STRATEGIC ANALYSIS REPORT

SAR 96-1

Adopted by the San Francisco County Transportation Authority Board on April 15, 1996

I. TOPIC	China Basin Ballpark Transportation Issues

II. INITIATED BY	Commissioner Ammiano

III. INTRODUCTION	Purpose of the Document

"This is a document designed to present the basic facts and the issues, to inform policy making."

"It provides strategic analysis of potential implications for the Authority as Prop. B administrator and as CMA. It is not meant as an in-depth technical discussion."

The purpose of this *Strategic Analysis Report* is to provide the SFCTA Board with a brief but comprehensive summary of background and analysis of transportation-related issues regarding the proposed siting of a ballpark in the China Basin area of San Francisco. As the name suggests, this Strategic Analysis Report, or SAR for short, is furthermore intended to highlight for the Board the strategic significance of these issues in areas of SFCTA jurisdiction, as well as to identify implications for future policy decisions by the Board in its capacity as administrator of Proposition B funds and as Congestion Management Agency (CMA) for San Francisco. Every effort was made to make this into a factual document, avoiding speculation, and leaving judgment to the reader. The document was designed to inform policy-level decision-making. Its abbreviated length (only 10 pages plus exhibits) is, therefore, an attempt to optimize its usefulness to Authority Board members. In pursuit of this goal, technical discussion has been condensed and only those facts are included which were deemed essential to outline the policy-level issues. Additional information is available from the sources cited, or by calling José Luis Moscovich, Director of Congestion Management, at 557-6857.

IV. BACKGROUND	Context - Relevant Previous Studies

The idea of building a ballpark in the China Basin area is not new. In 1983 the City prepared a Stadium Feasibility Analysis. Most recently in 1989, San Francisco voters considered and rejected such a proposal. Recognizing the need for a look at transportation issues, data, and potential implications from the Authority's perspective, Commissioner Ammiano requested that the Authority develop the current SAR. This document focuses primarily on transportation issues, including congestion, mobility and parking related to the ballpark. No attempt is made to analyze other issues, like potential land use changes, construction costs, financing, benefits to the City's economy, etc., which, though potentially significant, are beyond the Authority's jurisdiction. It is expected that most of those issues, including an in-depth analysis of the transportation impacts discussed here at the sketch-planning level, will be addressed as part of a future Environmental Impact Report (EIR), as required by the California Environmental Quality Act (CEQA). It is anticipated that the EIR process will not get underway until after the March 26, 1996 election.

a. **The Stadium Feasibility Analysis of 1983:** In 1983 the City published a report presenting a theoretical analysis of a possible stadium/arena in downtown San Francisco. Survey data was collected at Candlestick Park for this effort, to provide a picture of the distribution of fan trips by origin and transportation mode, and to determine auto occupancy factors. The report was considered too outdated to incorporate into the current SAR.

"The stadium was to be located at King St., between Second and Third Streets (the same site as the currently proposed one)..."

b. **The China Basin Ballpark Initiative of 1988 and the Mission Bay Plan:** In 1988, then Mayor Art Agnos proposed the construction of a stadium and indoor arena complex in the China Basin area. The stadium was to be located at King St., between Second and Third Streets (the same site as the currently proposed one), and the arena was to be located at Seventh and Townsend Streets.

Because of their anticipated cumulative impacts, and because the Mission Bay Draft EIR had already been published in August 1988, both facilities were the subject of a supplement to that EIR. That analysis is contained in Appendix M of the Mission Bay EIR, and is further referenced below, as relevant.

"...the treatment of parking, circulation, and mode choice (transit vs. other) issues is also similar to the approach currently proposed."

The most significant difference between the current proposal and the 1989 one is that the current proposal does not include an arena. As regards the stadium, there appear to be otherwise more similarities than differences between the two proposals. Specifically, the capacity of the currently proposed stadium would be 42,000 spectators, very close to the 45,000 assumed in 1988. Also, the Mission Bay EIR Supplement includes analysis of scenarios that assume stadium-only events (no arena impacts) and are therefore germane to the current discussion; and the treatment of parking, circulation, and mode choice (transit vs. other) issues is also very similar to the approach currently proposed.

"...the data developed at the time... did not include the effects of buildout at Mission Bay, which was then expected for 2020."

It must also be pointed out that the 1989 EIR Addendum only quantified impacts to the year 2000. This is important because it means that the data developed at the time (particularly about traffic congestion), did not include the cumulative effects of buildout at Mission Bay, which was then expected for 2020[1]. Consequently, portions of the detailed analysis developed at the time appear to still be relevant, despite the prospect that the Mission Bay land use plan may be revamped, and were partially used in this report as a surrogate for the more detailed (and updated) impact analyses, which are not available at this time, and which the future EIR is expected to include.

"the *data* available from the Giants consultant (is) the result of a preliminary analysis, subject to further changes..."

It must be understood, however, that the *current* proposal has not yet reached the EIR stage. Not only is the *data* available from the Giants consultant the result of a preliminary analysis, subject to further changes, but as regards the *stadium concept itself*, the proposed parking and circulation features are likely to be further refined during the EIR process, to better address expected impacts.

V. STRATEGIC ANALYSIS — Overall Evaluation, Implications For Authority Policy-Making, Next Steps And Recommended Follow-Up

A. OVERALL EVALUATION — The Giants' Analysis. The Authority's Transportation Capacity Analysis.

"Their analysis appears internally consistent and uses reasonable and rather conservative assumptions."

"most fans (65 to 75%) would come from outside San Francisco"

1. The Giants' Analysis: Authority staff met several times with the Giants' transportation consultants and obtained and discussed their preliminary assessment of transportation and parking impacts. Their analysis includes two generic scenarios: one for weeknight and weekend games (about 73 games/year), and one for weekday games (about 8 games/year). Weeknight games would start at 7:30 p.m. Weekday games at 12:00 noon, and weekend games at 1:00 p.m. The Authority was provided with copies of the charts analyzing these scenarios, complemented with a verbal description of the Giants' proposed approach. These two information items were used in creating this section of the SAR. It is expected that the Giants will further refine their approach in the weeks to come. Summarized analysis results are shown in Table 1. The salient points are as follows:

   - Most fans (65 to 75%) would come from outside San Francisco;
   - overall transit share of total trips ranges from 14 to 20% (though the Giants explain that their ultimate goal is 50%);

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1 Addendum, pp. XIV.M.25 and 26. This section of the report addresses 2020 impacts qualitatively, i.e., without providing specific data.

- while up to 45% of San Francisco fans would get to the ballpark by transit, only up to 14% of suburban fans would come by transit, which explains transit's rather low share of overall trips;
- the maximum number of fans taking MUNI (Metro and bus) would range from 3,900 (weeknight) to 6,200 (weekday);
- the estimates assume 2.7 persons/car occupancy ratio (the same as was used in 1989), which was the lowest observed at Candlestick (a very conservative assumption);

"a maximum of 11,628 parking spaces would be needed"

- a maximum of 11,628 parking spaces would be needed. About 5,000 of those would be provided in a new Mission Bay lot across from the stadium, and the remaining 6,600 would come from on-street and off-street (public and private) spaces within a 15-minute walk;
- of the 6,600 spaces needed, approximately 68% would be off-street public parking spaces, 23% on-street spaces and 9% would be off-street private spaces;
- based on the Giants' own recent inventory[2] of existing spaces, during weeknight games fans would be taking up about 42% of all on-street spaces, and 73% of all off-street public spaces, but only 15% of all private parking spaces (including a portion of employee and customer parking) in the South of Market area within 15-minute walk of the ballpark (see Figure 2);
- during weekday games (8 per year) there could be a deficit of about 1,400 parking spaces, after taking into account both on and off-street parking and the Mission Bay lot.

"...the parking figures assume sellout crowds at the stadium. Actual attendance is likely to be lower."

The Giants point out, however, that the parking figures assume sellout crowds at the stadium. Actual attendance is likely to be lower. Transit's share of trips is likely to increase through the use of marketing and fare incentives which have not been explored in much depth in the Giants' initial analysis. These factors, combined with a higher auto occupancy than the one assumed by the Giants (which is very conservative), should help reduce the actual demand for parking.

"The main concern here is to avoid compounding the congestion which already exists during the afternoon peak period (4 to 6 p.m.)"

The Giants expect to produce a detailed analysis of traffic impacts on the street and freeway system as part of the EIR process. The main concern here is to avoid compounding the congestion which already exists during the afternoon peak period (4 to 6 p.m.) The Giants consultant makes the following points:

- Inbound trips, generated by weeknight games, would, in general, not conflict with the p.m. peak because the main direction of travel is outbound from San Francisco;
- neighborhood congestion would be reduced by pre-assigning parking spaces at specified off-street lots at the time of ballpark ticket purchase;
- the bulk of the 4,700 cars from the Peninsula/South Bay would use I-280 and exits at King and Fourth Streets, a block away from the main (Mission Bay) parking lot, and also at Sixth Street and Mariposa Street;
- ballpark circulation would require enforcement and traffic management personnel in order to proceed smoothly.

Overall, the Giants' approach is internally consistent, although a number of questions remain to be answered as part of the EIR. The seemingly low transit share assumed, and the consequent need for parking, are a function of the Giants' understanding of their fans' travel habits. They have assumed that many suburban fans will either drive or not come to the ballgame, and they have therefore proposed to provide parking to reduce impacts on the neighborhoods and ensure attendance at the ballpark.

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[2] The inventory identified 13,264 spaces within 15-minute walk, and 20,781 spaces within a 20-minute walk radius in the South of Market Area.

"Their analysis does imply that parking needs will actually decrease as fans are gradually educated to the advantages and convenience of taking transit to the game."

Their analysis does imply that parking needs will actually decrease as fans are gradually educated to the advantages and convenience of taking transit to the game. However, the street and freeway capacity issues posed are significant. The EIR process will require careful analysis, and development of traffic management and other mitigation measures commensurate with the magnitude of these issues.

2. The Authority's Transportation Capacity Analysis: The Authority's analysis of the current proposal is aimed at answering two main questions: a) how much *unused* transit and roadway capacity is currently available, to absorb the projected ballpark demand, *in addition to serving current non-ballpark trips*?; and b) what *capacity expansion* would be needed to absorb the balance of the projected ballpark trips?. The first question is important because it tries to identify trips which can be served without increasing MUNI operating expenses. By identifying new service levels potentially needed, the second question gets at the issue of additional MUNI operating costs. The analysis also addresses parking issues because of their relationship to street capacity and mode choice. We addressed the three game times assumed by the Giants: evening, midday and weekend afternoon.[3] It must be understood that this is a very preliminary analysis, performed in order to provide a sense of the scale of the transportation issues related to the ballpark proposal. The assumptions and calculation methods used throughout are conservative and subject to further refinement. Note also that this is an analysis of the Giants' specific proposal, to provide a preliminary sense of its potential transportation impacts and implications for the Authority. It is not for the Authority to generate a "counter-proposal".

"...this is a very preliminary analysis, performed in order to provide a sense of the scale of the transportation issues..."

For both the transit and roadway analyses it must be noted that there are important differences in system requirements for the return trip after the game. While fans can be assumed to arrive at the ballpark over a period of an hour or longer, in effect metered by BART and CalTrain schedules, freeway conditions and personal choice, the end of the game delivers the whole crowd back to the transportation system in just a few minutes. While transportation system capacity is typically measured in trips per hour, it is not reasonable to expect that fans would wait longer than 30 or 40 minutes to get on a bus or train, particularly at night after a game. The Authority's analysis of transit service requirements for the return trip reflects a maximum wait time of 40 minutes[4]. This results in additional pressure on the transit system to provide the needed capacity within a shorter period of time, but it is also more realistic if transit is to become a truly viable option for Giants fans.

"The Authority's analysis of transit service requirements for the return trip reflects a maximum wait time of 40 minutes."

a. Transit Capacity Analysis

"This analysis looks at currently unused capacity, and estimates additional capacity needed to serve the ballpark."

This analysis looks at currently unused capacity, and estimates additional capacity needed to serve the ballpark. The analysis of currently unused transit capacity was performed by Authority staff, using ridership and service information obtained from MUNI. The analysis looked at bus routes currently entering the area bounded by Market, Fourth and Berry Streets between during the hour before each game and up to 40 minutes after each game. Estimates of currently unused capacity on each bus were derived as the difference between the vehicle's total capacity (seated and standing) and the actual number of passengers on board upon leaving the first stop within the study area[5].

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3 All scenarios assume sellout crowds.

4 MUNI notes that 40 minutes may be adequate for transit service at Candlestick, but may not do at China Basin. Many patrons may decide to walk instead, creating a different set of pedestrian issues.

5 We note that this is an optimistic assumption, since it doesn't account for capacity taken up by SF residents who might ride MUNI to the game from places outside the South of Market Area. The distribution of those trip origins, however, is too speculative at this time to allow a more accurate analysis. The EIR analysis should address this point in detail.

The MUNI Metro extension along King Street was assumed to be operating at the currently proposed level, with only the one-car J-line trains serving it with 12 minute headways. To calculate service expansion needs we started from individual transit vehicle capacity and derived the necessary service frequencies. The table shown as part of Figure 1 summarizes the results of the currently unused capacity analysis. The potential for expansion of MUNI services is analyzed in Table 2, based on different service headways, for MUNI Metro and assuming possible ballpark bus shuttles from Market Street. Preliminary conclusions are as follows:

Regarding Weekday Games

- The Giants anticipate that weekday games would generate the largest demand for MUNI service, about 6,300 passengers. (Note that there will be only 8 weekday games per year);
- late morning and noon time unused system capacity is around 3,400 passengers. See Figure 1. Therefore weekday games will require expansion of current MUNI service. Most of the expansion would be provided by the MUNI Metro extension, using 20 extra cars[6] to provide the additional 3,000 passenger capacity needed;
- the return trip on weekdays after the game would require 30% more MUNI capacity, to serve the transit demand (about 4,000 passengers) within a 40 minute window. This translates into service expansion to provide about 20 additional Metro cars and 12 additional buses;[7]
- weekday games could pose an additional challenge for MUNI if games end any later than 3:00 p.m., because they may overlap with the p.m. peak period, when all of MUNI's available fleet capacity is used[8]. In this case, service increase might be feasible by reducing level of service to other parts of the system, but it would more likely be supplemented with buses from the reserve fleet, as special service. As a last resort, MUNI would have to acquire extra buses;
- the mid-day capacity of regional operators, including BART, AC Transit, Golden Gate Transit, SamTrans and the CalTrain is underutilized, and it could become a major asset in relieving ballpark-related roadway and parking congestion, but this will depend on changing the travel habits of suburban fans, which will require education, marketing and transit incentives.

"Most of the expansion would be absorbed by the MUNI Metro extension..."

"weekday games could pose an additional challenge for MUNI if games end any later than 3:00 p.m., because they may overlap with the p.m. peak period..."

"the mid-day capacity of regional operators...is underutilized, and it could become an major asset in relieving congestion"

Regarding Weeknight Games

- The Giant anticipate that MUNI demand for weeknight games will be about 3,900 passengers;
- a reasonable estimate of *current* unused capacity in the one hour between 6 and 7 p.m. on the five MUNI bus routes serving the ballpark site[9] within easy walking distance is about 1,475 passengers;
- unused capacity on the MUNI Metro extension on King Street, for the same time period, could only accommodate about 635 fans. This reflects only the J-line operating beyond Embarcadero Station (12 minute headways, as currently envisioned);

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6 Note that "extra" and "additional" equipment may come from the existing fleet. Fleet expansion is not automatically implied.

7 Provided that the equipment is available, MUNI Metro could carry up to 9,100 fans, at 3-minute headways, assuming all Metro lines would serve the ballpark with 4-car trains. Similar results could be achieved by running individual Metro cars at shorter headways. Because of operating considerations, shuttle trains would run from Castro Station. Because of travel time, trains could only do one trip to the ballpark in the 6-7 p.m. period. Critical issues with regard to Metro service are equipment availability and MUNI's ability to store Metro cars at King and 6th streets without interfering with regular MUNI Metro service to King and 6th while the game is in progress.

8 The issue is whether MUNI can serve the return trips from the game and then have enough time to re-deploy its buses and trains where they are needed to begin p.m. peak commute service according to schedule.

9 This includes MUNI routes 15, 30, 42, and 45.

"up to 54% of all MUNI trips *to* the ballpark, as projected by the Giants, (about 3,900 fans) could be satisfied using currently unused capacity..."

- up to 54% of all MUNI trips *to* the ballpark, could be satisfied using currently unused capacity on MUNI buses, and the MUNI metro; the rest, about 1,800 passengers, would come from deploying an extra 11 Metro cars;
- after the game, MUNI unused capacity could only satisfy 35% of the trips. This is the result of reduced transit service levels in the late evening, and of the assumption that maximum wait for transit service should not exceed 40 minutes. An additional 2,500 passenger capacity would be needed, requiring about 13 Metro cars and 6 buses.

Regarding Weekend Games

"...there would be a need for expansion of Metro and bus service to handle 3,900 passengers."

- During weekend games[10] there would be adequate MUNI bus capacity to the game, but an additional 12 Metro cars would be needed to carry about 1,800 fans;
- because of reduced service levels, and because we assume that all return trips must be handled within 40 minutes of the end of a game, there would be a need for expansion of Metro and bus service to handle 3,900 passengers (14 metro cars and 2 buses);

For All Games

- The analysis assumes that buses can keep to their schedules and are not impeded by street congestion levels beyond what they experience currently. This will require bus-preferential lanes along key streets, such as Third and Fourth;
- the cost of serving China Basin would be partially compensated by the current cost of MUNI service to Candlestick;
- because of the location of the stadium, MUNI could not charge the "ballpark special" $3 fare currently applied to Candlestick shuttle bus service;
- MUNI would carry about seven times more ridership to China Basin than to Candlestick. Increased ridership would partially compensate for charging a $1 fare, instead of $3, and cost effectiveness would be much higher than for Candlestick service;

"AC Transit and Golden Gate Transit could provide direct service to the ballpark..."

- AC Transit and Golden Gate Transit (GGT) could provide direct service to the ballpark, and eliminate the need for additional MUNI capacity;
- because of travel times and current peak period schedules, GGT ballpark ferry service could only be expanded if additional vessels were acquired. East Bay ferry service directly to the ballpark has some expansion potential. In any case, even with existing fleets, there is potential to expand ferry ridership to the 1,000 passenger level, but these services are not currently being provided at ballgame times and would have to be subsidized;
- a scenario assuming that auto use is reduced from 75% to 50% would simply double the expected ballpark ridership on all transit systems, creating additional service capacity requirements.[11]

b. Roadway Marginal Capacity: Roadway marginal capacity was analyzed using Level of Service data collected as part of the annual monitoring of the Congestion Management network. In addition, the stadium-only scenario in the ballpark Addendum to the Mission Bay EIR provides detailed analyses of intersection operating conditions which, though subject to further refinement as part of a future Ballpark EIR, are at the same order of magnitude as the current proposal, and can serve as a general parameter for this discussion.

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10 We only looked at Saturday games.

11 Assuming the Giants' proposed distribution of trips by transit operator, which appears very reasonable.

"...the transportation system would have to handle an additional 11,600 cars on weeknights, and about 9,400 on weekdays."

The only other recent[12] environmental document which addresses potential ballpark impacts is the Mid Embarcadero/TSS DEIR, but it doesn't provide sufficient detail for this discussion.

Under the Giants' proposal the transportation system would have to handle an additional 11,600 cars on weeknights, and about 9,400 on weekdays. As a reference, a freeway lane can carry about 2,000 cars per hour.

The Mission Bay EIR Supplement on the ballpark analyzed one weekday game scenario which is comparable to the current proposal[13], and predicted deterioration of Level of Service (LOS)[14] for six of twelve key intersections in the area, including three which would go to LOS F. The impacts of the current proposal can be expected to be on the same order of magnitude, even though the location of impacts may not exactly coincide. The EIR should specifically analyze impacts on the freeways (US 101 and I-280), in particular any possible back-ups which may force traffic off the freeway at the Vermont, Mariposa, Pennsylvania or even Army Street exits, and into neighborhood streets.

"...it can be expected that there will be congestion in the area around the ballpark, and on city arterials leading to and from I-280 and I-80, probably for an hour before and after a game."

Despite the close proximity of the proposed Mission Bay parking lot to the new I-280 exit at King and Fourth streets, it can be expected that there will be congestion in the area around the ballpark, and on city arterials leading to and from I-280 and I-80, probably for an hour before and after a game. The Giants anticipate providing traffic management at key intersections. Currently, they deploy between 20 and 30 people for that purpose at Candlestick Park. The EIR should discuss assumptions about the ending time of the evening peak and any overlaps with ballpark traffic.

"The Authority conducted a random sample of the Giants' survey,,,"

"the inventory appears accurate enough for order-of-magnitude analysis."

c. Parking Issues: Table 1 shows parking availability according to the survey conducted in late 1994 by the Giants' transportation consultant. Figure 2 shows the contours of the walk areas, to provide a better sense of how far fans would need to walk in order to take advantage of available parking. The Authority conducted a random sample of the Giants' survey, to try to ascertain the actual availability of parking lots which may be slated for development in the near future. The Authority selected 10 city blocks located within the 15-minute walk area defined by the Giants[15] in South of Market. Within those blocks we picked 16 parking facilities, at random. We checked the lots for pending or approved building permits or other development actions. Of the 16, only two were found to have current construction plans, and will therefore not be available for parking in two years. From this perspective, the Giants inventory appears accurate enough for order-of-magnitude analysis. The following parking issues are highlighted:

"...it is possible to partially mitigate this by pre-assigning parking to specific lots when fans purchase their ballgame tickets..."

- the location of parking spaces will have an effect on neighborhood circulation and congestion levels, as fans drive around looking for parking;
- it is possible to partially mitigate this by pre-assigning parking to specific lots when fans purchase their ballgame tickets, but this will have the effect of ensuring that people will in fact drive[16].

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12 Based on consultations with the Planning Department.

13 The scenario assumed a stadium-only event (no arena), and discussed impacts between 3 and 4 p.m. (at the end of the game). Refer to Table XIV.M.6, middle column, on page XIV.M.19 of that document.

14 LOS is a measure of roadway congestion. It ranges from A to F. LOS A is free flow conditions and LOS F is bumper-to-bumper traffic.

15 The Giants proposal is to use only those spaces located within the 15-minute walk area.

16 In fact, the Mission Bay EIR Supplement on the ballpark, page XIV.M.11, Table XIV.M.2, footnote /b/, states that "The main determinant of the auto mode share is the supply of available parking. "

Good transit marketing strategies should be put in place so that driving, and parking demand, are reduced over time, and transit use is increased. Charging for parking as an add-on to the price of admission should be considered as a disincentive to driving and as a potential source of revenues to subsidize transit services. The Giants anticipate working on this issue, but no details are available yet;

"more information is needed, and should be collected, about current and projected neighborhood parking needs,.."

- more information is needed, and should be collected, about current and projected neighborhood parking needs, to avoid underestimating the need for parking spaces, particularly if it is possible to provide more than 5,000 spaces at Mission Bay. This would reduce the likely level of neighborhood parking impacts in the short term, while the City and the Giants work on increasing transit share;
- similarly, it will be necessary to reconcile (through occupancy surveys and further analyses) the ballpark's parking needs with those of other South of Market activity generators, such as Moscone Center, MOMA and the Fashion Center, particularly since the Giants assume access to a significant percentage of public parking spaces (see page 3);
- – because the Giants' proposal would rely on a 5-year lease on the Mission Bay parking lot, the EIR should provide a detailed analysis of the parking supply assumptions after that period, and relate it to expected transit mode share, and to expected neighborhood parking impacts.

In addition to the items discussed in the sections above, we note that land use changes, development assumptions, attendance patterns at other activity generators in the South of Market Area, and a number of other issues affecting transportation outcomes will need to be discussed in depth as part of the EIR process. In order to avoid repetition, specific items are described below in section C: Next Steps .

B. IMPLICATIONS FOR THE AUTHORITY	Likely Impacts in Areas of Significance to the Authority's Role

"...there would be requests for additional operating funding on the MUNI Metro Extension..."

"...there would likely be requests for pedestrian improvements, possibly including overcrossings at key intersections, to minimize pedestrian/auto conflicts and maximize roadway capacity,"

a. **Prioritization and Programming of Funds:** Implementation of the ballpark proposal will result in the need for funding additional MUNI service to the ballpark. The Authority only has jurisdiction over operating assistance provided by Proposition B[17] to capital projects built with Proposition B funds. It should therefore be expected that there would be requests for additional Prop. B operating funding on the MUNI Metro Extension on King Street. MUNI shuttle or regular bus operations could not be subsidized with Proposition B. Likely capital costs include money for implementation of transit-only lanes on some South of Market streets (probably Third and Fourth), and there would probably be requests for Prop. B or other funds for pedestrian improvements, possibly including overcrossings at key intersections, to minimize pedestrian/auto conflicts and maximize roadway capacity, particularly after the game. A number of left-turn bays, street geometry modifications, and traffic signal improvements would probably be necessary at key intersections throughout South of Market, to keep traffic moving. Some of those improvements, particularly traffic signal projects, are already included in the Prop. B Streets and Traffic Safety Capital Development Program, prepared by the Department of Parking and Traffic. Depending on the results of more detailed operating analyses, there may by a need for MUNI to expand its bus fleet. This could result in Prop. B and other funding requests.

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[17] The ballpark measure to be included in the March 26 ballot is known as Proposition B. The 1989 measure that created the half-cent sales tax for transportation administered by the Authority is also known as Proposition B. **Throughout this report, Prop. B is always used to refer exclusively to the 1989 transportation sales tax.**

Finally, pending more detailed analyses, and depending on the future use of Mission Bay land, the City may eventually decide to build a parking structure to deal with ballpark and neighborhood needs. Although funding eligibility is not clear, the Authority would have to consider prioritizing state and federal funds for such a project.

b. Impacts on the CMP Network and Multimodal Performance

As Congestion Management Agency for San Francisco, the Authority must periodically monitor the level of service (LOS) on the designated CMP network, which includes many streets in the South of Market and China Basin area. When the performance of a segment of the network deteriorates below the established LOS standard of "E" (very congested), this triggers the requirement for deficiency plans, and it may even lead to loss of state fuel tax revenues as well as loss of federal and state funding for capital projects. A review of the LOS monitoring results for 1991, 1993 and 1995, shows a relatively stable picture of performance. No LOS F segments were identified on South of Market arterials, and LOS F segments on I-80 are already grandfathered in the CMP legislation, so they are not subject to the above requirements. In addition, there are some segments operating at LOS D and E in the p.m. peak period. It is not possible to determine the likely future performance of these intersections without detailed analysis of proposed land use and transportation system changes. Note also that the CMP conformance process relies on LOS measurements between 4 and 6 p.m. The discussion of intersection impacts in 2.b., above, refers to the period between 3 and 4 p.m., which isn't directly subject to CMP measurement. The current performance levels appear to be fairly stable, with no major changes over the last two measurement cycles, but if they were to worsen, they could create the need for deficiency plans which would translate into added costs for the City. Deficiency plans, should they be necessary, are likely to rely heavily on traffic management and transit solutions, not on roadway capacity expansion. The Authority will therefore need to closely track the progress of ballpark analyses, to ensure that data on likely deficiencies and congestion trends are being collected and addressed properly as part of the environmental process. Consistent with the CMP process, however, ballpark-related CMP findings will probably be done for the most likely occurrence, which will probably be an average-attendance game, not for a sellout crowd scenario.

"The Authority needs to closely monitor LOS. "When the performance of a segment of the network deteriorates below the established LOS standard of "E" (very congested), this triggers the requirement for deficiency plans...."

C. NEXT STEPS	Recommended Follow-Up

This analysis identifies a number of transportation issues related to the proposed China Basin ballpark, which are of potential significance for future policy decisions by the Authority Board. These issues should be addressed in detail as part of the EIR process. In particular, we recommend the following:

1. The City's Transit First policy should inform all analyses of transportation impacts conducted as part of the EIR.
2. The EIR should address in detail specific transit incentive programs that would be put in place with the ballpark. At minimum, if parking will be pre-assigned at the time of ballgame ticket purchase, there should be a similar arrangement for transit users, and it should be marketed aggressively, so that fans know that they have travel options at the time when they buy their ballgame tickets.
3. The EIR should consider direct service to the ballpark by AC Transit and Golden Gate Transit, and detail assumptions for bus parking (including charter buses).
4. The EIR should consider arrangements (such as pre-payment) that may allow the provision of no-fare MUNI services during the hours immediately before and after ballgames, to speed up passenger handling and enhance the throughput and efficiency of whatever transit service is deployed.
5. The EIR should consider the establishment of transit preferential lanes on South of Market streets, to ensure that MUNI buses can operate dependably, to and from the ballpark.
6. Detailed transportation analyses will have to address a range of mode split assumptions to account for the gradual shift from automobiles to transit (particularly as Mission Bay reclaims land initially devoted to ballpark parking).

7. The Caltrain station was assumed to be at 4th and Townsend for this analysis, but the EIR should look at the longer term effects of its relocation to downtown.
8. In analyzing unused MUNI capacity to serve the ballpark, the EIR should detail assumptions about the origins of San Francisco trips to the ballpark, and consider competition for that capacity with fans coming from downtown hotels and offices, and from fans transferring from regional carriers.
9. The EIR analyses should address any potential reductions in MUNI service to other parts of the system that might be necessary in order to serve the demand at the ballpark.
10. The EIR should address the potential effects of building the Bayshore LRT line, both in terms of extra transit capacity and regarding transit/auto conflicts on 3rd Street.
11 The EIR should analyze in detail the multimodal transportation requirements for weekday games, since return trip demand may conflict with the p.m. peak period. It should also address possible conflicts with the p.m. peak for weeknight games. Experience indicates that the peak period may extend beyond the 4-6 p.m. on the freeway system (starting earlier and ending later).
12. The EIR should address specific impacts on all freeway and arterial segments that are part of the designated CMP network, to ensure that CMP conformance will be maintained.
13. The assumptions in the EIR traffic analyses should include the demolition of the upper deck of the Central Freeway.
14. The EIR should specifically analyze impacts on the freeways, and the potential for back-ups which may force traffic onto neighborhood streets at the Vermont, Mariposa, Pennsylvania or Army Street exits.
15. Other South of Market activity generators are being expanded (e.g.: Moscone), or are experiencing increased attendance (e.g.: MOMA), on potentially overlapping schedules. The EIR will have to address the competition for available transportation system capacity (by time of day), including the possible need for some restrictions on use by time of day, and provide details about parking supply assumptions after the initial 5 years.
16. Data about existing traffic conditions in Rincon Point/South Beach needs to be collected as part of the EIR since development has occurred since the 1989 study.
17 The shift to a housing emphasis at Mission Bay will result in different travel and parking needs, and different cumulative impacts. The EIR should discuss these and the new timing for developing the entire Mission Bay area.
18. The detailed transportation impacts analysis section of the Ballpark EIR should include an inventory or census of neighborhood on and off-street parking needs for the areas most likely to be affected by the ballpark, including at least all locations within 15 minute walking distance of the ballpark. This should provide a picture of likely competition for parking spaces in the area, and a more reliable estimate of their actual availability for use by fans.
19. The EIR should consider the need for additional parking structures to minimize neighborhood impacts.
20. The EIR should consider the need for pedestrian improvements, including overcrossings, sidewalk widenings, and pedestrian safety-related items.
21. The EIR should discuss bicycle and pedestrian access issues in detail.
22. Waterfront Plan EIR impacts will have to be taken into account.
23. The EIR analyses should develop cost estimates for all capital and operating expenses associated with mitigating the transportation impacts of the proposed ballpark.

VI. SOURCES | Reports and Information Used in the Preparation of this SAR

1. *Preliminary Transportation Analysis for the China Basin Ballpark.* Robert L. Harrison Transportation Planning (consultant to the SF Giants), January 1996.
2. *Mission Bay EIR, Appendix XIV.* SF Planning Department, March 1989.
3. *Proposition B Streets and Traffic Safety Capital Development Program.* SF Department of Parking and Traffic, May 1, 1995
4. *Proposition B Strategic Plan.* SFCTA, August 1995
5. *1995 San Francisco Congestion Management Program Document.* SFCTA, November 9, 1995.
6. *Ballpark and Arena At China Basin: An Analysis of Traffic and Parking.* SF Planning Department, with Harrison & Associates and Reeves & Associates, July 1989.
7. *Mid Embaracadero and Terminal Separator Structure DEIS/DEIR.* SF Planning Department, August 1995.

TABLE 1

Highlights of the Giants' Transportation Analysis[18]

	Scenarios [19]	
	Weeknight/Weekend Games	**Weekday Games**
Mode Shares		
% of Trips by Auto.	75	60
% of Trips by Transit	14	20
% of Trips by Charter Bus	7	5
% of Trips by Taxi	2	5
% of Pedestrian Trips	2	10
Total	100	100
Transit Patronage Estimates		
MUNI Metro	2,240 [20]	3,569
MUNI Bus	1,654	2,741
BART	438	426
CalTrain	1,247	1,315
GGT Bus	50	64
GGT Ferry	202	255
AC Transit	73	71
East Bay Ferry	219	213
SamTrans	139	146
Total	**6,044** [21]	**8,581**
Fans by Origin[22]	**In %**	**In %**
Peninsula/South Bay	37	32
East Bay	30	25
North Bay	8	8
San Francisco	25	35
Total	**100**	**100**
Parking Space Availability[23]	**Weeknight only**	**Weekday**
Within 5 minute-walk	454	94
Within 10 minute-walk[24]	2,405	545
Within 15 minute-walk	6,494	1,869
Within 20 minute-walk	9,528	2,956
Proposed Mission Bay Lot	*5,000*	*5,000*
Total Parking Spaces	14,528	7,956
Total Autos Arriving	11,628	9,372
Surplus/(deficit)	2,900	(1,416)

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18 Source: Robert L. Harrison Transportation Planning (consultant to the Giants)

19 All scenarios assume sellout crowds.

20 Includes transfers to BART

21 Excludes transfers to BART, to avoid double-counting

22 Variations attributable mostly to workers in downtown attending midday games.

23 The numbers include off street, off-street private, and on-street parking. Private/Other parking includes a portion of Employee and Customer Parking assumed to be made available for ballpark events; also includes parking garages and lots which are now closed in the evening and on weekends.

24 The 10-minute walk area includes all the spaces from the 5-minute walk area, and so on.

TABLE 2

Authority's Analysis of Potential Additional MUNI Capacity

	Total Additional Capacity Available	No. of Vehicles Required
Transit Mode/Scenario[25]		
Current MUNI Metro - 12 min. headways	2,400 (3,000)[26]	20[27]
MUNI Metro - 6 min. headways	4,800[28]	40
MUNI Metro - 5 min. headways	5,760	48
MUNI Metro - 4 min. headways	7,200	60
MUNI Metro - 3 min. headways	9,600	80
MUNI Metro - 2 min. headways	14,400	120
MUNI Shuttle Bus - 3 min. headways	1,880[29]	7[30]
MUNI Shuttle Bus - 2 min. headways	2,820[35]	10
MUNI Shuttle Bus - 1 min. headways	5,640[35]	20

[25]This analysis does not address the operating plan in terms of optimizing fleet management or operating costs. For example, it may be better to run separate Metro shuttle trains between Castro and 7th and King Streets rather than running all MUNI Metro lines to 7th and King Streets.

[26]2,400 is the current unused capacity available for trips to the ballpark on weeknights. 3,000 is the total capacity, including non-ballpark trips.

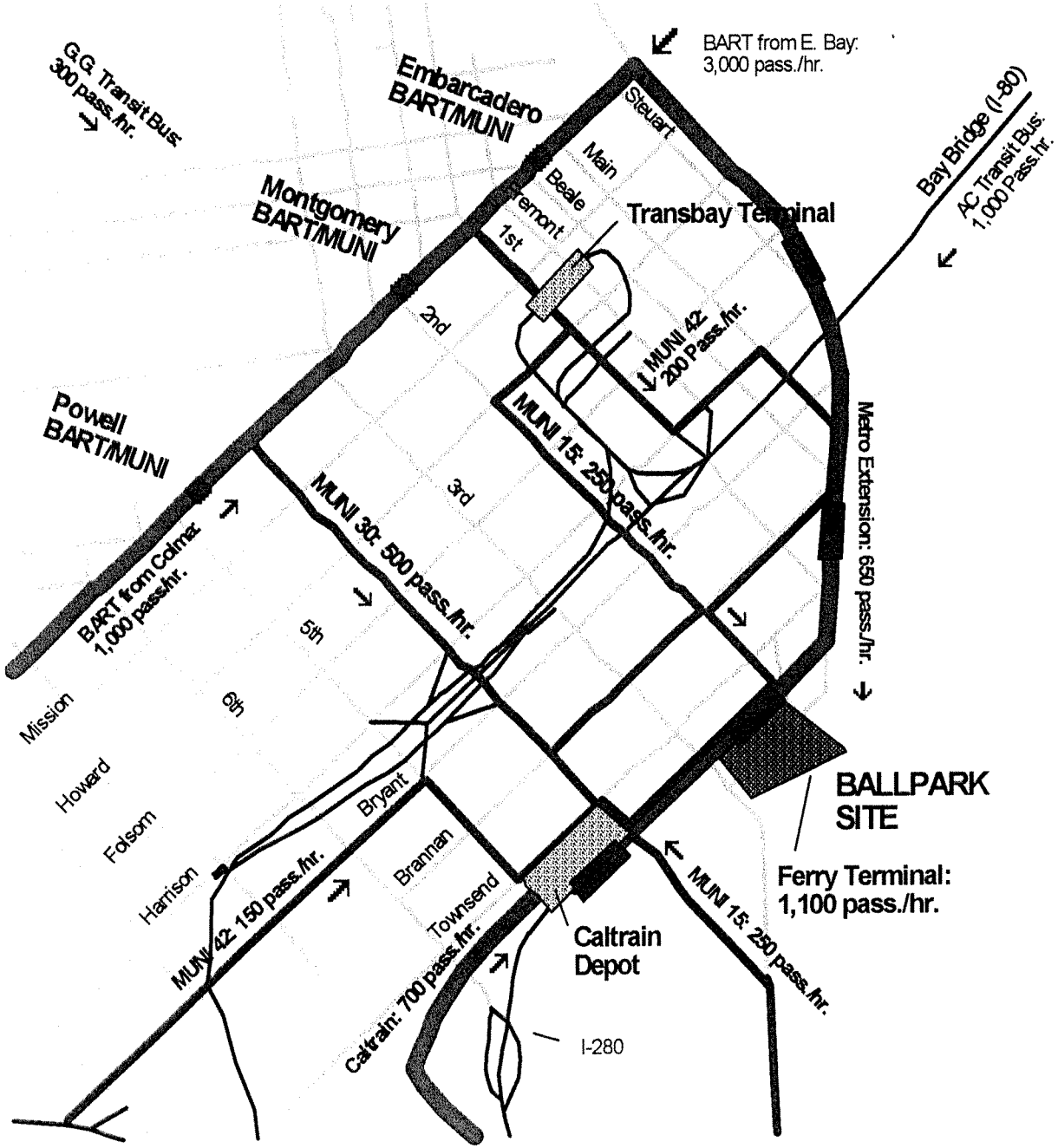
[27]All Metro scenarios assume 4 car trains composed of Breda cars with a capacity of 150 passengers per car. Numbers represent number of cars.

[28]All Metro scenarios assume current ridership levels.

[29]All shuttle bus scenarios assume a shuttle route from Montgomery BART/MUNI station south on 4th Street, left on Berry Street, left on Sutter Street, and left on Stockton Street.

[30]Assumes shuttle bus vehicles are articulated motor coaches with a capacity of 94 persons per vehicle.

Figure 1.
China Basin Ballpark Access -- Unused Transit Capacity (Weeknights)



Map Source: SFCTA Transportation Analysis Database

The Authority's Unused Transit Capacity Analysis (1)

Transit Patronage Estimates		To Weekday Games: Ballpark Patronage (2)	To Weekday Games: Current Unused Capacity (3)	To Weekday Games: Surplus / Deficit (4)	From Weekday Games: Current Unused Capacity (5)	From Weekday Games: Surplus / Deficit
MUNI Metro	(6)	3,569	721	(2,848)	415	(3,154)
MUNI Bus		2,741	2,687	(54)	1,671	(1,070)
BART		426	2,097	1,671	2,075	1,649
CalTrain		1,315	300	(1,015)	400	(915)
AC Transit		71	193	122	357	286
GGT Bus		64	280	216	193	129
SamTrans		146	n/a	n/a	n/a	n/a
Ferries		468	760	292	870	402
Total	(7)	**8,581**	**7,038**	**(1,543)**	**5,981**	**(2,600)**

		To Weeknight Games			From Weeknight Games	
MUNI Metro	(6)	2,240	635	(1,605)	282	(1,958)
MUNI Bus		1,654	1,475	(179)	1,098	(556)
BART		438	3,948	3,510	247	(191)
CalTrain		1,247	701	(546)	0	(1,247)
AC Transit		73	1007	934	192	119
GGT Bus		50	300	250	54	4
SamTrans		139	n/a	n/a	n/a	n/a
Ferries		421	1,299	878	0	(421)
Total	(7)	**6,044**	**9,365**	**3,321**	**1,873**	**(4,171)**

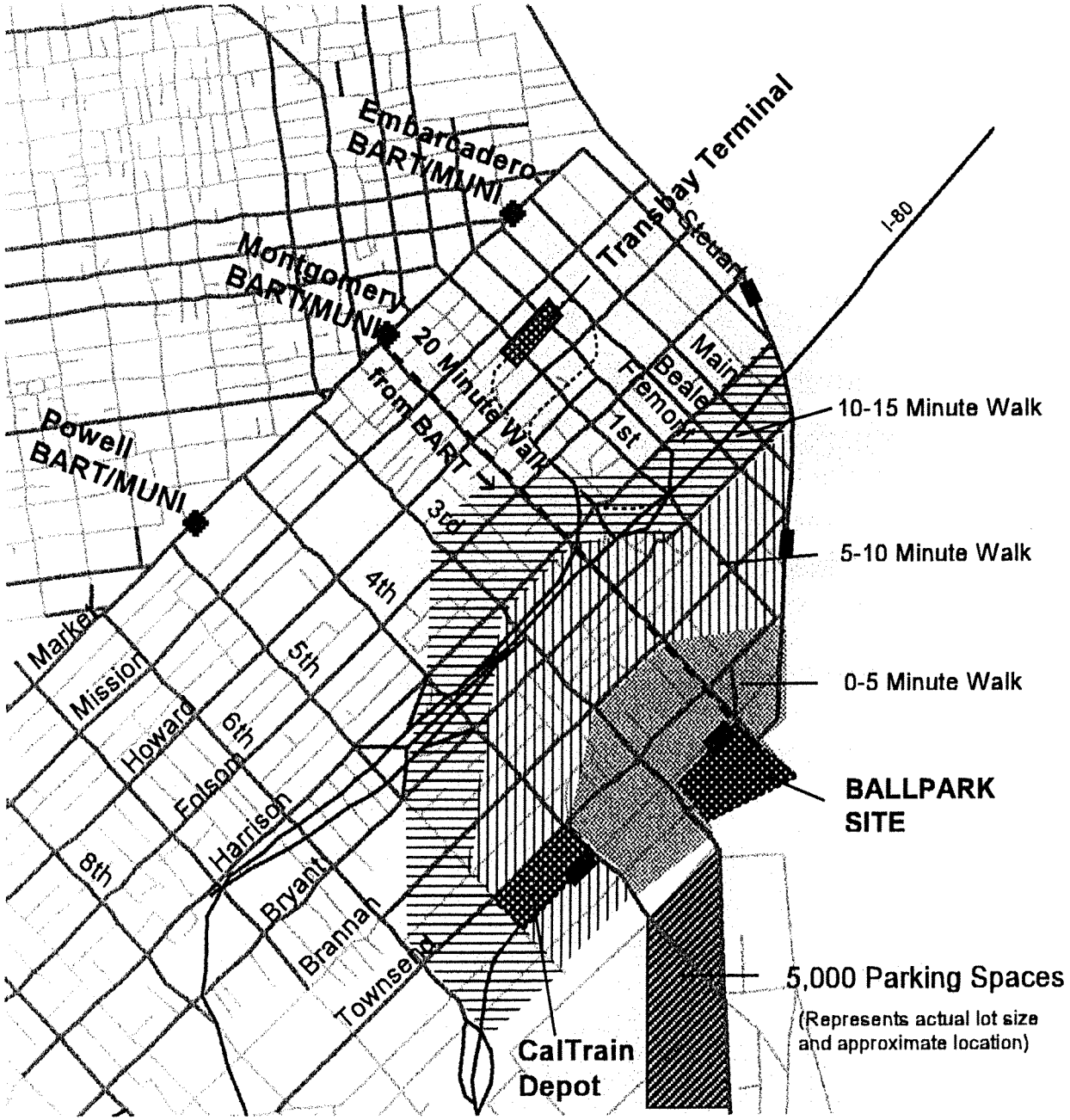
		To Weekend Games (Saturday)			From Weekend Games	
MUNI Metro	(6)	2,240	481	(1,759)	176	(2,064)
MUNI Bus		1,654	2193	539	1,447	(207)
BART		438	1523	1,085	1,015	577
CalTrain		1,247	300	(947)	400	(847)
AC Transit		73	193	120	129	56
GGT Bus		50	150	100	112	62
SamTrans		139	n/a	n/a	n/a	n/a
Ferries		421	729	308	486	65
Total	(7)	**6,044**	**5569**	**(475)**	**3,765**	**(2,279)**

(1) See section V.A.2 of the text for background information and assumptions.
(2) Ballpark patronage estimates are from the Giants' analysis. See Table 1.
(3) Current Unused Capacity is the remaiing capacity left for ballpark fans after accounting for all of the regular transit passengers.
(4) Where deficit is shown, capacity would have to be increased by at least that amount, to address ballpark needs.
(5) Assumes all demand needs to be served in 40 minutes after end of game.
(6) Includes transfers to BART.
(7) Excludes transfers to BART.

0.5 0 Miles

N

Figure 2. China Basin Ballpark Access -- Walk Times from Parking



Map Source: SFCTA Transportation Analysis Database

Giants' Parking Inventory

Parking Space Availability[1]	Weeknight only	Weekday
Within 5 minute walk	**454**	94
Off Street	141	63
Off Street Private	122	24
On Street	191	7
Within 10 minute walk[2]	**2,405**	**545**
Off Street	1,418	458
Off Street Private	334	67
On Street	653	20
Within 15 minute walk	**6,494**	**1,869**
Off Street	4,450	1,643
Off Street Private	548	110
On Street	1,496	116
Within 20 minute walk	**9,528**	**2,956**
Off Street	6,894	2,950
Off Street Private	656	137
On Street	1,978	229
Proposed Mission Bay Lot	*5,000*	*5,000*
Total Parking Spaces	14,528	7,956
Total Autos Arriving	11,628	9,372
Surplus/(deficit)	2,900	(1,416)

1Source: Robert L. Harrison Transportation Planning (consultant to the Giants). See Table 1 for more notes.

2The 10-minute walk area includes all the spaces from the 5-minute walk area, and so on.

0.5 0 Miles

N