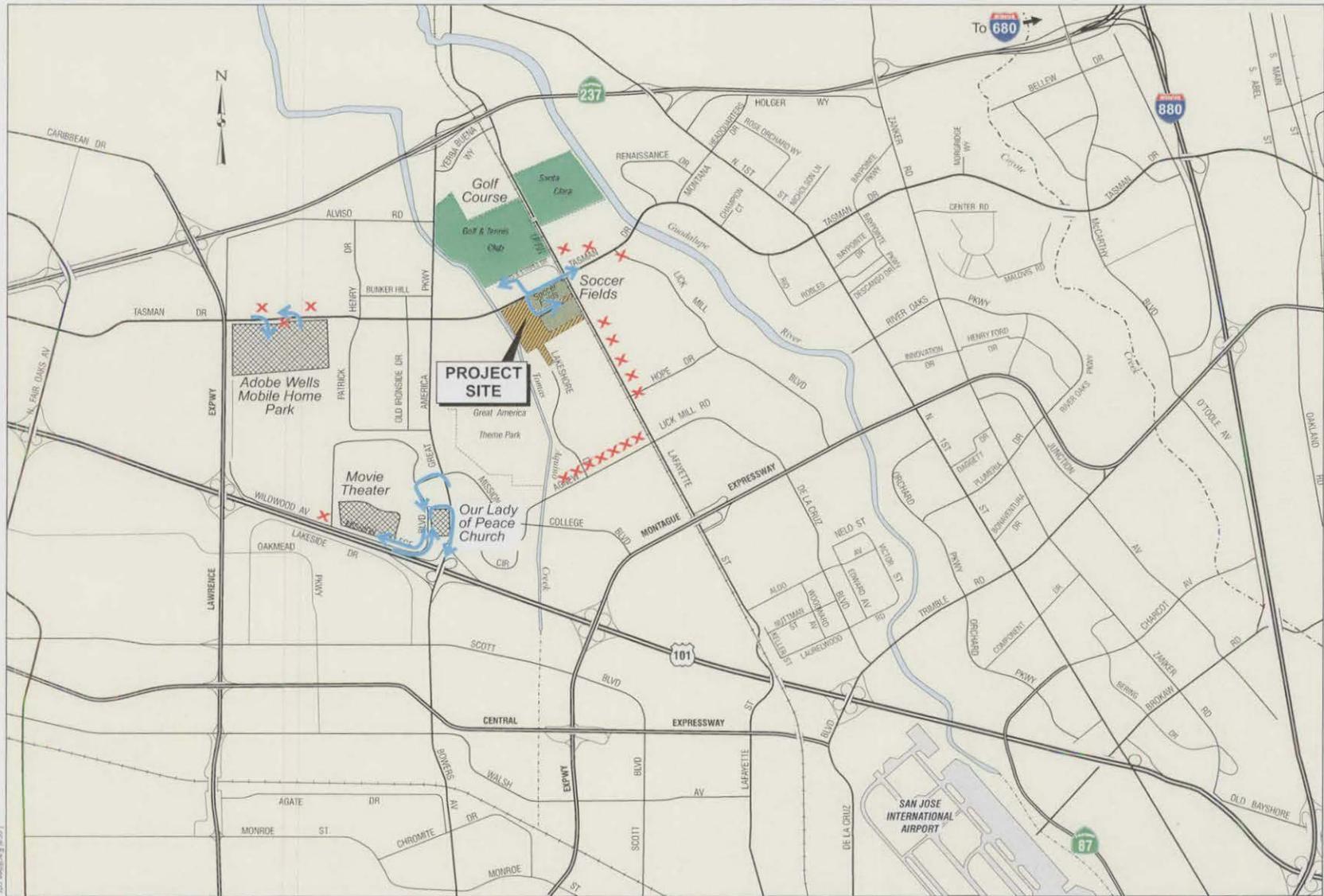
Local hotels are located along Great America Parkway throughout the Stadium area. During game days, each local hotel would be accessible at officer controlled intersections, and at right-in right-out driveways. Guests entering a local hotel south of the Stadium site would do so from northbound Great America Parkway, and guests entering a local hotel north of the Stadium site would do so from southbound Great America Parkway. Guests exiting a local hotel south of the Stadium site would travel south along Great America Parkway toward US-101, and guests exiting a local hotel north of the Stadium site would travel north along Great America Parkway toward SR-237.

To keep game day traffic from entering residential neighborhoods in the vicinity of the Stadium site such as the Adobe Wells Mobile Home Park west of the Stadium site, the Rivermark community, and other residential communities southeast of the Stadium site, numerous local roadways will be closed to game day traffic and will only be accessible to residents and their guests. Each roadway would continue to allow residential access, and some would allow transit access. These roadways include:

- Lick Mill Road;
- Calle Del Sol;
- Calle De Luna;
- Calle De Primavera;
- Fairway Glen Drive;
- Hogan Drive;
- Eisenhower Drive;
- Hope Drive;
- Reamwood Avenue;
- Adobe Wells Mobile Home Park Access;
- Birchwood Drive;
- Wildwood Avenue;
- Basset Street;
- Davis Street;
- Cheeney Street;
- Fillmore Street;
- Hunter Place;
- Lakeshore Drive;
- Lake Santa Clara Drive; and
- Agnew Road.

It should be noted that the access points to the Adobe Wells Mobile Home Park will be officer controlled. Game day traffic would be stopped to allow residents to enter or exit the mobile home park. In addition, officers would be stationed on either end of Agnew Road between Mission College Boulevard and Lafayette Street to prevent game day traffic from cutting through. Officer control of the access points to other residential communities south and southeast of the Stadium site would not be necessary since game day traffic would not travel along Lafayette Street.

The location of each special user group, their available access routes, and the location of each roadway closed to game day traffic are illustrated in Figure 14.



49ERS SANTA CLARA STADIUM SITE

Figure 14

LOCAL FACILITIES

4.5 PEDESTRIANS

To evaluate the effectiveness of the pedestrian paths of travel to and from the Stadium area, the available capacity of pedestrian facilities and the amount of time required for all pedestrians to reach their vehicles (or transit) is calculated. Each calculation requires the use of a pedestrian Level of Service (LOS), which is defined in the *2000 Highway Capacity Manual*. A pedestrian LOS of A corresponds to uncongested walking conditions, and a pedestrian LOS of E or F corresponds to highly congested walking conditions. For the purposes of this analysis, a pedestrian LOS of a borderline E/F has been assumed.

Pedestrian paths of travel to several parking facilities and transit loading areas will not require pedestrians to cross vehicular traffic. Pedestrians traveling to parking facilities north of the Stadium area would walk through the closed-off area of Tasman Drive, which would be a free-flow of pedestrians. Most of the pedestrians traveling to the Great America Commuter Rail Station would continue east along the new pedestrian pathway at the north edge of the 49ers Training Facility to the cul-de-sac on Stars & Stripes Drive. Pedestrians traveling to parking facilities south of the Stadium site would either use the pedestrian path located between the Stadium site and San Tomas Aquino Creek, or walk on the sidewalk along Great America Parkway. Pedestrian travel to each of these parking facilities / transit loading areas would be an uninterrupted flow of pedestrians. Though crowded conditions are to be expected for each path, pedestrians would not experience delays on account of vehicular traffic.

Pedestrians traveling to parking facilities northwest, west, or southwest of the Stadium site, and a small portion of pedestrians traveling to the Great America Commuter Rail Station would have to cross game day vehicular traffic. To do so, pedestrians would use crosswalks located at officer-controlled intersections. Pedestrians traveling to parking facilities northwest of the Stadium site would walk through the closed off section of Tasman Drive, and cross Great America Parkway either at Tasman Drive or at Bunker Hill Lane. Pedestrians traveling to parking facilities west and southwest of the Stadium site would cross Great America Parkway either at Tasman Drive, Old Glory Lane, Patrick Henry Drive, or at Mission College Boulevard. A small portion of pedestrians traveling to the Great America Commuter Rail Station would walk through the closed off section of Tasman Drive and cross traffic at Centennial Boulevard to reach Stars and Stripes Drive. Due to arriving and departing vehicular traffic, pedestrian use of crosswalks is estimated to be 25 percent of the time, and vehicles would travel through intersections the remaining 75 percent of the time. As a result, crosswalk capacity (assuming pedestrian LOS E/F conditions) during a game day would be 3,450 persons per hour. The available capacity for pedestrian paths of travel, and the amount of time required for all pedestrians to reach their destination is summarized in Table 17, and illustrated in Figure 15.

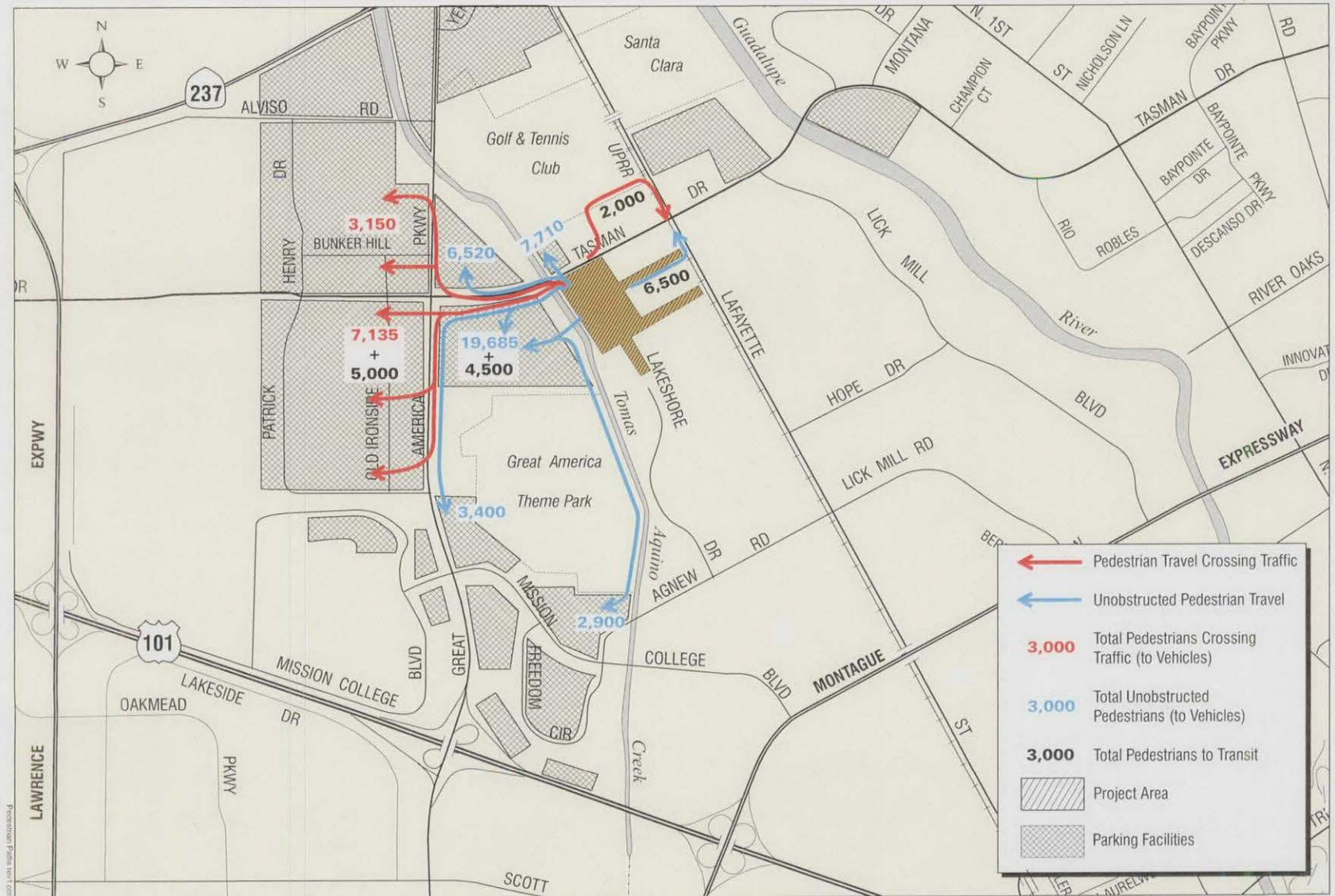
Though the majority of light rail riders would exit the light rail within the designated "Transit and Pedestrian Area" located north of the stadium site on Tasman Drive, the potential exists for riders to exit one stop to the east, prior to reaching the stadium. Additional signage will be added at the Calle del Sol VTA station to direct pedestrians west along Tasman Drive to the Stadium.

Table 17: Pedestrian Facility Summary

Destination	Number of Pedestrians	Total Crosswalk Capacity per Hour	Total Time for All Pedestrians To Reach Destination
Great America Main Lot	19,685	NA	NA
Parking Garage and Dirt Lots north of the Stadium	7,710	NA	NA
VTA Light Rail	4,500	NA	NA
Convention Center (northwest of the Stadium)	6,520	NA	NA
Great America Commuter Rail Station (through Training Facility)	6,500	NA	NA
Great America Commuter Rail Station (via Tasman Drive)	2,000	3,450 ^b	35 minutes
Other Parking facilities northwest of the Stadium site	3,150	10,350 ^c	20 minutes
Parking facilities west and southwest of the Stadium site	12,135 ^a	17,250 ^d	45 minutes
Parking facilities south of the Stadium site	6,300	NA	NA
Total	68,500	----	----

Source: DMJM Harris, 2007

- Notes:
- ^a Includes 7,135 pedestrians traveling to vehicles and 5,000 traveling to charter buses.
 - ^b Includes a crosswalk at the Centennial Boulevard / Tasman Drive intersection.
 - ^c Includes two crosswalks at the Great America Parkway / Bunker Hill Lane intersection, and one crosswalk at the Great America Parkway / Tasman Drive intersection.
 - ^d Includes one crosswalk at the Great America Parkway / Tasman Drive intersection, one crosswalk at the Great America Parkway / Old Glory Lane intersection, one crosswalk at the Great America Parkway / Mission College Boulevard intersection, and two crosswalks at the Great America Parkway / Patrick Henry Drive intersection.



49ERS SANTA CLARA STADIUM SITE

Figure 15

PEDESTRIAN PATHS OF TRAVEL