

**UNIVERSITY OF CALIFORNIA**

**Los Angeles**

**THE LOS ANGELES BUS SHELTER PROGRAM**

**An Analysis of Location,  
Design, and Construction Contracts  
and  
Recommendations for Improvement**

**A comprehensive project submitted in partial  
satisfaction of the requirements for the degree  
Master of Arts in Urban Planning**

**by**

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## EXECUTIVE SUMMARY

This report is intended to provide an analysis of the bus shelter program in the City of Los Angeles. It offers research and policy recommendations to the city as it seeks to improve its bus shelter program. This report is composed of three sections concerning (1) the distribution of bus shelters in the city, (2) the design of bus shelters, and (3) recent bus shelter contracts.

### **Equity and Efficiency in the Location of Bus Shelters**

The current bus shelter contract in Los Angeles does not adequately set out guidelines for determining which bus stops should receive a bus shelter. In the past, the city used a point system that allowed 49 points for advertising revenue potential, 26 points for Council District and other considerations, and only 25 points for actual bus stop use. A more efficient and equitable way to identify bus stops that should receive a bus shelter is to measure bus stop use in terms of *person-minutes* of wait time. This allows the city to consider each minute that every person waits for the bus as a *person-minute* that requires protection by a bus shelter. Shelters can then be distributed to cover as many person-minutes of waiting as possible. Person-minutes are calculated by multiplying the number of people boarding at bus stops by the amount of time in minutes that they spend waiting for the bus. By identifying bus stops with the highest person-minutes of waiting, the city can provide shelters at bus stops that have large numbers of boardings as well as stops that experience longer wait times.

Analysis of data obtained from the Los Angeles County Metropolitan Transportation Authority (MTA) shows that each day, bus patrons in Los Angeles spend about 4 million person-minutes, or 7.6 person-years, waiting for the bus. The current distribution of bus shelters provides coverage to only 20 percent of the 4 million person-minutes of wait time. Redistributing the bus shelters to maximize the coverage of waiting transit patronage, without changing the total number of shelters, can increase the coverage rate to 52 percent. This represents an *extraordinary* reduction of over 2.4 person-years of exposed passenger wait time each day.

Placing shelters at bus stops with the greatest level of bus stop use is the most efficient and equitable way to provide shelter to the people who need it. This report contains a list and a map of the 626 bus stops that experience the highest amounts of person-minutes of wait time but do not have a shelter. Proposals for new shelter construction in the city should consider the stops in this list. Furthermore, in many cases circumstances exist that merit a bus shelter at stops that do not have high levels of use. The city can address these concerns without compromising the efficiency and equity of the system as a whole.

***Recommendation 1:***

- a.) Abandon the point system used previously by Los Angeles to identify locations for bus shelters because it does a poor job of protecting waiting bus patrons. New shelter construction should be targeted at the bus stops that have the highest amount of person-minutes of wait time. These stops are listed in the Appendix.
- b.) The City should establish a minimum threshold of bus stop use for the installation of shelters. All stops meeting this threshold should automatically be considered for a bus shelter. The MTA data used in this analysis show that a threshold of 1,000 person-minutes per day qualifies over 1,600 bus stops that deserve a bus shelter.

***Recommendation 2:*** The City of Los Angeles should coordinate with the various transit agencies that provide service to the city in order to gather data and obtain a clearer picture of bus stop use and shelter coverage. Coordination can be achieved through the Bus Operators Subcommittee at the MTA. This will ensure that all bus stops in the city served by all transit operators will be considered in any further analyses.

***Recommendation 3:*** The city should address instances of special circumstances that are not accounted for when measuring bus stop use in person-minutes of wait time. Establish a fixed number of shelters per year that may be installed based on direct requests from the community, and/or based on special circumstances such as the needs of the elderly and disabled.

***Recommendation 4:*** Require the shelter company to present a compelling rationale for selecting shelter locations based on criteria other than bus stop use. There are several ways in which the city can address the revenue needs of the shelter company:

- a.) Consider setting aside a fixed number of shelter locations per year, above and beyond those contractually mandated, that the shelter company may be allowed to choose using its own criteria.
- b.) Consider allowing the shelter company to install free-standing advertising kiosks in commercially viable areas to support non-commercial shelters in locations that have high levels of use but may not have high revenue potential.

**Functional and Aesthetic Design of Bus Shelters**

The city can improve on the current contract's design guidelines to create functional and attractive shelters. Current guidelines call for a standard design that is inflexible and thus not adaptable to the many different physical environments and bus riders that exist in the city. Following are recommendations for improvement in shelter design:

***Recommendation 5:*** Adopt the current Americans with Disabilities Act (ADA) guidelines for bus shelter dimensions for all new shelter construction or replacements. Consider adopting a phased plan to make all city shelters ADA-compliant.

**Recommendation 6:** Work with the shelter provider to establish a set of flexible, modular shelter configurations that can be expanded/contracted depending upon ridership level and sidewalk dimensions.

**Recommendation 7:** Establish a procedure for bus shelter placement and orientation that considers the unique conditions and uses of each bus stop. Modular shelter configurations allow shelters to be installed for maximum effectiveness and utility.

**Recommendation 8:** Consider the use of bus nubs at bus stops on crowded sidewalks where sidewalk space is limited, and where conflicts with pedestrian traffic and bus patron activity occur frequently. Bus nubs extend the sidewalk width and separate the bus stop area from pedestrian through-traffic.

**Recommendation 9:** Coordinate with the shelter provider, the Los Angeles County Metropolitan Transportation Authority, and other transit agencies to design and implement a plan to install maps and schedules at all bus shelters.

**Recommendation 10:** Provide all shelters with good lighting and visibility. Ensure that design elements do not compromise the safety of bus patrons.

**Recommendation 11:** Work with the shelter provider to implement a citywide adopt-a-shelter program to improve shelter maintenance and safety.

**Recommendation 12:** Establish a shelter design standard that maintains elements of consistency and unity, but which allows Los Angeles neighborhoods to choose unique elements that identify and distinguish their communities.

**Recommendation 13:** Implement a program to involve local artists and residents in the use of public art at bus shelters. The type of art can range from simple murals, paintings, and posters at small bus stops to much larger works at major transfer points. Initial funding may be provided by the revenue generated from shelter advertising, and from the Federal Transit Administration.

**Recommendation 14:** Facilitate the process by which bus shelters can be installed in coordination with public and private development projects that involve bus stops. The city can either:

- a) Specify a non-exclusive contract with the shelter provider (which has been done recently by the City of Burbank);
- b) Set aside a specific number of shelters per year that can be custom-built by entities other than the shelter provider;
- c) Establish a process or set of conditions by which the shelter provider must cooperate with other city departments or private developers in installing custom bus shelters.

## Desirable Contract Terms

This report summarizes the shelter contracts in Burbank, Long Beach and San Francisco, and the recent requests for proposals (RFPs) for coordinated street furniture franchises from Boston and New York. These documents provide a current picture of the revenue and amenity packages that cities have requested and received from their street furniture providers. In comparison with the current City of Los Angeles contract, these other contracts are more sophisticated and assertive in terms of shelter design, payment packages, advertising guidelines, and the overall benefits that the city can gain out of the agreement.

**Recommendation 15:** If Los Angeles decides to establish a new shelter contract, it should include the following items in its request for proposals.

- **Innovation in design.** Shelter providers are required to design adaptable shelters that accommodate various sidewalk widths, respond to distinctive neighborhood character and architecture, and reflect historic districts and landmarks.
- **Increased payment packages and competitive bids.** Cities are receiving larger percentages of the shelter providers' gross advertising revenue, usually in the form of a percentage of the revenue or a guaranteed minimum amount per shelter. Cities also require companies to offer a competitive bid, thereby potentially maximizing the revenue they will receive.
- **Strict construction timelines.** Shelter providers are required to build and install the minimum specified number of shelters in a given time period, typically one year.
- **Ownership after contract expires.** Shelter providers appear willing to transfer ownership of all structures built under the contract term to the city, with no compensation.
- **Non-exclusive rights.** Shelter providers appear willing to enter into contracts that grant a non-exclusive right to build shelters and provide advertising. This allows the city greater freedom and flexibility for a number of reasons, in particular the ability to develop other street improvement projects on its own or with another agency.
- **Advertising restrictions.** Cities outline strict advertising restrictions with respect to both number and location. For example, the city of Vancouver does not allow advertising on bus shelters located in residential neighborhoods. In Boston, shelter providers will be required to clearly show the financial need for additional advertising panels.
- **Public service advertising.** Cities require minimum percentages of advertising space to be reserved for free public service announcements and public art displays. While the current Los Angeles shelter contract calls for one non-commercial shelter for every 100 commercial shelters, San Francisco requires a ratio of one non-commercial shelter for every two commercial ones. Perhaps more importantly, *dedicated city staff* work to ensure that this display space is fully utilized.
- **Participation in specific improvement programs.** Cities include specific development or improvement projects in their contracts, and require that the shelter provider participate in such projects by designing and installing shelters and



maintaining them. Shelter providers are also required to participate in various citywide projects that involve real-time transit information displays and electronic information kiosks.

- ***Clear identification of the duties and goals.*** Cities clearly identify the various public departments involved in administering the bus shelter contract, as well as their specific tasks. Cities are also requesting that the companies responding to the RFP identify their staff who will be working on the project. Laying out the exact duties and goals of the various people and departments involved will prevent future confusion over the contract terms.
- ***Dedicated staff and independent committee to oversee operations.*** Cities benefit from dedicated personnel and independent committees (consisting of members from city agencies and the community) whose functions are to oversee the design, construction, and maintenance of the street furniture. These “oversight” committees can monitor and evaluate both the city and the shelter provider on their performances in upholding the terms of the contract. They can also provide a voice for members of the community that benefit from bus shelters.
- ***Dialog with the potential and final contractors.*** Representatives from both Boston and New York met with street furniture providers during the development of their RFPs, in order to get a sense of what companies were willing to offer. After the release of their RFPs, both cities held pre-proposal conferences to allow prospective respondents to ask questions and clarify issues. This open dialog between public and private agencies facilitated the negotiation and bidding process and will no doubt serve Boston in good stead as it begins its new street furniture program.

## **Conclusion**

With the expiration of its bus shelter contract in the year 2000, Los Angeles is at a critical juncture; it can choose to extend the existing contract or release a request for proposals (RFP) for an entirely new one. Thus, strategic evaluation of its current bus shelter program, and possible new directions, are in order. Analysis of data on shelter locations and passenger boardings shows that there remains tremendous potential for the City of Los Angeles to improve its shelter program. Many examples of success and innovation from other cities provide valuable lessons and encouragement. Many of the recommendations provided here have attempted to synthesize the experience and knowledge of researchers and policy makers, technicians, architects and artists. Whatever the city decides, the opportunity exists to make important strides towards a more equitable, efficient, and well-designed shelter program.

## **1. INTRODUCTION**

This report is intended to provide an analysis of certain aspects of the current bus shelter program in Los Angeles and present a series of recommendations for improvement. This report is composed of three sections, concerning the distribution of bus shelters in the city, the design of bus shelters, and recent bus shelter contracts.

### **Improving the Los Angeles Bus Shelter Program**

In March 2000, the contract between the City of Los Angeles and Outdoor Systems, Inc. (OSI), the advertising company responsible for the construction and maintenance of bus shelters in the city, will expire. This represents an opportunity for the public and private sectors, as well as local communities, to work in a collaborative effort to improve the system of bus shelters in Los Angeles.

Although the city has an extensive bus shelter system, careful analysis and planning can ensure that this system better serves transit users. According to data from the Los Angeles County Metropolitan Transportation Authority (MTA), the 26 bus stops in Los Angeles with the highest average daily boardings do not have shelters. Political leaders, researchers, and the media have raised concerns that the current method in which a private contractor constructs and locates shelters has allowed priorities to shift from a focus on transit users to a focus on advertising revenue.

Clearly, the needs of the shelter company, the bus riders, and the transit operators need to be balanced in some way to make the shelter system work. Shelter companies are concerned with selling enough advertising space to pay for capital and operating costs and to generate a profit for the business. Naturally, they would prefer to locate bus shelters in locations that offer the greatest potential for advertising revenue. On the other hand, transit operators are concerned with maintaining or increasing ridership rates, and offering amenities to their passengers in the form of shelter, benches, and information. They would want to locate bus shelters at bus stops that have the greatest amount of use—where the riders are. In this way, with a given number of bus shelters, they can provide amenities to the greatest amount of people. While the needs of the bus riders and the shelter company may be disparate, both should be recognized as important to the success of the shelter system. One solution would be to allow the shelter company to install freestanding advertising kiosks in areas of the city that may be more commercially viable, to support bus shelters with no advertising in areas that have high levels of boardings but lower revenue potential.

A contractual arrangement between the city and a private firm to build and maintain shelters is beneficial in that it provides a public good to the community and generates revenue as well. This report offers research and policy suggestions regarding shelter

location, design, and contracts to the City of Los Angeles as it seeks to improve its bus shelter program.

## Background

Although buses and urban bus service have been widespread since the 1920's, bus shelters would not become a part of the American landscape until about the 1970's and 80's.<sup>1</sup> New York was the first major US city to provide bus shelters to its transit users, using designs brought from Europe. In 1980, the Los Angeles Department of Transportation (LADOT) released a bus stops facility study as part of a program to develop a coordinated planning process for bus facilities. Using criteria such as bus passenger volume, pedestrian congestion, space availability, and amount of employment in the area, the study identified 249 locations where a bus shelter would improve passengers' comfort and convenience.<sup>2</sup> The study mentioned a proposal under consideration by the City Council's Public Works Committee that would allow an advertiser to provide and maintain bus shelters at no cost to the city. In light of this proposal, no funds were authorized for the construction of the bus shelters.

In 1981 and 1982, Los Angeles awarded two separate contracts for 500 shelters each to Shelter Media. The contractor would provide the city with bus shelters in exchange for the right to place advertising on these shelters in the city rights-of-way. In addition, the contract specified that the city would receive a percentage of the annual gross advertising revenue that would begin at 8% and increase to a maximum of 13%. In 1988 Gannett Transit bought out Shelter Media and in the next seven years constructed five shelter "increments," or groups of fifty shelters.<sup>3</sup> Because of these increments and shelters built on behalf of the Los Angeles Neighborhood Initiative (LANI), the contract was extended from March 31, 1997 to March 31, 2000. In 1996, OSI purchased Gannett Transit and began to seek city approval for the assignment of the contract. As of early 1999, the assignment has not been approved.

Today several national and international firms with established reputations and abilities in shelter construction and advertising dominate the shelter industry. Recent contracts in Southern California and elsewhere have seen many concessions made to cities, including considerably higher revenue payments compared to that established in the current Los Angeles contract. Heightened competition and an established industry may account largely for these developments. Most recently, cities have sought out coordinated street furniture franchises that include bus shelters as well as newsstands, information kiosks, and automated public toilets. Responses from street furniture companies have been strong. With the end of its contract nearing, Los Angeles is at a critical juncture; it can

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<sup>1</sup> Woodyard, Chris. "Building a Niche in Bus Shelters." *Los Angeles Times, Orange County Edition*, June 25, 1991.

<sup>2</sup> Los Angeles Department of Transportation. *Bus Stop Facilities Study, Phase II*. Vols. I and II, May 1980.

<sup>3</sup> Outdoor Systems, Inc. Unpublished chronology of the Los Angeles shelter system. May 1998.

choose to extend the existing contract or release a request for proposals (RFP) for an entirely new one. Thus, strategic evaluation of its current transit shelter program, and possible new directions, are in order. Whatever the city decides, the opportunity exists to make important strides towards a more equitable, efficient, and well-designed shelter program.

### **The Players and Non-players—An Assessment of the Current Dilemma**

Since the purchase of Gannett by OSI three years ago, the City of Los Angeles has not officially assigned the contract. Yet during this time, OSI has continued to function as if it were assigned the contract—by maintaining and cleaning the shelters, providing and selling advertising space, and making annual payments to the city worth almost \$1 million. Furthermore, OSI has offered to build 400 shelters and renegotiate parts of the contract that are in contention.<sup>4</sup> Although OSI has been responsive to the City's concerns, their discussions have not produced a meaningful conclusion to the dilemma.

By early 1999 the city still hasn't granted assignment and the situation remains in limbo. Meanwhile, the shelter system continues to draw criticism that each day thousands of bus riders must wait at their bus stops with no protection from sun or rain. Although the original contract calls for up to 2,500 bus shelters, today the number is less than 1,000. Many are located along major boulevards with high traffic volumes but relatively low bus boardings—calling question to the objectives guiding the placement of bus shelters. Furthermore, poor design and the lack of other amenities such as maps and schedules make the bus shelters less effective for users. Members of the Southern California Transit Advocates (SOCATA) claim that many bus shelters fail in their primary function—providing shelter from sun, wind, and rain.

### **The Functions of Bus Shelters**

The 1980 report produced by LADOT stated that bus shelters were desirable to enhance passenger comfort and convenience. Since that time, the function of bus shelters has evolved to include a variety of purposes, some logical, some unanticipated. Granted, Los Angeles sees more clear, pleasant days than most American cities, but the bus shelters here do provide protection from the occasional rainstorm. The city also sees its fair share of hot days, with temperatures exceeding 100° F, and winds gusting at high speeds blowing dust and dirt into the air. In these cases, shelters provide much needed protection from the elements. Shelters also provide a place to rest while waiting for the bus—with a bench to sit on, walls to lean on. These are the typical functions of a bus shelter.

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<sup>4</sup> Leovy, Jill. "City Panel Agrees to Bus-Shelter Talks." *Los Angeles Times, Valley Edition*, May 14, 1998.

Shelters can also provide information, in the form of maps, schedules, and timetables. Although such amenities can also be provided without a shelter, the structure of a shelter provides a convenient frame on which to display this information. Furthermore, shelters are generally located where there are greater numbers of waiting bus patrons. Providing critical information along with bus shelters ensures that the maximum number of people will be able to make use of it and public transit.

Shelters provide advertising for the transit system as well as the communities they're located in, at least in an unofficial manner. A survey conducted by the Los Angeles County MTA suggests that the presence of a shelter, as well as the physical condition of the shelter, can significantly affect the use of public transit.<sup>5</sup> People may avoid using public transit when they feel there is no protection from sun or rain at the bus stop, and when they feel unsafe. Therefore, the addition of a bus shelter that is well maintained and well designed can significantly improve people's attitudes toward the transit system and help increase transit use. In addition, shelters can serve to identify the neighborhood and transit system to non-transit users, including motorists driving by and pedestrians.

Shelters are revenue-generators, at least when they sell commercial advertising and are located in places with revenue potential. Collectively, the 992 bus shelters in Los Angeles bring in almost \$1 million annually, as 13% of gross advertising revenue. This suggests a total gross revenue for OSI of \$7.7 million. Unfortunately, the revenue-generating aspect of bus shelters may provide a disincentive for locating them where the bus riders are—in the poorer, more transit dependent areas of the city.

Finally, bus shelters can be part of vibrant residential and commercial districts. Bus stops are rarely seen as the sole driving force of economic development, since they generally do not have the scale of activity compared to a rail or subway station. However, in the more transit dependent neighborhoods in Los Angeles, daily boardings number in the hundreds and thousands. Innovative and strategic bus shelter placement and design can tap into this activity to create a thriving area that can promote neighborhood revitalization. The Los Angeles Neighborhood Initiative (LANI) has incorporated bus stops into their projects for the revitalization of commercial corridors. The neighborhoods involved with LANI have used bus stops as a starting point from which to expand their local redevelopment initiatives. This aspect of the transit system remains an untapped resource.

### **Purpose and Methodology**

This report provides an analysis of the bus shelter program in Los Angeles and presents a series of recommendations. This report is composed of three sections.

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<sup>5</sup> Los Angeles County Metropolitan Transportation Authority, *Service Planning Market Research Project, Phase II: Focus Group Report on Issues Affecting Metro Bus Use & Customer Communications*, 1998.

The first centers on the issues of efficiency and equity in the geographic distribution of bus shelters. It proposes a method of identifying bus stops that should receive bus shelters based on a measure of passenger boardings and passenger wait time. This section uses data provided by the MTA on average daily boardings at MTA bus stops and headways for MTA bus lines. The appendix contains a detailed explanation of the analysis for this section.

The second section focuses on the design of bus shelters, including aesthetics, safety, and structural design. The research for this section involves telephone surveys of various cities and transit agencies in the United States and Canada, and a review of the literature on bus shelters and bus stops.

The third section presents a review of current bus shelter contracts and RFPs, and provides a series of recommendations on "what to get out of" the next bus shelter contract. The section evaluates the contracts of Long Beach, Burbank, and San Francisco, and the RFPs of New York and Boston.

A number of reports produced under the Transit Cooperative Research Program (TCRP) of the Transportation Research Board and National Research Council were especially useful for this report. They are specifically highlighted in the appropriate sections.

## 2. LOCATION

The current bus shelter contract in Los Angeles specifies that shelters will be placed at bus stops based on "City request, bus service data and Program revenue considerations."<sup>6</sup> These vague requirements stipulated in the contract have been manifested in a point system that appears to be geared more towards revenue generation than bus stop use (Table 2.1).

**Table 2.1.** Criteria for Shelter Selection. Source: Los Angeles Bureau of Engineering.

| <b>Maximum points</b>   | <b>City Considerations</b>                                       |  |
|---|--|--|
| 26  | Points   | Factors  |
|   | 5  | Senior Citizens/Hospital   |
|   | 15   | Council District number of shelters<br>(points awarded on a sliding scale) |
|   | 6  | Council District recommendation  |
| 25  | <b>Bus Service Considerations (Daily boardings from MTA)</b>     |  |
|   | Points   | Boardings  |
|   | 4  | 0-50   |
|   | 5  | 50-100   |
|   | 12   | 100-200  |
|   | 16   | 200-300  |
|   | 20   | 300-400  |
| 25  | 400-above  |  |
| 49  | <b>Transit Shelter Contractor's Considerations</b>               |  |
|   | NR* = AR - (IC + MC)   |  |
|   | NR = net annual advertising revenue                              |  |
|   | AR = gross annual advertising revenue                            |  |
|   | IC = installation cost (annual payment to amortize capital cost) |  |
| MC = maintenance cost (annual cost)   |  |  |
| *The value of NR is not expressed in monetary units but rather as a relative value used to determine the profitability of the shelter locations being considered. |  |  |

Bus riders and the media have often criticized the distribution of bus shelters in Los Angeles as being inequitable with regard to transit users. An analysis by the *Los Angeles Times* in 1987 showed that a 25-square-mile area of the west San Fernando Valley, where bus ridership is low but the people are relatively wealthy, had more than twice the number of bus shelters found in a similarly-sized area in South Central.<sup>7</sup> Critics have raised questions as to what factors are actually guiding the placement of bus shelters in the city. A report by the Los Angeles Department of Transportation suggests that in the early years of the contract, the city was concerned about the financial stability of the

<sup>6</sup> Paragraph 7.1 of contract C-66332, Transit Shelter Contract, signed by the City of Los Angeles and Shelter Media Communications, Inc. on March 13, 1987. (Pending assignment to Outdoor Systems, Inc.)

<sup>7</sup> Connell, Rich and Tracy Wood. "Bus Shelters: Why Aren't They Where They're Needed the Most?" *Los Angeles Times*, July 26, 1987.

company and may have allowed the focus on advertising revenue to guide the placement of bus shelters.<sup>8</sup> Today, this concern for financial stability is no longer necessary.

The point system shown in Table 2.1 appears to allocate points in an arbitrary fashion. The largest possible allocation of points (49) pertains to the advertising revenue potential of bus stops, and not to actual bus stop use. Under “bus service considerations,” bus stops with 400 or more daily boardings are given 25 points. This treats equally bus stops that have over 4,000 boardings and bus stops that have only 400 boardings. In effect, this gives *more* consideration to the people that wait at bus stops with *lower daily boardings* than to those who wait at the busiest bus stops.

An equitable and efficient method of locating bus shelters gives *equal* consideration to all bus riders, and distributes shelters so that the maximum number of people can benefit from their use. Other factors such as bus stop use by the elderly and handicapped, and physical constraints at the bus stop site, can be addressed without significantly compromising the efficiency and equity of the entire system. This section provides an analysis of the factors that should be considered in determining where to place bus shelters. It proposes a method of identifying bus stops that should receive a bus shelter, with the objective of establishing an efficient and equitable bus shelter distribution. Data from the MTA are then used to analyze the current distribution of bus shelters with regard to bus stop use. Based on the principles set out in this analysis, the data are used to determine a more efficient and equitable distribution. Finally, the data are analyzed to produce a list and a map of potential sites for new bus shelters within the city.

### **City Considerations – Treating Transit Users Equally**

Under the term “City Considerations,” the point system presented in Table 2.1 allocates some points based on Council District recommendations and the number of existing shelters by Council District. Ostensibly, this is to ensure that there is an equitable distribution of shelters by Council District. The idea is that by treating districts equally, the residents within each district will also be treated equally. However, it is clear that not all residents ride the bus or make use of bus stops. While the distribution of the population of Los Angeles is roughly equal across all fifteen Districts, the distribution of boardings is highly unequal (Table 2.2).

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<sup>8</sup> Los Angeles Department of Transportation. *A Report on the City of Los Angeles Transit Shelter Program*. May 11, 1998.



**Table 2.2 Population and boardings by Council District.**

| <b>Council District</b> | <b>Population (October 1996)*</b> |                | <b>Average Weekday MTA Boardings**</b> |                |
|-------------------------|-----------------------------------|----------------|--|----------------|
| 1                       | 249,547                           | 7.0 %          | 74,631                                 | 9.4 %          |
| 2                       | 242,852                           | 6.8 %          | 18,169                                 | 2.3 %          |
| 3                       | 239,683                           | 6.7 %          | 20,352                                 | 2.6 %          |
| 4                       | 221,181                           | 6.2 %          | 55,778                                 | 7.0 %          |
| 5                       | 222,209                           | 6.2 %          | 48,290                                 | 6.1 %          |
| 6                       | 244,280                           | 6.8 %          | 20,430                                 | 2.6 %          |
| 7                       | 251,897                           | 7.0 %          | 26,831                                 | 3.4 %          |
| 8                       | 210,898                           | 5.9 %          | 59,350                                 | 7.5 %          |
| 9                       | 246,649                           | 6.9 %          | 126,737                                | 16.0 %         |
| 10                      | 243,425                           | 6.8 %          | 94,580                                 | 11.9 %         |
| 11                      | 245,020                           | 6.8 %          | 30,136                                 | 3.8 %          |
| 12                      | 243,524                           | 6.8 %          | 7,823                                  | 1.0 %          |
| 13                      | 252,884                           | 7.1 %          | 81,487                                 | 10.3 %         |
| 14                      | 228,404                           | 6.4 %          | 112,126                                | 14.2 %         |
| 15                      | 238,304                           | 6.7 %          | 14,921                                 | 1.9 %          |
| <b>Total</b>            | <b>3,580,755</b>                  | <b>100.0 %</b> | <b>791,641</b>                         | <b>100.0 %</b> |

\*Source: Los Angeles City Planning Department Population Estimate and Housing Inventory (unpublished).

\*\*Source: Los Angeles County MTA (see Appendix for detailed description of data).

Over half of all weekday MTA boardings (52.4%) occur in just four Council Districts – 9, 10, 13, and 14. There are more weekday boardings in District 9 than there are in Districts 2, 3, 6, 7, 12, and 15 *combined*. By treating Council Districts equally, a bus shelter program will treat individual transit users *unequally*. If the goal of the bus shelter program is to provide shelter to the City’s transit users, then the distribution of bus shelters should be based on the distribution of transit use—and the level of transit use is represented by boardings.

In some instances, one might argue that not all transit users should be treated equally, and that a bus stop used mainly by the elderly and disabled should merit a bus shelter regardless of the overall number of waiting bus riders. In this case, the City can address this issue in several ways without completely compromising the method that treats transit users equally. First, the City can set aside a fixed number of shelters per year that must be installed near hospitals or senior citizens centers. Second, the City can solicit and accept a fixed number of direct requests for bus shelters from members of the community. Third, the City can assign a weight to boardings by the elderly or disabled in its calculations of bus stop use. The additional weight will give more importance to these types of boardings. Any of these options used separately or together allow the City to provide shelters under special circumstances, while still maintaining the principles of efficiency and equity.

## Bus Service Considerations – Measuring Use with *Person-Minutes*

For bus service considerations, the point system shown in Table 2.1 assigns points based on daily boardings obtained from the MTA. Stops with more boardings receive higher points. However, the relationship between boardings and points is unclear.

In general, cities do not assign points but instead have an established minimum threshold of boardings. Stops that meet or exceed this threshold are identified as requiring a bus shelter. Based on prevailing practice, the Transportation Research Board suggests a minimum threshold of 50 to 100 daily boardings to justify the installation of a bus shelter.<sup>9</sup> The actual threshold amount used by cities varies by population and transit use. Often, it further varies within cities by location (central city vs. suburb). For example, in Seattle, bus stops in the city must have at least 50 daily boardings before they receive a shelter.<sup>10</sup> Stops in the suburbs only require 25 daily boardings. In Minneapolis, the minimum threshold is 40 daily boardings in the city, and 25 in the suburbs.<sup>11</sup> Stops with 80 or more boardings are eligible for heated shelters.

Many of the cities and agencies surveyed for this report consider the following factors when determining whether to install a bus shelter at a particular site:

- Number of boardings/alightings
- Major origins/destinations (hospitals, shopping centers)
- Major transfer points

In fact, the number of boardings actually incorporates the other two factors. Major origins, destinations, and transfer points by definition have higher amounts of boardings. Therefore, a shelter program that targets bus stops with the largest number of boardings should also capture major trip origins and destinations as well as transfer points.

Although boardings account for the number of people that wait at a bus stop, they do not represent the amount of time that people actually wait at the stop. On one hand, it would be desirable to have a bus shelter at a bus stop where large numbers of people wait each day. That single structure can provide shelter to more people compared to a shelter located at a stop with very low boardings. However, it would also be desirable to have a bus shelter at a bus stop where people tend to wait longer for the bus. These people might benefit more from a bench to sit on and a roof over their heads than other people who only have to wait a few minutes. Therefore, a more accurate measure of bus stop use would incorporate *both* the number boardings *and* the amount of time spent waiting.

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<sup>9</sup> Texas Transportation Institute, Texas A&M University. *Guidelines for the Location and Design of Bus Stops, Transit Cooperative Research Program Report 19*. Washington, DC: National Academy Press, 1996.

<sup>10</sup> Cummings, Dale of the King County Department of Transportation in Washington State. E-mail correspondence, February 16, 1999.

<sup>11</sup> Steiner, Evan of Metro Transit in Minnesota. E-mail correspondence, February 17, 1999.

This can be done using a unit of measurement called *person-minutes*. Person-minutes can be calculated by multiplying the number of people waiting at a stop by the amount of time, in minutes, that they've spent waiting. For example, suppose five people have each spent ten minutes waiting for the bus at a stop. Together, they have spent 50 person-minutes of wait time ( $5 \times 10 = 50$ ). Suppose 25 people have each waited only two minutes for the bus at another bus stop. Together, they have also spent 50 person-minutes of wait time ( $25 \times 2 = 50$ ). In this way, a measure of bus stop use that incorporates person-minutes of wait time will account for both the total number of people as well as the length of time they spend waiting at a bus stop. Using person-minutes as a measure of bus stop use, the City can then identify its most heavily used bus stops and install shelters at those locations. The resulting distribution of shelters will be *efficient*, in that it covers the maximum number of person-minutes, and *equitable*, because it treats equally all transit users and the amount of time they wait.

### **Transit Shelter Contractor's Considerations – Commercial Shelters**

The bulk of the points shown in Table 2.1 are allocated to the transit shelter contractor's revenue considerations. Under this point system, the locations that are deemed commercially desirable for advertising may have no relation to the significance of the bus stop as part of the transit network. As a result, a bus shelter system that is geared towards revenue generation and not towards providing protection to transit users is likely to be inefficient and inequitable.

The commercial viability of bus shelters is a function of their costs and potential revenue. The cost of providing shelters entails not only construction and installation costs but also maintenance expenses. In a recent survey of cities by the Los Angeles Bureau of Street Services, all cities cited vandalism and graffiti as major concerns.<sup>12</sup> These costs can often be instrumental in frustrating efforts to provide an efficient and equitable distribution of bus shelters. Providing bus shelters where there is greatest need, in primarily low income, transit-dependent neighborhoods, may mean placing shelters where they will more likely be vandalized. OSI claims that it spends more on maintenance for shelters in Los Angeles than in other cities due to graffiti and vandalism.<sup>13</sup>

The involvement of advertising agencies in shelter provision further complicates the matter. Many cities such as Los Angeles grant contracts to private companies to build and maintain the shelters in exchange for the right to sell advertising space in the public right-of-way. This arrangement potentially benefits all parties involved: the company makes money, the bus riders are provided with bus stop amenities, and the cities often receive a share of the advertising revenue from the company. However, the involvement of a profit-driven company may create an incentive to place bus shelters in locations that promise the greatest amount of advertising revenue, but don't have significant levels of

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<sup>12</sup> Los Angeles Bureau of Street Services, Street Use Inspection Division, *1999 Nationwide Transit Shelter Survey*.

<sup>13</sup> Leovy, Jill. *Op cit*.

bus stop use. In 1987, Shelter Media representatives stated that they preferred areas such as the Valley, West Los Angeles, and Century City, because those areas had many shopping malls and greater revenue potential.<sup>14</sup>

Some cities such as San Francisco and San Diego do not receive a percentage of the company's revenue, and instead simply have their administrative costs paid for, thus removing the incentive to help maximize advertising revenue. There are also programs that cities can implement to mitigate vandalism and graffiti. Even with the strictest maintenance schedules, shelter providers can not ensure that the shelters are clean all the time. Adopt-a-shelter programs allow local businesses and residents to participate and help in maintaining nearby shelters, with training and materials provided by the shelter company. This develops a sense of ownership among adjacent property owners and users, and taps in to the "neighborhood watch" mentality that is traditionally used for neighborhood safety. OSI has indicated that it is willing to engage in such a partnership with the city. Another mitigation measure that will be discussed later in the report is the use of public art, which can tap into feelings of civic pride and ownership.

Clearly, advertising revenue considerations should not be the driving factor that determines the location of bus shelters in Los Angeles. There is no linkage between advertising revenue potential and bus stop use. While advertising may be a means to finance the construction and maintenance of bus shelters, the main purpose of shelters is to provide bus riders with protection from the elements. The most direct way to achieve this is to put shelters where the riders are. Unless the shelter company can show that it is facing financial hardship because of poor advertising sales, it should not be allowed to place shelters based solely on criteria other than bus stop use.

### **Other Considerations**

Certainly there are other factors that affect whether a bus shelter may be installed at a particular site. These include the availability of electricity for lighting, conflicts with sight lines, and opposition from nearby property owners. Some of these can be addressed through visual inspection of the sites and notification of surrounding property owners. Innovative shelter design can be used in response to factors such as small sidewalk width and local ordinances prohibiting shelters. In some instances, visual inspection of a bus stop may indicate that a shelter may not be needed at all, if there is adequate shade by nearby buildings. In other cases, there may be special circumstances, such as extremely hot or windy conditions, that warrant a shelter regardless of bus stop use. As a response to these special cases, cities, transit agencies, and shelter companies usually accept direct requests from all members of the public. The idea is that while these additional factors are significant, there are ways to address them on a case-by-case basis while maintaining a standard practice of identifying bus stop locations based on bus stop use.

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<sup>14</sup> Connell and Wood. *Op cit.*

## The Current Shelter Distribution in Los Angeles

Based on the principles set out here, an analysis of data from the MTA indicates that the current bus shelter program falls far short of the objectives of efficiency and equity in providing shelter to waiting passengers. This report utilizes data from the MTA from surveys conducted in 1996 and 1997 for bus stops in the City of Los Angeles that are served by MTA buses. The data represent average weekday boardings on MTA lines, and do not include boardings on other lines that serve parts of Los Angeles, such as the Santa Monica Blue Bus, Culver City Transit, Antelope Valley Transit, and Foothill Transit. The MTA data identify over 8,000 bus stops in the City of Los Angeles. The MTA bus stop list was matched with a list of bus shelter locations provided by OSI to identify 852 bus stops that have a bus shelter.<sup>15</sup>

For the purposes of this analysis, bus stop use will be represented by *person-minutes* of wait time. This measure gives importance to bus stops that see very high numbers of people, as well as those bus stops that have lower numbers but whose patrons must wait longer for their bus. Calculations based on the MTA data show that on an average weekday there are about 791,000 boardings that occur at MTA bus stops in Los Angeles. The total amount waiting that is spent at these bus stops is estimated at *4 million person-minutes*, or *7.6 person-years*, per weekday.

This analysis will determine the what portion of those 4 million person-minutes are spent waiting at bus stops that have bus shelters. The analysis will consider three different scenarios:

- Scenario 1 – The current distribution of shelters within Los Angeles.
- Scenario 2 – A balanced distribution of shelters by council district. Shelters are distributed to *the most heavily used bus stops* in each district.
- Scenario 3 – A distribution of shelters to the 852 most heavily used bus stops *regardless of council district*.

Under each scenario, the data are analyzed to determine the percent of total person-minutes of waiting that occur at a stop with a bus shelter. An efficient distribution of bus shelters will maximize this rate of coverage. Table 2.3 summarizes the results. (See the Appendix for a detailed description of the analysis and results.)

Under Scenario 1, which represents the current distribution of shelters, approximately 20% of the total person-minutes of waiting occur at a stop with a shelter. In other words, of the total 4 million person-minutes of waiting at MTA bus stops that occurs on the average weekday in Los Angeles, only 20% occurs at bus stops that have a bus shelter. This means that, on average, the bus riders in Los Angeles spend roughly 3.2 million person-minutes waiting each weekday with no protection from sun, wind, or rain.

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<sup>15</sup> City records indicate a total of 992 bus shelters in Los Angeles. This discrepancy is partially explained by the fact that MTA bus lines do not serve all bus stops in the city.

**Table 2.3. Shelter coverage under three scenarios of bus shelter distribution.**

| Council District | Scenario 1 – Current |  | Scenario 2 – By District |  | Scenario 3 – By Use |  |
|------------------|----------------------|--|--------------------------|--|---------------------|--|
|                  | Number of Shelters   | % of Total Person-Minutes with Shelter | Number of Shelters       | % of Total Person-Minutes with Shelter | Number of Shelters  | % of Total Person-Minutes with Shelter |
| 1                | 54                   | 18 %                                   | 57                       | 45 %                                   | 59                  | 46 %                                   |
| 2                | 50                   | 28 %                                   | 57                       | 47 %                                   | 40                  | 39 %                                   |
| 3                | 68                   | 21 %                                   | 57                       | 44 %                                   | 48                  | 40 %                                   |
| 4                | 97                   | 28 %                                   | 57                       | 54 %                                   | 50                  | 51 %                                   |
| 5                | 93                   | 29 %                                   | 57                       | 51 %                                   | 53                  | 49 %                                   |
| 6                | 42                   | 19 %                                   | 57                       | 66 %                                   | 21                  | 42 %                                   |
| 7                | 33                   | 19 %                                   | 56                       | 61 %                                   | 52                  | 58 %                                   |
| 8                | 51                   | 19 %                                   | 57                       | 36 %                                   | 58                  | 37 %                                   |
| 9                | 64                   | 13 %                                   | 57                       | 41 %                                   | 110                 | 54 %                                   |
| 10               | 74                   | 22 %                                   | 57                       | 44 %                                   | 80                  | 54 %                                   |
| 11               | 62                   | 30 %                                   | 57                       | 65 %                                   | 46                  | 60 %                                   |
| 12               | 30                   | 18 %                                   | 56                       | 58 %                                   | 24                  | 37 %                                   |
| 13               | 44                   | 16 %                                   | 57                       | 52 %                                   | 83                  | 63 %                                   |
| 14               | 57                   | 13 %                                   | 57                       | 53 %                                   | 101                 | 66 %                                   |
| 15               | 33                   | 19 %                                   | 56                       | 65 %                                   | 27                  | 48 %                                   |
| <b>Total</b>     | <b>852</b>           | <b>20 %</b>                            | <b>852</b>               | <b>50 %</b>                            | <b>852</b>          | <b>52 %</b>                            |

Under Scenario 2, a balanced distribution by council district increases this rate to 50%. It is important to note that this assumes that the bus shelters are placed at *the most heavily used bus stops* in each council district. Adjusting the distribution in this way will more than *double* the effective coverage of the current bus shelter system. Under this scenario, bus shelters will cover over 2 million person-minutes of waiting. This is an *extraordinary* improvement of 1.2 million person-minutes over Scenario 1, an improvement accomplished without adding a single bus shelter to the existing supply.

Finally, Scenario 3 shows that distributing the shelters to the most heavily used bus stops in the city, without regard to council district, will cover 52% of the total person-minutes of waiting. This distribution provides the *maximum* amount of coverage. The differences between the scenarios are not trivial. The 2% increase in shelter coverage between Scenario 2 and Scenario 3 translates into over 34,000 boardings and 85,000 person-minutes of waiting. In other words, the distribution of shelters under Scenario 3 will provide shelter to *an additional* 34,000 boardings per day, or 85,000 person-minutes of waiting per day, compared to Scenario 2. Placing shelters at bus stops with the greatest levels of use, without regard to council districts, will create a system that is immensely more efficient and equitable than the ones under Scenarios 1 and 2.

## **Recommendations for Future Increments**

If it has not already done so, the City of Los Angeles should abandon the points system shown in Table 2.1 as a method of placing bus shelters. With the principles of efficiency and equity in mind, the City should utilize data on boardings to direct future shelter construction at bus stops with the highest amounts of use. Following this section are a list and a map of the bus stops that were identified in Scenario 3 as the most heavily used stops in Los Angeles that do not have a shelter. Although these locations may not all be suitable for a shelter, this list will be useful as a reference for any proposed increments in construction.

### ***Recommendation 1:***

- a.) Abandon the point system used previously by Los Angeles to identify locations for bus shelters because it does a poor job of protecting waiting bus patrons. New shelter construction should be targeted at the bus stops that have the highest amount of person-minutes of wait time. These stops are listed in the Appendix.***
- b.) The City should also establish a minimum threshold of bus stop use for the installation of shelters. All stops meeting this threshold should automatically be considered for a bus shelter. The MTA data used in this analysis show that a threshold of 1,000 person-minutes per day qualifies over 1,600 bus stops.***

Although the analysis carried out here is based on MTA data, it is important to recognize that many other transit agencies provide service to Los Angeles.

***Recommendation 2: The City of Los Angeles should coordinate with the various transit agencies that provide service to the city in order to gather data and obtain a clearer picture of bus stop use and shelter coverage. Coordination can be achieved through the Bus Operators Subcommittee at the MTA. This will ensure that all bus stops in the City served by all transit operators will be considered in any further analyses.***

***Recommendation 3: The city should address instances of special circumstances that are not accounted for when measuring bus stop use in person-minutes of wait time. Establish a fixed number of shelters per year that may be installed based on direct requests from the community, and/or based on special circumstances such as the needs of the elderly and disabled.***

While revenue considerations should not be the driving force in determining where shelters should be located, this report acknowledges that revenue generation is vital to the financial success of the shelter company.

***Recommendation 4: Require the shelter company to present a compelling rationale for selecting shelter locations based on criteria other than bus stop use. There are several ways in which the city can address the revenue needs of the shelter company:***

- a.) Consider setting aside a fixed number of shelter locations per year, above and beyond those contractually mandated, that the shelter company may be allowed to choose using its own criteria.***
- b.) Consider allowing the shelter company to install free-standing advertising kiosks in commercially viable areas to support non-commercial shelters in locations that have high levels of use but may not have high revenue potential.***



### 3. DESIGN

An efficient and equitable distribution of bus shelters, located geographically to maximize the number of transit users that are covered, won't do much good if the shelters are poorly designed. Shelters with good design are functional as well as aesthetically pleasing and attractive. Shelters with bad design can both fail to provide protection from the elements and have a negative impact on people's perceptions about the neighborhood as well as the transit system. In describing bus stops, Suisman (1996/7) suggests that bus shelters have the potential to shape and change public perception about cities and the transit system:

Bus stops advertise the transit system to the public. A stop that looks dirty or neglected, or whose waiting passengers look hot, cold, wet, confused or vulnerable sends a devastating message: if you're lucky you don't have to ride the bus. A stop that looks clean, comfortable, safe and informative suggests that riding the bus is a practical, attractive alternative to driving.

Bus stops also send a message about a city's public space. They are the place where bus transit and municipal identity overlap. Each stop can be thought of as having a two-way identity; it is a gateway to the transit system for pedestrians getting on, and a gateway to the adjacent neighborhood for passengers getting off. Each stop should be assessed as part of a pedestrian network that permits someone to get to and from the stop.<sup>16</sup>

Well-designed shelters don't simply provide protection from the elements. They can also, and frequently do, attract riders, help people find their way along the transit system, and support an integrated pedestrian network.<sup>17</sup> This section of the report presents a survey of the literature that has been produced on bus shelter and bus stop design and presents recommendations for improving the current design of shelters in Los Angeles. It begins with a discussion of the requirements set in accordance with the Americans with Disabilities Act (ADA) of 1990, reviews the elements of good bus shelter design, and finishes with a section on transit and local economic development.

#### ADA Guidelines

Under the 1990 ADA, the U.S. Access Board is responsible for developing guidelines for the design of buildings and facilities so that they are accessible to and usable by people with disabilities.<sup>18</sup> In 1991 the Access Board published the ADA Accessibility Guidelines (ADAAG) for the Department of Justice, which is responsible for adopting enforceable standards that are consistent with these guidelines. In January 1998, the

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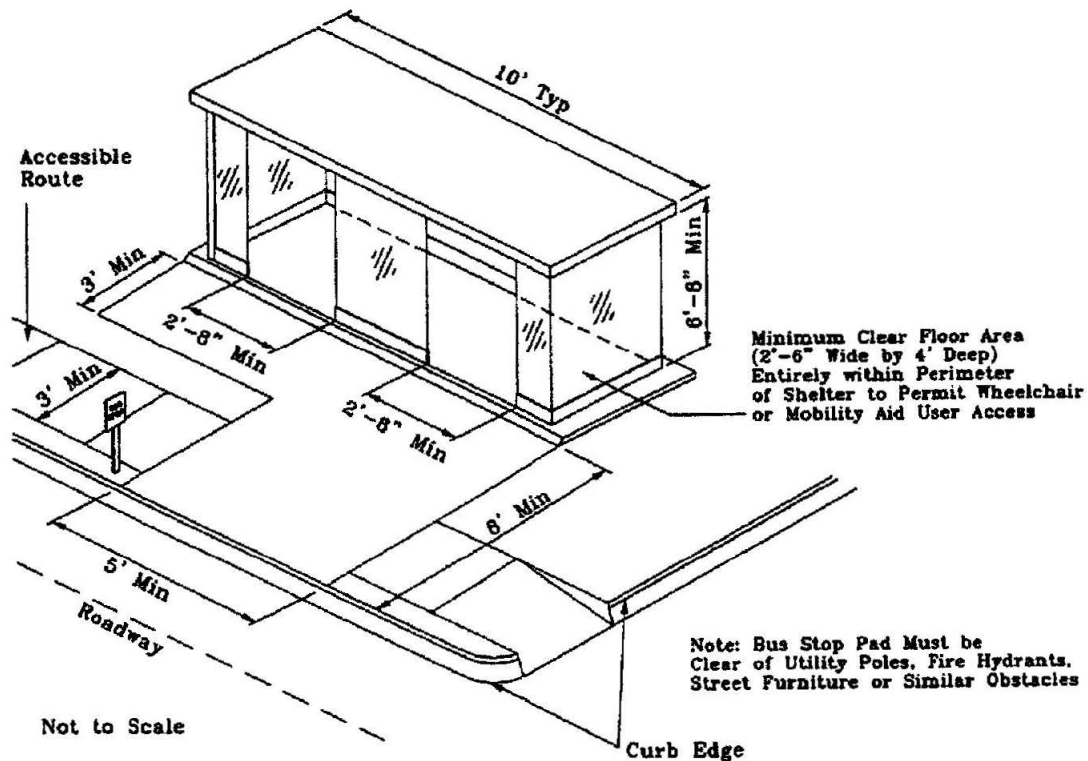
<sup>16</sup> Suisman, Doug. "The Bus Stop as an Urban Place." *Places*, 1996/7, v11 n2. Page 80.

<sup>17</sup> Project for Public Spaces. *The Role of Transit in Creating Livable Metropolitan Communities, Transit Cooperative Research Program Report 22*. Washington, DC: National Academy Press, 1997.

<sup>18</sup> U.S. Access Board. *Americans with Disabilities Act: Accessibility Guidelines for Buildings and Facilities (ADAAG)*. September 1998.

Access Board published a series of amendments that have not yet been adopted by the Department of Justice.

Section 10.2 of the ADAAG, "Bus Stops and Terminals," specifies the minimum dimensions for newly constructed bus stop pads and bus shelters. New bus stop pads must have a minimum clear dimension of 8 feet measured from the curb and 5 feet measured parallel to the curb. New or replaced bus shelters must permit a wheelchair or mobility aid user to enter from the public way and to have a minimum clear floor area under the shelter of 2 feet 6 inches by 4 feet. Figure 3.1 below displays the dimensions:



**Figure 3.1.** Dimensions for a bus stop pad and shelter meeting ADA minimum requirements. Source: Texas Transportation Institute, Texas A&M University. *Guidelines for the Location and Design of Bus Stops, Transit Cooperative Research Program Report 19.* Washington, DC: National Academy Press, 1996.

Since the specifications for shelter dimensions contained in the current bus shelter contract were written before the 1990 ADA, it is possible that many of the shelters in the city do not meet ADA standards. While the Accessibility Guidelines do not require existing shelters to be altered, any new construction in Los Angeles should follow these prescriptions. Similarly, any new contract that the city agrees upon should enforce the ADAAG.

***Recommendation 5: Adopt the current ADA guidelines for bus shelter dimensions for all new shelter construction or replacement. Consider adopting a phased plan to make all city shelters ADA-compliant.***

### **Modular Shelter Design**

Section 7 of the current bus shelter contract sets out the shelter design specifications for all bus shelters in Los Angeles. The basic shelter design has minimum engineering and dimension requirements (4'6" W x 12' L x 8'6" H), and must accommodate one wheelchair with 32" minimum clearance. Shelters must be placed on a parkway and sidewalk dedication of at least 10 feet. Subsections specify dimensions for advertising panels and benches, and requirements for shelter electrification, identification, and drainage. Preferred materials are structural steel for the support columns and glass for the shelter panels, and brown, tan and bronze are the only acceptable colors unless approved by the Cultural Affairs Commission.

There are several advantages of maintaining a standard shelter design, including cost-minimization and system-wide consistency. A standard shape and color is easily identifiable and recognizable, and it simplifies the construction, maintenance and cleaning processes. More importantly, it keeps these costs low. Often one aspect of the shelter design is altered to denote a different neighborhood or district—in San Diego standard shelters provided by the Metropolitan Transportation Development Board (MTDB) are typically brown, although the downtown ones are blue.<sup>19</sup>

A disadvantage of Los Angeles' current standard design is that it is not adaptable to accommodate different sidewalk dimensions or the amount of people waiting at a bus stop. The width of the sidewalk or parkway dedication is perhaps the most important factor limiting the design of a shelter. It limits shelter dimensions, restricts the space for pedestrian movement around shelters, and can hinder compliance with ADA requirements. Yet many of the most heavily used bus stops are located in older, poorer areas of the city with narrow sidewalks. The current standard design does not fit well in these areas, nor will it function effectively. A package or series of shelter designs that are modular and adaptable to different situations would better handle these situations.

For example, the advertising panels associated with a bus shelter do not have to be physically attached to a shelter. Placing the advertising panels on a free-standing kiosk can free up room for bus patrons in and around the bus shelter, provide an extra third panel for bus service information, and still allow advertising at the site. Tri-Met in the Portland, Oregon area has five shelter configurations whose "amenity packages" become more complex as ridership increases.<sup>20</sup> Whereas bus stops with minimal ridership have only an ADA-compliant waiting pad, those stops that see large numbers of bus patrons

<sup>19</sup> Lee, David of the San Diego Metropolitan Transportation Development Board. Telephone interview, March 9, 1999.

<sup>20</sup> Beadle, Chuck of Portland Tri-Met. Telephone interview, February 22, 1999.

have benches and shelters. Stops with over 300 riders per day require high-capacity shelters that are 30 feet long. These stops are also fitted with graphic information systems that use color-coded logos and display monitors to help people navigate the bus network.<sup>21</sup>

A bus stop improvement program under consideration by Foothill Transit in the San Gabriel Valley in Southern California identified twenty bus stop types, based on four ridership levels and five sidewalk widths. The combination of ridership and sidewalk width would determine what “package” of amenities the bus stop would receive. These amenities include shelters, benches, trash bins, and ad kiosks. A stop with minimal width and ridership may only receive a sign post, while a heavily utilized stop may receive all of the amenities. Urban setting and adjacent uses would then be taken into account in order to make layout and design adjustments, such as the addition or subtraction of elements, based on site-specific conditions. In this way, changes in bus shelter design correspond with changes in the level and type of bus stop use, thereby making the shelter more effective and user-friendly.

***Recommendation 6: Work with the shelter provider to establish a set of flexible, modular shelter configurations that can be expanded/contracted depending upon ridership level and sidewalk dimensions.***

### **Designing for People**

The typical shelter in Los Angeles consists mainly of two large ad panels displaying colorful advertising geared towards passing automobiles. People waiting at the shelters are given a bench to sit on and a roof over their heads, and little else in terms of comfort or information. Current efforts in changing shelter design—using perforated metal instead of glass panels—are aimed at vandalism mitigation, not the needs of the bus patrons. Consequently, there remains much room for improvement in shelter design.

The TCRP Report 19, *Guidelines for the Location and Design of Bus Stops*, provides a survey of current practices and is an excellent guide for bus stop and bus shelter design. In particular, Appendix E of the report utilizes field data on pedestrian movements in and around bus stops in order to provide recommendations on how best to design and situate bus shelters. Understanding the behavior of bus patrons can lead to a better shelter design that is targeted towards the people that use them.

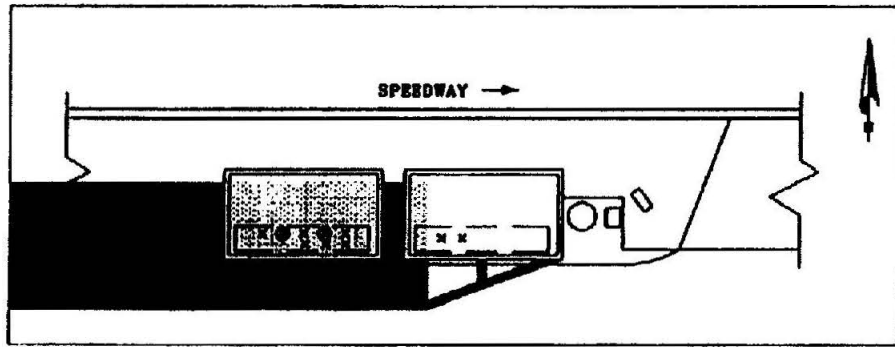
Flexible shelter designs provide for modular shelter configurations that can be adapted to different environments. In particular, shelters should be oriented in order to provide protection from the sun, rain, and wind. All too often the shade provided by a bus shelter roof does not cover the bus bench where people are sitting. Furthermore, poorly designed

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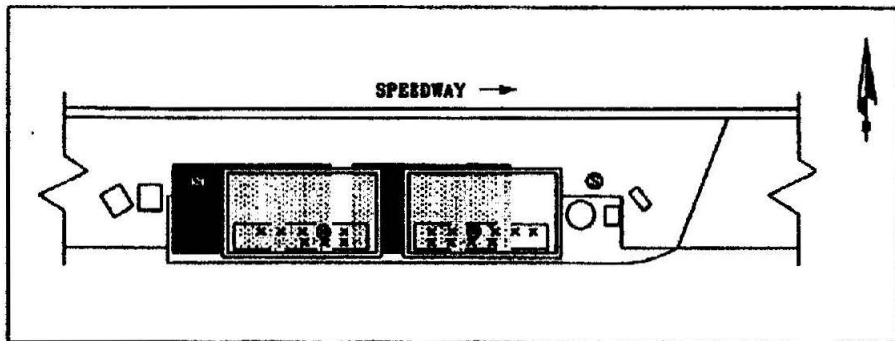
<sup>21</sup> Suisman. *Op cit.*

shelters may have negative consequences on the behavior of transit users that can result in an overall negative impact on the immediate environment.

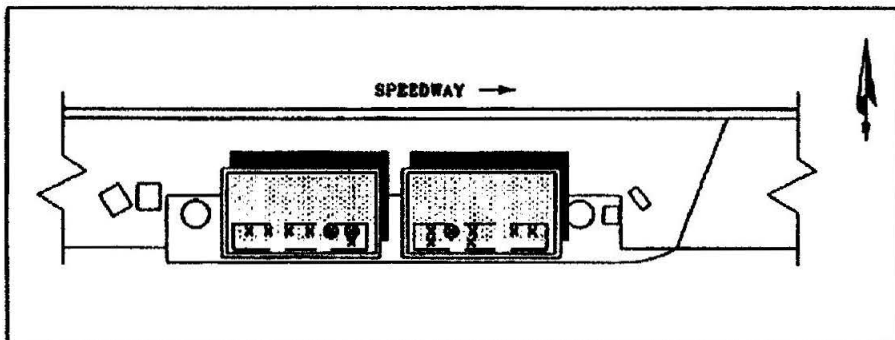
For example, shelters in Los Angeles are generally placed facing the street with the rear panels and benches parallel to the curb. However, people waiting at a west-facing shelter will have the sun in their eyes in the afternoon, and as a result they may choose to stand *behind* the shelter where the shade is, or in front of nearby stores with overhangs at their entrances (see Figures 3.2a and 3.2b).



CUMULATIVE SEATING 7-9 a.m. (Shadow ● 8 a.m.)



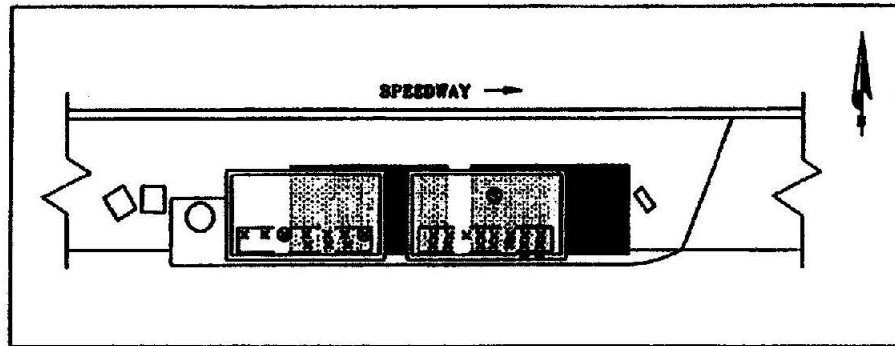
CUMULATIVE SEATING 9-11 a.m. (Shadow ● 10 a.m.)



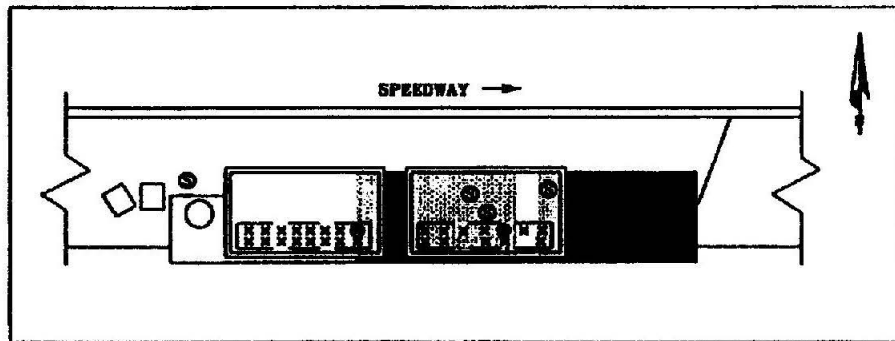
CUMULATIVE SEATING 11 a.m.-12 p.m. (Shadow ● 12 p.m.)

● = Persons present at time of shadow reading  
 s = Persons standing  
 x = Persons seated

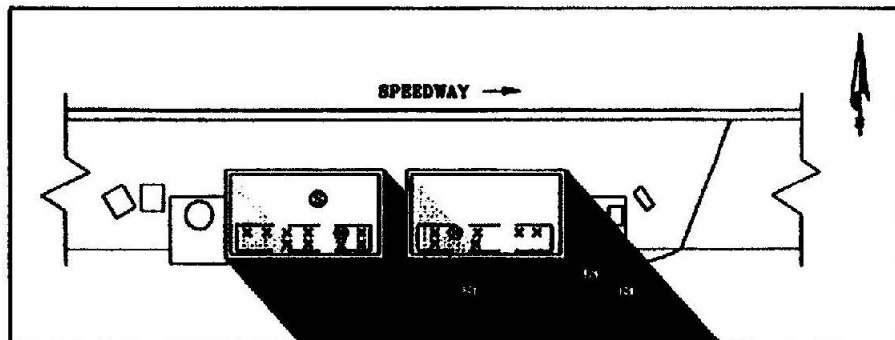
**Figure 3.2a.** Observed standing and seating patterns of bus patrons at a stop in Tuscon, Arizona. Source: Texas Transportation Institute, Texas A&M University. *Guidelines for the Location and Design of Bus Stops, Transit Cooperative Research Program Report 19.* Washington, DC: National Academy Press, 1996.



CUMULATIVE SEATING 1-3 p.m. (Shadow ● 2 p.m.)



CUMULATIVE SEATING 3-5 p.m. (Shadow ● 4 p.m.)

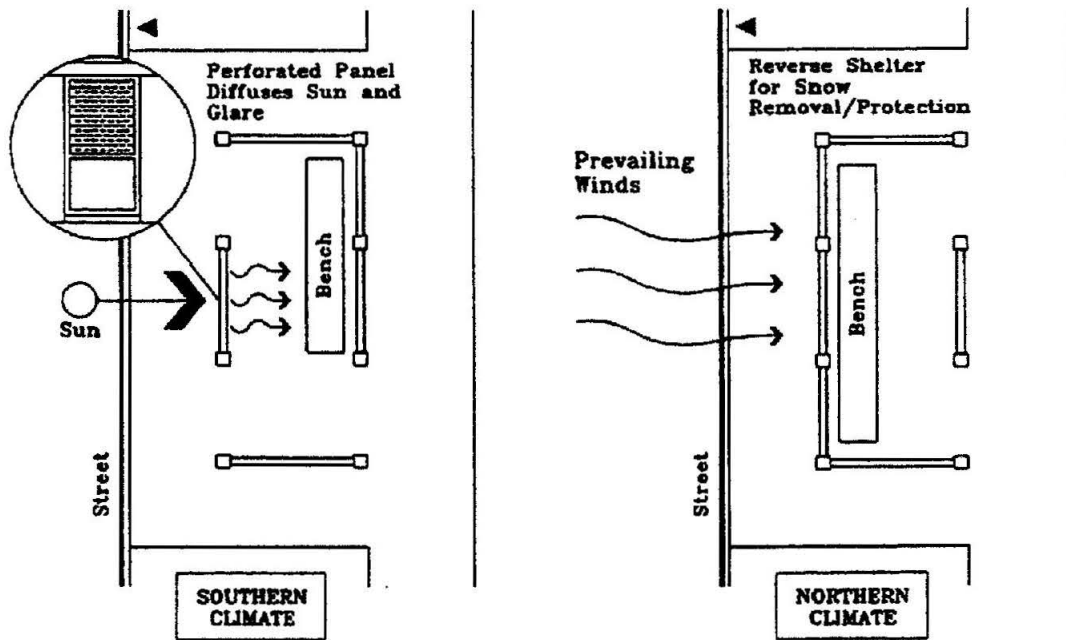


CUMULATIVE SEATING 5-7 p.m. (Shadow ● 6 p.m.)

⊙ = Persons present at time of shadow reading  
 s = Persons standing  
 x = Persons seated

**Figure 3.2b.** Observed standing and seating patterns of bus patrons at a stop in Tuscon, Arizona. Source: Texas Transportation Institute, Texas A&M University. *Guidelines for the Location and Design of Bus Stops*, Transit Cooperative Research Program Report 19. Washington, DC: National Academy Press, 1996.

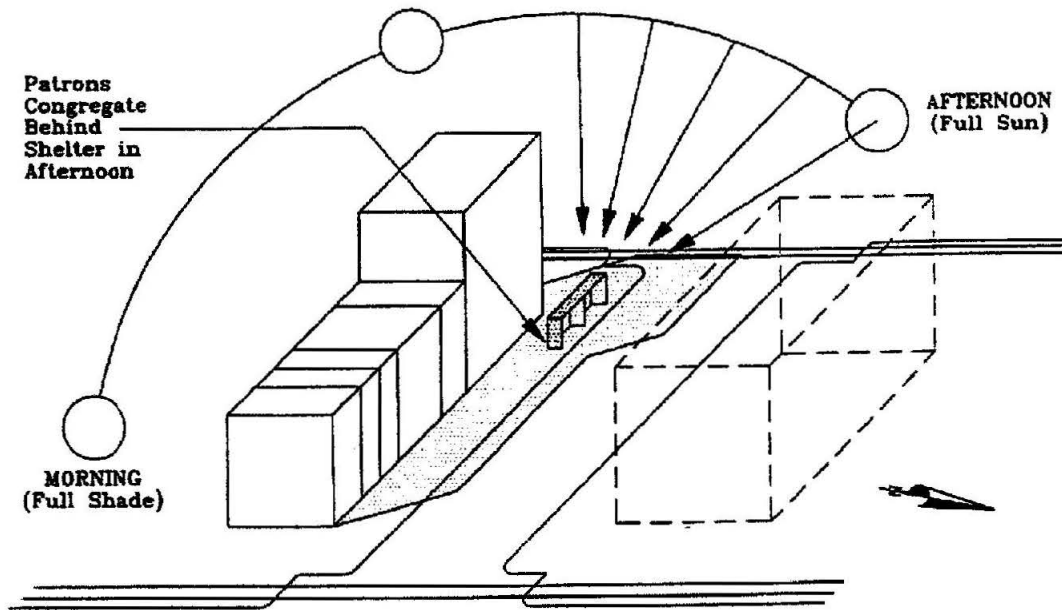
In doing so, bus patrons may interfere with pedestrian through-traffic along the sidewalk and between the bus shelter and storefronts, and increase the chances of a bus driver passing the stop. One solution to this would be to change the placement of the bus bench and panels to provide the best protection against the sun (see Figure 3.3).



**Figure 3.3.** Changing the placement of panels and bench orientation is effective in protecting waiting passengers from the elements. Source: Texas Transportation Institute, Texas A&M University. *Guidelines for the Location and Design of Bus Stops, Transit Cooperative Research Program Report 19.* Washington, DC: National Academy Press, 1996.

In another example, existing trees or buildings provide shade early in the day, while in the afternoon the bus stop is in full sun (see Figure 3.4). In this case, people are forced to stand behind the shelter for shade, or to linger in storefronts. Therefore, installing a shelter at a bus stop should involve observation and planning regarding the orientation and placement of the structure, and how this affects its usefulness at different times of the day.





**Figure 3.4.** The utility of a shelter at various times of the day depends on its placement and environment. Source: Texas Transportation Institute, Texas A&M University. *Guidelines for the Location and Design of Bus Stops, Transit Cooperative Research Program Report 19*. Washington, DC: National Academy Press, 1996.

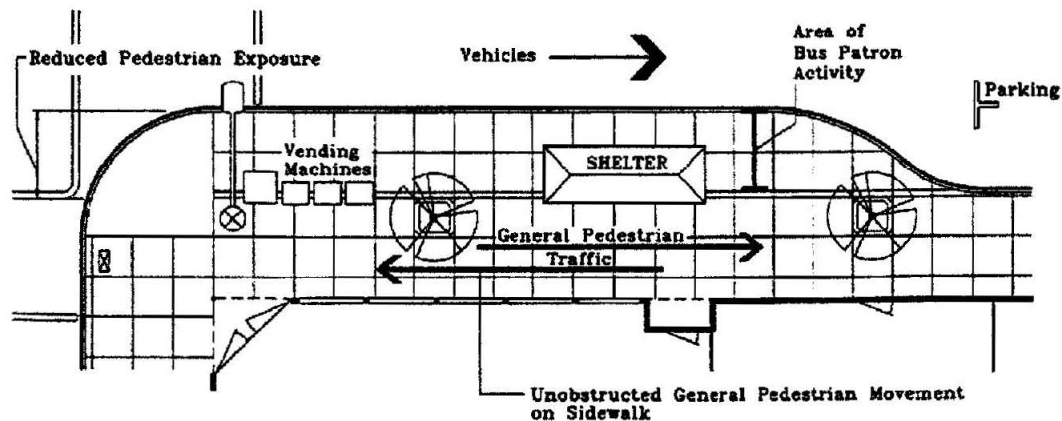
Placement of amenities at a bus stop, including bus shelters, exterior benches, trash receptacles, advertising kiosks, and signposts, should allow enough room for unobstructed movement to and from the bus, and to and from the bus stop. Crowding and environmental extremes, coupled with people's feelings about personal space, can encourage people to seek cover away from the bus stop site.<sup>22</sup> When people are confronted with poorly designed shelters, they make adaptive use of the surrounding environment and sit on low walls, or stand in store entrances or under nearby trees where there is protection from the elements. Good shelter designs will consider the ways in which people wait for the bus, and will provide adequate opportunities to lean and sit as well as stand. Innovative placement of trees to provide additional shade without obstructing views can improve the bus stop environment. In sidewalks too narrow for a complete shelter, a building awning or canopy can be constructed to provide some form of cover.

***Recommendation 7: Establish a procedure for bus shelter placement and orientation that considers the unique conditions and uses of each bus stop. Modular shelter configurations allow shelters to be installed for maximum effectiveness and utility.***

<sup>22</sup> Texas Transportation Institute, Texas A&M University. *Op cit.*

## Bus Nubs: Problem-Solving Through Design

In areas with large numbers of daily boardings and narrow sidewalks, the crowds that gather at bus stops will impede on pedestrian through traffic. This affects the movement of people walking by the bus stop, people getting off the bus, and those waiting to board. Bus nubs are one solution to provide additional sidewalk space for bus patrons and amenities such as benches and shelters. Bus nubs are a section of the sidewalk that extend from the curb of a parking lane to the edge of the through lane, and allow buses to stop in the traffic lane instead of pulling into the parking lane (see Figure 3.5).



**Figure 3.5.** Bus nubs provide more space for bus patron activity, eliminating conflicts with general pedestrian traffic. Source: Texas Transportation Institute, Texas A&M University. *Guidelines for the Location and Design of Bus Stops, Transit Cooperative Research Program Report 19*. Washington, DC: National Academy Press, 1996.

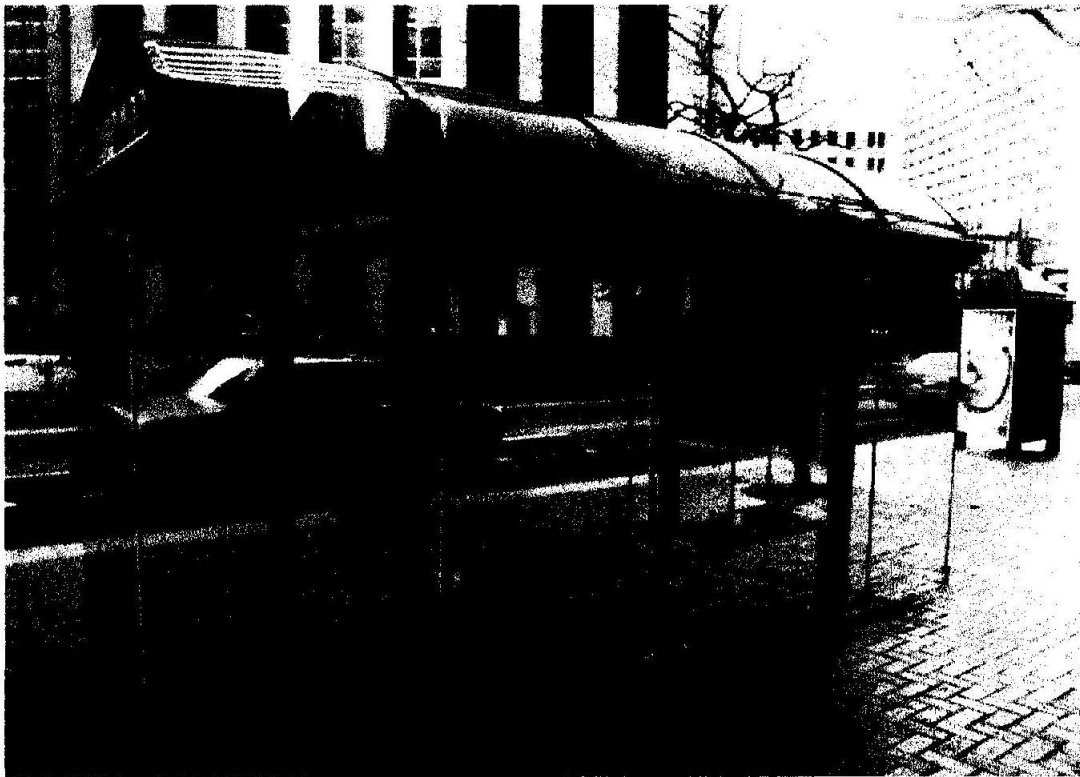
Nubs allow the separation of general pedestrian traffic with bus patron activity to reduce conflicts between the two. Nubs should be considered at sites with high pedestrian activity and crowded sidewalks, and are particularly applicable along streets with lower traffic speeds and/or low traffic volumes where buses can stop in the traffic lane. Bus nubs may reduce the possibility of pickpockets, who often take advantage of crowded situations. Bus nubs have also been shown to reduce pedestrian-patron conflicts, increase the number of possible bus stop amenities, reduce the adaptive use of store ledges or awnings, and in general enhance the comfort and convenience of transit in dense urban settings.<sup>23</sup>

**Recommendation 8:** Consider the use of bus nubs at bus stops on crowded sidewalks where sidewalk space is limited, and where conflicts with pedestrian traffic and bus patron activity occur frequently.

<sup>23</sup> *Ibid.*

## Information and Other Amenities

Bus stops with high levels of use are good places to put additional bus stop amenities, such as information, trash bins, and telephones, since these amenities will potentially benefit the greatest number of users. Bus shelters in particular are excellent places to provide customer information—system and route maps, schedules, and service contact information—both because of the high levels of activity and also because shelters provide a convenient support for the display cases (see Figure 3.6). The TCRP Synthesis 17, *Customer Information at Bus Stops*, is a good reference for a public agency seeking to begin or improve a bus stop information program. Also, TCRP Report 12, *Guidelines for Transit Facility Signing and Graphics*, is a comprehensive guide that will help transit operators use effective and appropriate signs and symbols for their facilities.



**Figure 3.6.** A shelter on Market Street with staggered seating, a map and schedule display, and a detached ad kiosk. Source: San Francisco Municipal Railway (Muni).

Section 7.94 of the Los Angeles bus shelter contract, titled “Bus Route Information,” states that the “contractor shall work with [MTA] and the municipal lines to include bus route information and schedules with the shelter.” In reality, few bus shelters have such information, and there are no incentives for the shelter provider to initiate this process. This leaves the responsibility with the city and transit providers, who have not responded well to the task.

The amount of information needed to make a transit trip is considerable—what route to take, where the bus goes, where the bus stops, when the bus arrives, and how long the trip will take.<sup>24</sup> For this reason, the lack of useful information at bus stops can actually be a barrier to increased transit ridership. Studies done by the Denver Regional Transportation District (RTD) concluded, “the lack of specific schedule information was the largest deterrent for first-time bus riders to try the bus.”<sup>25</sup> Furthermore, research performed in Wisconsin in the mid 1970’s showed that new information signs led to a small increase in transit use among both existing and new customers. Also, it appeared that people began to rely more on bus stop signs, rather than bus drivers, for their information. Agencies have reported the following benefits realized by providing information at bus stops:<sup>26</sup>

- Increased awareness and usage
- Better image
- Rider satisfaction
- Improvement in making transfer connections
- Improvement in discovering alternative routes for trips
- Improvement in identifying routes serving each stop
- Complaints reduced
- Increased and more frequent ridership

Professionals in urban design use a measure known as “target value” to rate the recognizability of icons. Signs that use colors, shapes, or symbols with high target values can more easily attract people’s attention in order to provide them with the necessary information they need to complete a transit trip. People traveling in an unfamiliar place, such as an airport or transit station, are under a certain amount of stress. They rely on icons to guide their travel towards an exit, towards a boarding platform, and so on. Lynx, a transit operator in Orlando, Florida, uses a lynx paw to identify bus stops. Travelers looking for a bus stop know to look for this icon.

A recent proposal to the MTA suggested a hierarchy of bus stop signs based on ridership.<sup>27</sup> Stops with low boardings would receive a basic or intermediary sign, while stops with over 1,000 daily boardings would receive an enhanced bus stop sign. The icon, route number, and destination would be placed at the top of the sign; large lettering and height would make the sign visible from at least a block away. Color would be used to indicate the type of service, such as local, limited, or express. Maps and detailed schedule information would be provided at eye level. Although the MTA has rejected this proposal, nevertheless it shows that sufficient knowledge exists regarding the type of

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<sup>24</sup> Dobies, John. *Customer Information at Bus Stops, Transit Cooperative Research Program Synthesis of Transit Practice 17*. Washington, DC: National Academy Press, 1996.

<sup>25</sup> *Ibid.* Page 29.

<sup>26</sup> *Ibid.*

<sup>27</sup> Loui, Anthony of Anthony Loui Design. In-person interview, May 8, 1999.

information that can be most helpful to transit users. This knowledge needs to be better shared among transit agencies.<sup>28</sup>

The 1990 ADA provides minimum requirements for bus stop signage, but does not set requirements for bus schedules, time tables, and route maps posted at the stop. It mainly specifies that signs have a background that contrasts well with the lettering, and that the lettering be at least 3 inches high. TCRP Report 12 gives an overview of the ADA guidelines governing transit facility signing.

A few transit operators have begun using electronic displays at bus stops. Video displays, electronic signage, and programmed audio announcements are the common techniques used.<sup>29</sup> Tampa's Hillsborough Area Regional Transit Authority (HART), Denver's RTD, and Portland's Tri-Met use some version of electronic signage and video displays to provide travelers with the next few scheduled arrival times by route. HART uses an automatic vehicle locator (AVL) system that tracks the progress of buses along a downtown transit mall and provides real-time information on delayed arrivals. Although the program has experienced technical difficulties, vandalism has not been a problem. The Federal Transit Administration (FTA) is researching the application of traveler information systems through its Advanced Public Transportation Systems Program (APTS). Also, TCRP is conducting a project to provide a review and critique of real-time transit information systems. Advances in technology have made such information systems feasible, although the real benefits of such systems in terms of ridership and patron response have not been conclusively established.<sup>30</sup>

Trash bins, telephones, and benches are other important amenities. Trash receptacles may help reduce litter at bus stops, and telephones can be useful for obtaining real-time transit scheduling and other information, as well as emergency help. Explicit policies should be established for the use of public phones at bus shelters. Phones that have been put in place in the past in Los Angeles have been removed because of complaints that they generate illegal activities such as drug dealing. The phones may also cause increased loitering at bus stops. Some mitigation measures are: separating the phone and the bus stop area when possible; removing the return phone number on the phone; limiting the phone to outward calls only.<sup>31</sup> Phones could also be restricted to only allow calls for bus information and police, fire, or paramedics. Los Angeles maintains a separate contract for stand-alone bus benches, and the design, placement, and safety recommendations provided here apply to benches as well. At many stops, benches are placed directly against the curb edge, making it dangerous for bus patrons to use.

***Recommendation 9: Coordinate with the shelter provider, the MTA, and other transit agencies to design and implement a plan to install maps and schedules at all bus shelters.***

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<sup>28</sup> Dobies, John. *Op cit.*

<sup>29</sup> *Ibid.*

<sup>30</sup> *Ibid.*

<sup>31</sup> Texas Transportation Institute, Texas A&M University. *Op cit.*

## Safety

Although the presence of a lighted bus shelter may enhance the safety of bus patrons, poor shelter design and placement can also negatively influence people's perceptions of safety at a stop. The *Guidelines for the Location and Design of Bus Stops* states that coordination with existing street lighting improves visibility and enhances safety.<sup>32</sup> Bus shelters should allow clear visibility of and to people waiting inside, especially with regard to buses and bus operators. Low-growing shrubbery are preferred over trees, and deciduous shade trees are preferred over evergreen trees.

Surrounding land uses are also important. Research on crime settings at the micro scale shows that the possibility of surveillance by bystanders, and signs of care that suggest there is some form of guardian nearby, can have a strong effect in discouraging crime.<sup>33</sup> Nearby stores and businesses that attract pedestrian activity can enhance surveillance of the bus stop, while abandoned lots or buildings in disrepair create a sort of "dead space" that does not promote a feeling of safety. Additional features of the built environment that can prevent crime include places to sit outdoors, actual and symbolic barriers, and territorial symbols.<sup>34</sup>

A recent study of the ten most dangerous bus stops in Los Angeles suggests several characteristics that can contribute to crime at bus stops: bad neighbors (land uses such as bars or liquor stores that can be considered crime generators), desolation and lack of surveillance, crowding, broken windows (empty lots, dilapidated buildings, vacant stores), and easy escapes.<sup>35</sup> The study concludes that bus shelter design can specifically address the crowding issue: design elements such as bus nubs (discussed previously) and/or metal bars can separate pedestrian through-traffic from the bus stop area. Furthermore, many cities have implemented adopt-a-shelter programs in which local residents and businesses work with the shelter provider to protect and maintain bus shelters. This "neighborhood watch" effect provides the surveillance and care that researchers suggest can deter crime. In Los Angeles, OSI indicates they are interested in implementing such a program.

### ***Recommendations:***

***10.) Provide all shelters with good lighting and visibility. Ensure that design elements do not compromise the safety of bus patrons.***

***11.) Work with the shelter provider to implement a citywide adopt-a-shelter program to improve shelter maintenance and safety.***

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<sup>32</sup> *Ibid.*

<sup>33</sup> Brantingham, P.L. and P.J. Brantingham, "Environment, Routine, and Situation: Toward a Pattern Theory of Crime," as cited in Loukaitou-Sideris, Anastasia. "Hot Spots of Bus Stop Crime: The Importance of Environmental Attributes," *Journal of the American Planning Association*, forthcoming.

<sup>34</sup> Perkins, D.D., et al. "The Physical Environment of Street Crime," as cited in Anastasia Loukaitou-Sideris. *Op cit.*

<sup>35</sup> Loukaitou-Sideris. *Op cit.*

## Design and Public Art

Shelters have the visibility to serve as markers of the transit system and the communities that the system serves. For example, the design, colors, and materials can be used to identify specific neighborhoods by reflecting the surrounding architectural styles. At the same time, common characteristics of the shelters can be used to identify and unify the transit system as a whole. Bus shelter design can be used strategically to attract riders, advertise a clean and efficient transit system, improve public perception, and provide bus patrons with functional and aesthetically pleasing places to wait.

A bus stop improvement program under consideration by Foothill Transit proposes a shelter design that maintains a standard framework and roof structure which, combined with a signage system, allows for the identification of the transit system throughout its service area. However, the cities within the service area would be allowed to choose from a list of colors and materials in order to customize the bus shelters within their boundaries. In this way, the bus shelters can clearly identify Foothill Transit as a “comprehensive and consistent system while also identifying the individual cities which that system serves.”<sup>36</sup>

In Philadelphia, bus shelters display beautifully designed posters that describe the history of nearby buildings, people, and events.<sup>37</sup> This is an aesthetic way to publicize the historic significance of the neighborhood, promote local pride, and advertise neighborhood attractions (especially if the area is popular with tourists). Some cities take this a step further and display specialized maps of the area in the vicinity of the bus shelter so that unfamiliar riders can find their way. In the recently opened Westside MAX, an extension of Portland, Oregon’s light rail line, 23 artists created over 100 pieces of artwork for 20 new rail stations. Each station has its unique theme, guided by the artists’ impressions on the character of each station neighborhood. The Tri-Met web page, [www.tri-met.org](http://www.tri-met.org), has an excellent description of each of the stations, including discussions of the local history, and the station design, theme, and art. Such an approach can be used to enhance bus shelters as well.

Another way to integrate a bus shelter with its surrounding community is to use public art. Public art is a common component in many of today’s major transit systems. Agencies such as New York MTA, King County Department of Transportation (Seattle), and Los Angeles County MTA have some version of a percent-for-art program in which a small portion of the construction costs for transit stations are dedicated for the inclusion of public art. A similar program may be applied in Los Angeles to major bus stops such as transfer points. Public art can personalize a bus shelter for the people who use it, get local residents involved and build a sense of ownership. Art can improve the public persona of cities and transit agencies, and even attract new riders.

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<sup>36</sup> Foothill Transit and Public Works Design. *Foothill Transit Bus Stop Improvement Program – Draft Final Report, July 1995*. Page 30.

<sup>37</sup> Suisman. *Op cit.*

In Corpus Christi, Texas, the Regional Transportation Authority (RTA) has made its bus transfer centers important elements of its public image and critical agents in attracting riders.<sup>38</sup> The RTA invited residents to help with decorative art projects at two new bus transfer centers, which resulted in charming and comfortable centers, a strong sense of community ownership, and plenty of good publicity. The art projects involved the decoration of about 3,000 ceramic tiles by local residents. The FTA funded 80 percent of the station costs, while local funds paid for the tile projects. A local arts organization coordinated the tilemaking and worked with architects on the construction of the stations while local artists hosted art workshops in the city to attract resident participation.

King County Metro, in the Seattle, Washington area, has made its shelters more welcoming by giving local residents, schoolchildren, and artists a chance to design and paint their own bus shelter murals.<sup>39</sup> People or groups interested in creating a mural must choose a shelter and submit a design, which is reviewed by Metro. Once approved, Metro provides the wood panels and paint, and the artists have about three months to complete their designs. The total cost excluding installation is about \$600 per mural, and the murals are coated to protect them from the elements and graffiti. The project began as a small endeavor with only a few staff and was funded by local businesses. Metro's percent-for-art program also initially provided funding and staff time, but today the program has a \$65,000 budget from the Bus Shelter Comfort and Safety Program. Students, senior citizens, and professional artists have been involved, and research is underway to study whether the murals have reduced graffiti. All in all, the program has been successful in improving both neighborhood spirit and Metro's relationship with the community.

Building artist-designed shelters requires a considerable amount of coordination, neighborhood support and involvement, a public relations effort to attract local artists, and perhaps sponsorship by a civic organization.<sup>40</sup> However, numerous examples across the country show how transit agencies can successfully engage artists, leaders, residents, and businesses in changing and improving how transit facilities are designed.<sup>41</sup> The examples presented here were drawn from an FTA publication titled *Art in Transit...Making it Happen*. It presents numerous case studies in which art has been successfully integrated into a transit project, and provides valuable "lessons learned" to aid other cities and transit agencies. The FTA has shown that it is willing to provide funding for art programs:

This circular...reaffirms that costs for design and art are eligible costs for FTA-funded transit projects, provides guidance for the incorporation of quality design and art into transit projects funded by FTA, and, within recommended parameters, leaves the allocation of funds for art to the discretion of the local transit entity.<sup>42</sup>

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<sup>38</sup> Federal Transit Administration, US Department of Transportation. *Art in Transit...Making it Happen*, 1996.

<sup>39</sup> *Ibid.*

<sup>40</sup> Texas Transportation Institute, Texas A&M University. *Op cit.*

<sup>41</sup> Federal Transit Administration, US Department of Transportation. *Art...in Transit*, 1995.

<sup>42</sup> FTA Circular 9400.1A, *Subject: Design and Art in Transit Projects*, June 1995



A final important note is that the functionality of a bus shelter should never be sacrificed for aesthetics.<sup>43</sup> The art should never detract from the many purposes of the bus shelter, most important of which is to provide protection from the elements. Artistic elements should never obstruct pedestrian movement, limit visibility or sight lines, or hinder the ability of all types of people from completing their transit trip.

**Recommendations:**

*12.) Establish a shelter design standard that maintains elements of consistency and unity, but which allows Los Angeles neighborhoods to choose unique elements that identify and distinguish their communities.*

*13.) Implement a program to involve local artists and residents in the use of public art at bus shelters. The type of art can range from simple murals, paintings, and posters at small bus stops to much larger works at major transfer points. Initial funding may be provided by the revenue generated from shelter advertising, and from FTA support.*

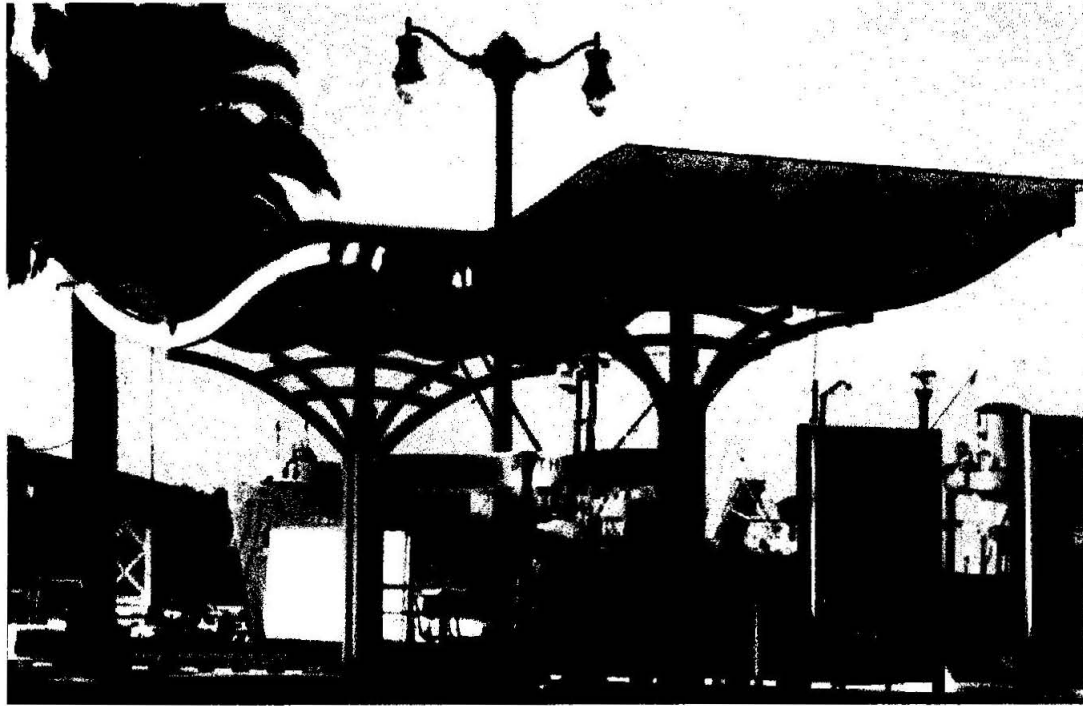
**Custom Shelters**

Cities recognize that certain districts and neighborhoods will benefit from the construction of distinctive, custom transit shelters that reflect and blend with their surroundings. The Metropolitan Council in Minneapolis, Minnesota has worked with a landscape architecture and planning firm to adopt a unique set of program criteria for designing its downtown transit stops. Instead of establishing a particular design solution, they have designed a *methodology* for architectural design that considers the existing conditions at the stop, the relationship with nearby property owners, and the materials and aesthetic of surrounding architecture. Site characteristics include the system significance of the transit stop, queue patterns of the riders, need for weather protection, materials, information, and amenities. The methodology concludes with a design, review, and approval process that should produce functional shelters that are also pleasing to look at.

San Francisco chose to build custom transit shelters at light rail stations in its Port district, using design to mimic the surrounding natural elements (Figure 3.7). Although the city's shelter provider did not design the shelters, it has agreed to maintain them in exchange for advertising rights.

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<sup>43</sup> Texas Transportation Institute, Texas A&M University. *Op cit.*



**Figure 3.7.** A rail station in San Francisco's Port district shows how a custom shelter can reflect the surroundings and add elements of architectural style to transit. Source: San Francisco Muni.

The current bus shelter contract effectively prohibits the construction of custom shelters by public or other private entities. Section 1.1 of the contract states:

The City hereby grants and awards to the Contractor the exclusive right to construct, install, operate and maintain a maximum of 2,500 transit shelters (the "Shelters"), located throughout the City, along with the exclusive right to display advertising materials on the shelters, in accordance with the terms of this Contract...

This means that the current shelter provider, OSI, must give approval for the construction of custom-built shelters that are part of city streetscape improvements, or that are part of private residential or commercial developments. In other words, it has the first right of refusal. If there is potential advertising space, the shelter provider will most likely prefer to construct the shelter itself.

In Los Angeles, streetscape improvement projects often seek funding from the MTA for projects that include bus shelters. However, any funding that the MTA approves for projects that include shelter construction could be wasted if the shelter provider refuses to grant permission to build the shelter.<sup>44</sup> In some sense, this highlights the conflicts between how land use planning and transportation planning are carried out. While individual cities control land use, the scale of transportation planning extends beyond city

<sup>44</sup> Rojas, James and Patricia Chen, Los Angeles County Metropolitan Transportation Authority. In-person interview, December 10, 1998.

boundaries. Unfortunately, land use and transportation are inextricably linked. The coordination between the city departments handling the placement of bus shelters and those directing streetscape projects must be improved. Coordinating shelter construction with a streetscape improvement would allow bus stops to be fitted with important amenities that will add significance to the area as a trip destination.

With regard to private developments, the benefits of collaboration between private developers and transit service providers on bus shelter installation are numerous.<sup>45</sup> Transit considerations can be considered in the development from the beginning, and the new development may become more transit-friendly in the process. This is beneficial in reducing or mitigating any adverse impacts on automobile traffic and improving the overall accessibility of the development. For commercial developments, easy transit access can attract customers and potential employees. Furthermore, developer-designed shelters deserve recognition for achieving aesthetic coordination with nearby land uses.<sup>46</sup> These shelters are often designed to imitate the forms, colors, and materials from the development to create unity and similarity. This can be a cost-effective way of providing aesthetically unique and interesting shelters.

***Recommendation 14: Facilitate the process by which bus shelters can be installed in coordination with public and private development projects that involve bus stops. The city can either:***

- a) Specify a non-exclusive contract with the shelter provider (which has been done recently by the city of Burbank);***
- b) Set aside a specific number of shelters per year that can be custom-built by entities other than the shelter provider;***
- c) Establish a process or set of conditions by which the shelter provider must cooperate with other city departments or private developers in installing custom bus shelters.***

### **Conclusion: Shelters as Focal Points of Neighborhood Development**

The City of Los Angeles should not build custom shelters for the sake of building custom shelters, nor should it integrate public art with its shelters for the sake of public art. Building well-designed shelters, allowing custom shelters to be built, and the use of public art at bus shelters to engender community involvement and support, all draw from a larger issue of the coordination of public transit with community development, or lack thereof. Bus stops and bus shelters in Los Angeles are rarely integrated into their immediate surroundings. Yet, as the discussion below suggests, this integration is often a successful way of stimulating and supporting neighborhood development.

A recent TCRP report on transit and livable communities states, "Historically, transit has been the central organizing feature around which communities were built and

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<sup>45</sup> Texas Transportation Institute, Texas A&M University. *Op cit.*

<sup>46</sup> *Ibid.*

functioned.”<sup>47</sup> Today, this is clearly seen in the effects that a new freeway has on nearby economic and residential development. Transportation has a strong impact on land use and community livability concerns such as crime, job access, housing, the environment, education, and unchecked growth and congestion. Many people have come to believe that designing cities for automobiles has diminished the quality of life as much as it seems to have improved it:

Intrusive roads have created barriers that disrupt communities and erode their physical and social cohesion. At the same time, public transportation options are often viewed as inadequate alternatives. As a result, many communities end up with transportation networks that simply pass through them, without responding to community needs, relating to their surroundings, or reflecting local character.

[Yet, a] focus on place-making can bring the ridership goals of the transit agency and the livability goals of the community together. For transit operators, this means that each decision made to provide service, locate a station or stop and maintain that station should be made in the context of how transit can contribute positively to the experience of that place....[T]ransit decisions should be made so as to complement and help realize a community's vision and plans.<sup>48</sup>

The TCRP Report 22, *The Role of Transit in Creating Livable Metropolitan Communities*, was produced by Project for Public Spaces (PPS) and is an excellent resource for transit agencies seeking to form partnerships with the communities they serve. The report presents a series of case studies that depict how transit strategies that involve design, service, land use, and “traffic-calming” can impact and promote livability. Some of the major points presented in the report are summarized here.

Transit is about going *somewhere*, and transit destinations can help to create community places by supporting *existing* spaces and providing a place for *new* activities and services. Transit draws pedestrians to an area, and can alleviate traffic congestion. Transit supports local business development by bringing both customers and employees to an area. A transit destination such as a bus stop can be a focal point for a number of activities and services, as well as a link to a region-wide transit system. These activities and services include businesses and service establishments, like open-air fresh produce markets, bank offices, coffee shops, health clinics, and child care centers. A well-designed bus shelter can serve as the gateway to the destination for transit users, and provide information about the nearby businesses, a map, as well as bus schedules and timetables.

Transit can act as a catalyst for community participation in downtown and neighborhood renewal programs. Such efforts involve the coordination of public and private sectors, city agencies, transit authorities, and the community. The PPS report cites LANI as an example of using bus stops as the focal points from which to rebuild disinvested neighborhoods. LANI is centered on the involvement of local residents, businesses, and property owners who are responsible for planning and implementing their own

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<sup>47</sup> Project for Public Spaces. *Op cit.* Page 6.

<sup>48</sup> *Ibid.* Pages 6 and 7.

improvement projects. Each of the eight neighborhoods participating in LANI focused on projects such as the installation of bus shelters and information kiosks, aiming to make their commercial streets more attractive and facilitate community cooperation. Gannett, the previous shelter provider in Los Angeles, furnished the bus shelters along with a donation and maintenance agreement. So far, LANI has been successful in getting the communities involved in creating places that are focused on transit and appealing to pedestrians, characteristics that were unheard of before in these areas. In particular, Leimert Park has raised over \$1 million to pay for street work, lighting, landscaping, and attracting a mixed-use retail and office development project.

A city bus shelter program is not simply about advertising or revenue or expediency. It can help improve public-private relations, increase transit use, and promote pedestrian- and transit-oriented development that is more amenable to concerns about livable communities. In order to do this, public agencies, community groups, and the shelter provider should cooperate and work together towards this mutual goal. Good shelter design requires an amount of effort and responsibility that has been unseen before in the Los Angeles bus shelter program. On the bright side, this means that there is tremendous potential for improvement, and the first few steps that are taken in the right direction can hopefully lead to large benefits overall.

#### 4. CONTRACTS

This section presents a summary of bus shelter contracts in Burbank, Long Beach, and San Francisco, California, and two recent RFPs in Boston and New York for street furniture franchises. The contract terms are presented in Table 4.1. In particular, this section analyzes the five documents for provisions regarding bus shelter design and location, payment from the contractor to the city, and advertising restrictions.

**Table 4.1.** Contract terms for three shelter contracts and two recent RFPs.

| City          | Contractor       | Term                  | Shelters | Revenue Received by City   |
|---------------|------------------|-----------------------|----------|--|
| Burbank       | Eller Media      | 10 years<br>Nov. 2008 | 65+      | First year: 20% of ad revenue;<br>\$175 minimum per shelter per month              |
| Long Beach    | OSI              | 6 years<br>Dec. 2003  | 240+     | First year: 14.45% of ad revenue;<br>\$140 minimum per shelter per month           |
| San Francisco | OSI              | 20 years<br>Jun. 2007 | 1,100+   | covers administrative costs; \$150 per<br>shelter per year, adjusted for inflation |
| Boston        | (RFP in process) | 20 years              | 250+     | competitive bid  |
| New York      | (RFP cancelled)  | 20 years              | 3,300+   | \$5,000,000 annually   |

This section also outlines notable provisions which may deserve consideration should Los Angeles decide to seek a new bus shelter contract. With the exception of the San Francisco contract, these documents have been produced within the last three years and provide a current picture of the revenue and amenity packages that cities have requested and received from their street furniture providers.

**Recommendation 15:** *If Los Angeles decides to establish a new shelter contract, it should include the following items in its request for proposals.*

- **Innovation in design.** Shelter providers are required to design adaptable shelters that accommodate various sidewalk widths, respond to distinctive neighborhood character and architecture, and reflect historic districts and landmarks.
- **Increased payment packages and competitive bids.** Cities are receiving larger percentages of the shelter providers' gross advertising revenue, usually in the form of a percentage of the revenue or a guaranteed minimum amount per shelter. Cities also require companies to offer a competitive bid, thereby potentially maximizing the revenue they will receive.
- **Strict construction timelines.** Shelter providers are required to build and install the minimum specified number of shelters in a given time period, typically one year.
- **Ownership after contract expires.** Shelter providers appear willing to transfer ownership of all structures built under the contract term to the city, with no compensation.
- **Non-exclusive rights.** Shelter providers appear willing to enter into contracts that grant a non-exclusive right to build shelters and provide advertising. This allows cities greater freedom and flexibility for a number of reasons, in particular the ability to develop other street improvement projects on its own or with another agency.

- **Advertising restrictions.** Cities outline strict advertising restrictions with respect to both number and location. For example, the City of Vancouver does not allow advertising on bus shelters located in residential neighborhoods.<sup>49</sup> In Boston, shelter providers will be required to clearly show the financial need for additional advertising panels.
- **Public service advertising.** Cities require minimum percentages of advertising space to be reserved for free public service announcements and public art displays. While the current Los Angeles shelter contract calls for one non-commercial shelter for every 100 commercial shelters, San Francisco requires a ratio of one non-commercial shelter for every two commercial ones. Perhaps more importantly, *dedicated city staff* work to ensure that this display space is fully utilized.
- **Participation in specific improvement programs.** Cities include specific development or improvement projects in their contracts, and require that the shelter provider participate in such projects by designing and installing shelters and maintaining them. Shelter providers are also required to participate in various citywide projects that involve real-time transit information displays and electronic information kiosks.
- **Clear identification of the duties and goals.** Cities clearly identify the various public departments involved in administering the bus shelter contract, as well as their specific tasks. Cities are also requesting that the companies responding to the RFP identify their staff who will be working on the project. Laying out the exact duties and goals of the various people and departments involved will prevent future confusion over the contract terms.
- **Dedicated staff and independent committee to oversee operations.** Cities benefit from dedicated personnel and independent committees (consisting of members from city agencies and the community) whose functions are to oversee the design, construction, and maintenance of the street furniture. These “oversight” committees can monitor and evaluate both the city and the shelter provider on their performances in upholding the terms of the contract. They can also provide a voice for members of the community that benefit from bus shelters.
- **Dialog with the potential and final contractors.** Representatives from both Boston and New York met with street furniture providers during the development of their RFPs, in order to get a sense of what companies were willing to offer. After the release of their RFPs, both cities held pre-proposal conferences to allow prospective respondents to ask questions and clarify issues. This open dialog between public and private agencies facilitated the negotiation and bidding process and will no doubt serve Boston in good stead as it begins its new street furniture program.

The following sections provide more detailed descriptions about the contracts and RFPs summarized above.

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<sup>49</sup> Fisher, Ian of the City of Vancouver Transportation Division. E-mail correspondence, February 9, 1999.

## **Burbank**

Burbank has an existing bus shelter contract with OSI. In November 1998, the city entered into another contract with Eller Media, based in Orange County, to provide and maintain a minimum of 65 bus shelters for ten years, although the contract can be extended another ten years. The contract grants Eller a *non-exclusive* license to build shelters and sell advertising space on those shelters.

### Shelter Design

The contract specifies a standard shelter design similar to that for Los Angeles. Shelters have a domed "hat," or roof, and must comply with ADA requirements.

### Shelter Locations

The initial 65 locations for shelters were selected based on ridership data from the MTA, sidewalk width, and line-of-sight requirements. The list may be adjusted once the sites are further evaluated and the permitting process begins. The contract requires Eller to build all of the initially approved shelters within one year. For each additional year, the city can require Eller to build up to 5 more shelters, or more if both parties agree. Eller must notify nearby residential and business properties within 100 feet of a proposed shelter. Such property owners may object to the installation of a shelter, and the matter will be decided by the director of the Public Works Department.

### Payment

The fee schedule is perhaps the most beneficial aspect of the contract. The city receives the greater of two amounts: a guaranteed minimum per month, and a percentage of gross advertising receipts. Burbank is guaranteed a minimum of \$175 per shelter per month for the first year. This minimum amount increases by \$5 per year, until it reaches \$220 in the tenth and final year of the contract. In addition, Burbank is guaranteed a percentage of gross receipts based on the shelter occupancy rate. At a 70% occupancy rate, meaning 70% of the shelter advertising panels actually contain advertising, the city receives 20% of Eller's total annual gross receipts. For each 10% increase in occupancy, the city's percentage share increases by 2%. Eller is required to pay the first two years in advance, and must file yearly financial statements showing gross receipts.

### Advertising Restrictions

Burbank reserves 5% of total advertising space to be used by the city for free public service announcements.

## **Long Beach**

Long Beach has entered into a contract with OSI to provide and maintain a minimum of 240 shelters for 6 years. The contract grants OSI an exclusive right to build shelters and display advertising on them.



### Shelter Design

All shelters are required to meet ADA standards. The contract specifies a standard shelter design similar to those in Los Angeles, with blue domed "hats," or roofs. OSI is required to display bus route information in and around each shelter, as well as the name of the nearest cross street on both ends of the shelter roof using ADA-sized lettering.

### Shelter Locations

The Public Works department approves all shelter locations, and the initial 240 shelters must be installed within one year. OSI is encouraged to place additional shelters at sites other than bus stops, such as taxi stands.

### Payment

Long Beach will receive the greater of two amounts from OSI: 14.45% of gross advertising revenue, or a guaranteed minimum amount per shelter per month. The guaranteed amount is \$140 per shelter per month in the first year, and rises to \$170 in the sixth and final year of the contract. With each payment, OSI is required to submit a statement identifying the location of each shelter, the advertiser(s) on that shelter, and the amount of gross advertising revenue related to each panel.

### Advertising Restrictions

At least 10% of all advertising panels, based on the total square feet of available panels, will contain public service advertising at no charge and will be distributed evenly throughout the city. A single bus shelter in the East Village Arts District will have display cases for two-dimensional artwork measure 4 feet by 6 feet.

## **San Francisco**

San Francisco has maintained a fairly successful bus shelter contract since 1987, providing a total of over 1,000 shelters. The initial contract was awarded to Gannett Outdoor, which was bought by Combined Communications Corporation (CCC) in 1991. CCC was itself succeeded by OSI in 1997, and the contract is set to expire in June 2007. The contract grants OSI the exclusive right to build and maintain advertising shelters.

There are many aspects of the San Francisco contract that are unique and which may contribute to the success of its program. Of particular note is a specific clause in which the city and contractor agree to maintain a continual dialogue and exchange of information to assure successful implementation of the program. They agree to use advertisements and technology to enhance the appearance and image of bus shelters in the city. The contract has been amended three times, in 1990, 1994, and 1998, each time gaining significant improvements to the shelter program.

### Shelter Design

Shelter designs are approved by the Art Commission and must conform to minimum shelter dimensions. The contract stresses adaptability for the shelter design to fit on

sidewalk widths of 7 feet 6 inches to 10 feet and grades up to 15%. Shelter lengths must be expandable beyond 12 and 14 feet, and be adaptable to 8 or 9 foot sidewalks in residential neighborhoods. Shelters must provide for wheelchair access with a 30-inch minimum clearance, and they must contain a lighted panel that holds system route map and schedule information. Separate designs are required for lower Market Street bus stops to reflect that area's commercial design and architecture. All Market Street shelters have a separate 3-sided advertising kiosk located no more than 25 feet away. The side facing away from the street is used solely for art posters selected by the Art Commission.

#### Shelter Locations

The contract originally specified a minimum of 350 shelters, but the third amendment extended the minimum to 1,100 shelters, with a maximum of 1,250. Initial bus shelter locations were selected based on ridership, transfer points, major trip generators, and locations experiencing severe weather conditions. The city, through the Public Utilities Commission and Muni, determines all shelter locations and holds public hearings for each group of twenty proposed shelter sites prior to giving approval.

#### Payment

The contract originally did not grant San Francisco a share of the advertising revenue, nor did it grant a guaranteed minimum payment per shelter per month. Instead, the contract required that the contractor pay the city at least \$150,000 per year minimum to cover the costs of administering the shelter program. This amount was adjusted annually using the CPI. The contractor is required to submit an annual financial report prepared by an independent public accountant.

The first amendment to the contract, approved in 1990, split the annual payment of \$150,000 between the Public Utilities Commission and the Art Commission. The Art Commission share provides programs and opportunities for young artists. In exchange for the right to build shelters on lower Market Street, the contractor was also required to pay an additional \$50,000. Each following year that amount would increase by either 5% or the percentage increase in the contractor's advertising rental rate, whichever is higher. These payments support the maintenance of new and existing public art on Market Street.

In the third amendment, the calculation for the annual payments to San Francisco was changed to \$150 per shelter per year in 1987 dollars, or about \$215 in 1998 dollars. With about 1,100 shelters, the city should have received roughly \$236,500 in 1998. OSI was also required to pay an annual fee of \$100,000 to the Public Transportation Department for marketing purposes for Muni. By 2001 this fee will increase to \$125,000, and by 2006 it will be \$150,000. In addition, the amendment required a \$50,000 one-time payment to the Mayor's office.

#### Advertising Restrictions

The contract requires a ratio of two advertising shelters for every one non-advertising shelter. The city can request more non-advertising shelters, but must pay the contractor annually for the added maintenance. OSI is allowed to use unsold advertising space for

its own advertising and promotion, and it can provide space for public service announcements.

#### Other Notable Provisions

The initial contract required Gannett to remove and replace existing shelters specified by the city. The city could also designate architecturally significant shelters that Gannett could not replace but had to maintain.

The second amendment to the contract requires the contractor to maintain several boarding platforms built by San Francisco for the light rail line serving Stonestown Station. These new shelters contain 8 double-sided display cases that allow for advertising provided the ads faced a commercially zoned district. The rest of the display cases are reserved for city use and the display of art, designs, and graphics. Space for Muni route maps and schedules are required at these platforms. The second amendment extends the shelter contract to cover not only typical bus stops but also light rail boarding platforms and median boarding islands.

The third amendment to the contract extends OSI's advertising rights to cover the San Francisco Port. The amendment also specifies these terms:

- Reach the minimum of 1,100 shelters in the city within one year.
- Design and furnish at its sole expense 30 posters, twice a year, as a public service and information campaign in the Bay Area to promote the Port of San Francisco.
- Each year beginning in 1997, pay San Francisco \$5,000 for Talking Signs remote infrared transmitters to be installed at shelter locations chosen by the city.
- Build shelters adaptable for street boarding islands 5 feet 6 inches or wider.
- Install telephones at 400 shelters by 1998.
- Participate in demonstration projects using global positioning systems (GPS) by allowing vendors to outfit shelter with equipment. This project will provide Muni patrons with real time transit information.

The third amendment extends the contract to 2007. However, beginning in June 2001, San Francisco has the right to terminate or request an assignment of the contract, as long as it gives OSI a one-year notice. If the city decides to seek out a new contractor, OSI may compete for this contract.

#### **Boston RFP**

Boston issued its RFP for a coordinated street furniture franchise in November 1998. In many ways the RFP emulated the recently cancelled New York RFP for a similar franchise in that city. The proposals were due in January 1999, and the 20-year contract will be awarded some time after June. Phase I installations are outlined in the RFP, and Phase II will be negotiated after the program is implemented. The RFP received a good

response from national and international firms: 12 companies picked up the RFP, 4 responded, and one was disqualified.

The RFP calls for a coordinated street furniture program consisting of bus stop shelters (minimum 250), automated public toilets (minimum 8 in phase I), news kiosks (pilot program), newsstands (minimum 4), and electronic information kiosks (minimum 9 in phase I, 13 phase II). Special projects are also included, such as bus stations in the city's Washington Street corridor. Upon expiration of the contract, the structures will become the property of the city without compensation to the franchisee. The RFP provides detailed permit procedures, identifying the departments involved and their specific roles.

The respondents' proposals must contain a statement of qualifications and experience, consisting of a narrative, references, organization chart and team members, and financial statements. Respondents must provide a design and manufacturing description, drawings, and scale models. Regarding maintenance and operation, respondents must provide a description of services and organization proposal. Finally, respondents must provide a financial analysis and compensation proposal detailing cash flow and an offer of compensation.

The evaluation will be conducted by a committee comprised of personnel from the City and the Boston Redevelopment Authority, private sector representatives from financial and design services industries, advertising and tourism industries, and from broader community constituencies. The franchise will be awarded to the franchisee who makes the most advantageous proposal to city. *Threshold* evaluation criteria are used to identify "responsible" franchisees as a first cut. The final *comparative* evaluation will be based on qualifications and experience, proposed design and manufacturing qualifications, maintenance and operations qualifications, and financial analysis and compensation.

#### Shelter Design

The RFP clearly states the objectives of the street furniture franchise:

- Street furniture should be well designed and placed to consolidate and prevent street clutter.
- Whenever possible, the separate furniture at a single site should be integrated.
- The design "should be respectful, without mimicking, the various unique physical characteristics of Boston's neighborhoods and historic or special use districts in which they will be sited. The challenge is to develop a design concept that is forward looking for the individual structures that creates a more cohesive streetscape while responding to distinct neighborhood and district characteristics."<sup>50</sup>
- The system should be designed to provide a sense of citywide cohesiveness, while still recognizing specific site characteristics.

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<sup>50</sup> Boston Redevelopment Authority. *Coordinated Street Furniture Program Request for Proposals*, November 1998. Page 3.

- Goal to provide residents and visitors with amenities in places that are lacking these services, and that allow suitable and responsible placement.
- Limiting the number of advertising panels is a high priority. Advertising must be sensitive to the requirements of specific neighborhoods and adjacent uses.
- The highest standard of care is required. The quality of maintenance and how it is carried out over the period of the contract is important.
- All structures should meet accessibility requirements of local, state, federal, and universal standards.

The RFP states that the issues of siting and design are interdependent. The responding companies are asked to propose a design concept that reflects the distinct characters of the neighborhoods, yet at the same time provides a sense of unity to the whole system. Three approaches are suggested: a single design with flexible parts; several different and distinct designs; or a completely new and unique option. All structures must be “functionally efficient, secure, durable, and must accommodate people with disabilities.”<sup>51</sup>

The franchisee is encouraged to visit the proposed locations “to become familiar with the wide variety of built contexts that make up [the city] and [the] physical conditions in which the structures will be placed.”<sup>52</sup> The specified optimum sidewalk width is 10 feet, with a minimum of 7 feet. On 10-foot sidewalks, maximum shelter depth is 4 feet. On sidewalks wider than 10 feet, a shelter can be larger and even desirable if it provides more weather protection. Shelters can not obstruct views of historic places or buildings, and this can be solved through shelter design.

The RFP explicitly requires that bus shelters “must first and foremost provide meaningful protection from precipitation, wind and sun, and the number and placement and side enclosures shall be sufficient to accomplish this purpose. At the same time, ease of access for both functional and security reasons must be maintained.”<sup>53</sup> The RFP encourages flexibility and innovation in design to accommodate the wide variety of conditions and needs, including extra-large shelters for the busiest bus stops, and smaller shelters where space is limited. There should be at least two standard designs for provide maximum shelter on wide and narrow sidewalks. Each bus shelter must allow a minimum clear path of entry to the shelter of 4 feet, and a minimum clear sidewalk path of 3 feet.

All designs must include: adequate illumination of interior and adjacent sidewalk; seating which by design prevents reclining; area(s) on the structure for bus route maps, street maps, bus stop name and street identification, and other public information; and the capacity to install telephones. Respondents are encouraged to propose additional public amenities.

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<sup>51</sup> *Ibid.* Page 5.

<sup>52</sup> *Ibid.* Page 4.

<sup>53</sup> *Ibid.* Page 8.

### Shelter Locations

The distribution of street furniture, specifically bus shelters, focuses amenities in the downtown and the neighborhoods along identifiable urban corridors. Bus shelters will be located as part of a coordinated system of streetscape enhancement along highly trafficked bus routes, boulevards and in commercial centers that connect these neighborhoods and the downtown. Other individual locations may accommodate suburban routes or heavily used stops.

The franchisee will dismantle selected existing shelters and deliver them to the Massachusetts Bay Transportation Authority (MBTA). Installation of new shelters will be based on a schedule approved by city, designed to “afford a fair distribution of new Shelters throughout the City and based upon ridership and boarding data from the MBTA or from authorized private carriers.”<sup>54</sup>

### Payment

Respondents to the RFP must make the city an Offer of Compensation, or Franchise Fee. This offer must be stated as a fixed guaranteed annual minimum fee plus a percentage of the annual gross revenues the franchisee expects to earn. The competitive nature of this bid will no doubt encourage respondents to offer sizeable bids.

### Advertising Restrictions

The franchisee will be given the “exclusive interest” to place advertising on the street furniture structures, and to a limited extent, separate advertising kiosks. The city stresses that limiting the number of purely advertising panels is a high priority, and the franchisee must clearly demonstrate the financial need for purely advertising panels above and beyond those mounted on the street furniture structures.

Maximum advertising areas are set for each street furniture structure. Bus stop shelters have a max of 2 panels or 55 square feet of advertising (more possible for larger shelters). At locations with more than one street furniture, total allowable advertising space is 82.5 square feet. All structures are required to have one public service face. The franchisee is required to provide free space on all structures above and beyond the requirements for maps. This free space will represent a minimum 25% of total number of advertising faces, and a minimum 25% of total advertising square footage.

### Other Notable Provisions

Custom, large scale transit stations will be built under the special project on Washington Street’s Silver Line bus service. Stations will be 60 feet long and 12 feet wide, and will have seating, information panels, vending machines, rental space, phones, trash bins, communication panels, and utility connections. MBTA will pay for the capital costs of construction. A total of 14 transit stations and 6 bus stop shelters will have to be operated and maintained by the franchisee.

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<sup>54</sup> *Ibid.* Page 9.

The franchisee will participate in the MIS Electronic Pilot Program, which incorporates use of electronic kiosks to provide multi-media displays and information on city services, tourist services, events, sporting venues, weather, movies, hotels, tours, attractions.

### **New York RFP**

Currently, 2,500 shelters citywide are maintained by Outdoor Systems.<sup>55</sup> In January 1997, New York issued an RFP for a coordinated street furniture franchise. Mayor Giuliani cancelled the RFP in June 1998, expressing doubts that a comprehensive plan would be the best way to furnish the city's streets. The RFP had received good response, according to Anne Koenig, Director of Franchises for the New York City Department of Transportation. Four national and international firms responded to New York's RFP: Adshel, Inc., a subsidiary of the More Group of Britain that was recently acquired by Clear Channel Communications of San Antonio; JC Decaux New York, whose French parent company JC Decaux has street furniture franchises in over 1,000 cities worldwide, including San Francisco; Wall City Design, a division of Wall Verkehrrsanlagen in Berlin; and Transportation Displays Inc. (TDI), a division of CBS, partnered with Cemusa of Madrid.<sup>56</sup> All enlisted well-known architects and designers to produce new and innovative designs for the various street furniture items required in the RFP. The eventual winner could have expected gross revenues of \$1 billion to \$2 billion over the total contract term, against an investment of about \$100 million to build the structures, plus the cost of maintaining them.<sup>57</sup> Although the four firms were disappointed regarding the cancellation, they remained optimistic that their design efforts would inspire and benefit other street furniture programs.

The RFP called for a 20-year *non-exclusive* franchise to install, maintain, and operate bus shelters, self-cleaning automatic public toilets, public service structures (litter, recycling bins; computer information terminals), and newsstands in exchange for placing advertising on such structures. The evaluation committee would consist of representatives from Departments of Transportation, City Planning, Design and Construction. Technical advisors would also be present, from the Art Commission, Landmarks Preservation Commission, and so on. There would be a Design Advisory Committee consisting of representatives from architecture, urban design, real estate, advertising, and newspaper publishing. On the expiration of contract, all structures would become the property of city without compensation to franchisee.

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<sup>55</sup> Dunlap, David W. "A Mayor's Prerogative: Rethinking the City's Street Furniture," *New York Times*, Wednesday, January 28, 1998.

<sup>56</sup> Dunlap, David W. "Street Furniture Designs Stuck in Gridlock," *New York Times*, Sunday, August 9, 1998.

<sup>57</sup> *Ibid.*

### Shelter Design

The RFP called for 3,300 shelters (with a maximum 3,500) plus amenities: signage, seating, and public service information. Duties included the creation of new designs and the replacement of existing inventory.

Designs would be compatible with a wide variety of built contexts and would conform to a citywide coordinated design scheme. Designs for the different types of furniture would be coordinated within any one site to create a harmonious relationship between the various items. Design would be evaluated on functional efficiency, aesthetics, security, durability, adaptability for various built environments, and accommodation of people with disabilities.

There would be two standard designs: one for deployment throughout the city which could be varied to suit specific contexts (using shapes or forms for component parts, alternate materials, color) and one for appropriate use within designated historic districts or in front of individual buildings designated as city landmarks. Some degree of variation in these designs was also required. The maximum area of the largest shelter would be 150 square feet (max. length 30 feet, width 5 feet, height 9 feet). Bus shelters must allow a minimum clear path of 7 feet in width (5 feet absolute minimum). Also required was a minimum 3-foot width of straight unobstructed path between the shelter and curb. Bus shelters were required to provide areas for bus route maps, street maps, and name identification.

Bus shelters should be available in several sizes and configurations to meet constraints imposed by various street conditions. The RFP encouraged innovation and flexibility to accommodate various street conditions and service needs, such as larger shelters for busiest stops. The franchisee was required to purchase existing shelters from New York Subways Advertising Co., Inc., owned by OSI. By the sixth year of contract the entire inventory would have to conform to the new designs and amenities. The franchisee would be required to build or retrofit 550 shelters each year for the first six years of contract. After that, the franchisee would install additional structures as directed.

### Shelter Location

The Department of Transportation would request recommendations for new shelter sites from Council Members, Borough Presidents, Community Boards, Business Improvement Districts, and MTA New York City Transit. The department would consider these factors: ridership, transfer points, existing shelters, geographic distribution throughout the five boroughs, sidewalk activity, and other franchise structures at site. The Department would have the final authority to compile the list of shelter sites.

### Payment

The contract required a minimum compensation of \$5,000,000. Respondents were asked to indicate the amount they were willing to offer, as the greater amount of either a percentage of gross revenues or a fixed guaranteed minimum annual amount.



### Advertising Restrictions

The maximum allowed advertising on bus shelters was two panels, or a total of 55 square feet. A minimum of 2.5% of total advertising panels, and a minimum 2.5% of total advertising square footage, would be reserved for free public service advertisements. The city was considering entering into marketing partnership agreements designating specific brands as the official products of the City of New York. If such an agreement occurred, the franchisee would be required to give the city's marketing partners priority in placing and scheduling advertising.

### Other Notable Provisions

The franchisee would be required to acquire and install hardware and software for a computerized inventory system of Franchise Structures and sites. The system would have database, mapping and graphic capabilities for recording the location, type, design, and features of all installed franchise structures and the location, features, and status of proposed sites for structures, including sites that had been rejected. The system would allow for two-way information sharing between the Department and the franchisee. On the expiration of contract the computer system and data would become the property of city without compensation to franchisee.

The franchisee would be required to cooperate with New York City Transit or other agencies to make structures available for the installation of equipment and maintenance for Intelligent Transportation Systems, as such programs were developed. These programs would be designed to provide real-time information to bus patrons regarding arrival times.

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## APPENDIX

### Data

The analysis carried out in Section 2 – Location and Equity, is based on data provided by the Los Angeles County MTA. Geographic data on bus stop locations in the city were obtained from Paul Burke of the Stops and Zones department. Survey data on weekday boardings and the approximate headways for MTA bus lines were obtained from Ashok Kumar. Headways represent the amount of time it takes for another bus to arrive at a stop, after the previous bus has left. The information on weekday boardings is taken from MTA surveys conducted in 1996 and 1997. The surveys were taken on a single day out of the year. The data are only provided for bus stops that are served by MTA buses. The data represent average weekday boardings on MTA lines, and do not include boardings on other lines that serve parts of Los Angeles, such as the Santa Monica Blue Bus, Culver City Transit, Antelope Valley Transit, and Foothill Transit.

### Analysis

The unit of measurement for bus stop use is *person-minutes* of wait time. This unit of measurement embodies both the number of boardings that occurs at each bus stop, as well as the amount of time that people spend waiting at a stop.

The survey data on weekday boardings were disaggregated by bus stop, by bus line, and by time of day. Aggregating by bus stop resulted in total boardings by time of day at all bus stops. Headway estimates were provided by time of day and by bus line. These headways were applied to the bus stops on the appropriate bus lines for the appropriate time of day. The results are summed by bus stop.

To compute the total person-minutes of wait time at each stop, it was assumed that all persons waited half of the headway reported by MTA. This assumption is suggested by the Federal Transit Administration.<sup>1</sup> For example, if 100 boardings occurred at a bus stop for a bus line in the morning period, and the approximate headway for that bus line in the morning is 10 minutes, then it was assumed that the total person-minutes spent waiting at that bus stop was 500 (see Figure A.1).

**Figure A.1.** Calculation of person-minutes wait time.

| Headway    | Assumed actual wait time per person | Boardings   | Calculation                         |
|------------|-------------------------------------|-------------|-------------------------------------|
| 10 minutes | 5 minutes                           | 100 persons | $100 \times 5 = 500$ person-minutes |

<sup>1</sup> In-person interview with Anthony Loui, Anthony Loui design. May 8, 1999.

Headway information was not available for lines 462, 470, and 573. Therefore, the boarding information for these lines was not included in the analysis.

Analysis of city and OSI records indicates that there are 992 bus shelters in Los Angeles. However, MTA data used in the analysis contained only 852 bus shelters. This is partly explained by the fact that MTA buses do not serve all of the bus stops within the city. Those bus shelters that are located at bus stops served by other transit agencies will not appear in the MTA data. Also, the MTA may simply have failed to include some bus stops in its data collection process.

### **Three Scenarios**

The analysis considers three different scenarios for the distribution of bus shelters in Los Angeles. Each scenario is examined for the amount of person-minutes spent waiting at bus stops that have bus shelters.

Scenario 1 assumes the actual current distribution of shelters.

Scenario 2 assumes an equal number of shelters per council district. The shelters are assumed to be located at the most heavily used bus stops in each council district. The 852 shelters could not be divided evenly into the 15 council districts. Only 12 districts could have 57 shelters, and the other three districts would have 56 shelters. To accomplish this, each district was first allotted 57 shelters according to the most heavily used bus stops per district. Then the bus stop with the lowest use was removed from each of three districts: 6, 12, and 15.

Scenario 3 assumes a distribution of bus shelters based entirely on bus stop use, without consideration for council district. To do this, the bus stops were sorted by bus stop use, or total person-minutes of wait time, and the top 852 stops were identified.

For each scenario, the total number of person-minutes of waiting time are calculated for each bus stop. They are then summed for all bus stops and for all bus stops with shelters. Then a "shelter coverage" rate is calculated for each council district to show the percent of person-minutes of waiting time that occur at bus stops that have a shelter. The results are presented in Tables A.1 through A.3. Finally, of the 852 bus stops identified in Scenario 3, 626 do not have a bus shelter. These stops are listed in Table A.4. This list can be a useful reference for future construction increments.

**Table A.1. Scenario 1 - Shelter coverage based on the current distribution of 852 shelters**

| District     | Stops        | Shelters   | Boardings      | Person-Minutes of Wait Time | Boardings at Stops With a Shelter | %          | Person-Minutes of Wait Time at Stops With a Shelter | %          |
|--------------|--------------|------------|----------------|-----------------------------|-----------------------------------|------------|---|------------|
| 1            | 477          | 54         | 74,631         | 275,370                     | 15,265                            | 20%        | 48,693  | 18%        |
| 2            | 534          | 50         | 18,169         | 231,987                     | 5,832                             | 32%        | 63,859  | 28%        |
| 3            | 598          | 68         | 20,352         | 241,720                     | 4,731                             | 23%        | 51,337  | 21%        |
| 4            | 521          | 97         | 55,778         | 240,976                     | 16,871                            | 30%        | 67,361  | 28%        |
| 5            | 618          | 93         | 48,290         | 288,389                     | 11,233                            | 23%        | 82,827  | 29%        |
| 6            | 402          | 42         | 20,430         | 125,100                     | 4,030                             | 20%        | 24,311  | 19%        |
| 7            | 413          | 33         | 26,831         | 247,353                     | 6,648                             | 25%        | 47,844  | 19%        |
| 8            | 641          | 51         | 59,350         | 275,922                     | 13,306                            | 22%        | 53,781  | 19%        |
| 9            | 924          | 64         | 126,737        | 628,151                     | 15,773                            | 12%        | 81,368  | 13%        |
| 10           | 543          | 74         | 94,580         | 341,032                     | 20,625                            | 22%        | 73,512  | 22%        |
| 11           | 441          | 62         | 30,136         | 231,679                     | 9,481                             | 31%        | 70,392  | 30%        |
| 12           | 465          | 30         | 7,823          | 127,119                     | 1,493                             | 19%        | 22,993  | 18%        |
| 13           | 496          | 44         | 81,487         | 353,576                     | 15,001                            | 18%        | 57,095  | 16%        |
| 14           | 753          | 57         | 112,126        | 538,333                     | 15,358                            | 14%        | 71,940  | 13%        |
| 15           | 447          | 33         | 14,921         | 143,122                     | 2,406                             | 16%        | 27,728  | 19%        |
| <b>Total</b> | <b>8,273</b> | <b>852</b> | <b>791,641</b> | <b>4,289,829</b>            | <b>158,053</b>                    | <b>20%</b> | <b>845,041</b>                                      | <b>20%</b> |

**Table A.2. Scenario 2 - Shelter coverage based on an even distribution by Council District.**

| District     | Stops        | Shelters   | Boardings      | Person-Minutes of Wait Time | Boardings at Stops With a Shelter | %          | Person-Minutes of Wait Time at Stops With a Shelter | %          |
|--------------|--------------|------------|----------------|-----------------------------|-----------------------------------|------------|---|------------|
| 1            | 477          | 57         | 74,631         | 275,370                     | 31,786                            | 43%        | 123,365   | 45%        |
| 2            | 534          | 57         | 18,169         | 231,987                     | 8,221                             | 45%        | 109,916   | 47%        |
| 3            | 598          | 57         | 20,352         | 241,720                     | 9,100                             | 45%        | 107,037   | 44%        |
| 4            | 521          | 57         | 55,778         | 240,976                     | 31,132                            | 56%        | 131,001   | 54%        |
| 5            | 618          | 57         | 48,290         | 288,389                     | 22,602                            | 47%        | 146,853   | 51%        |
| 6            | 402          | 56         | 20,430         | 125,100                     | 12,958                            | 63%        | 82,603  | 66%        |
| 7            | 413          | 57         | 26,831         | 247,353                     | 15,963                            | 59%        | 149,681   | 61%        |
| 8            | 641          | 57         | 59,350         | 275,922                     | 22,186                            | 37%        | 99,688  | 36%        |
| 9            | 924          | 57         | 126,737        | 628,151                     | 46,399                            | 37%        | 254,436   | 41%        |
| 10           | 543          | 57         | 94,580         | 341,032                     | 44,881                            | 47%        | 150,464   | 44%        |
| 11           | 441          | 57         | 30,136         | 231,679                     | 18,472                            | 61%        | 150,048   | 65%        |
| 12           | 465          | 56         | 7,823          | 127,119                     | 4,663                             | 60%        | 73,585  | 58%        |
| 13           | 496          | 57         | 81,487         | 353,576                     | 42,383                            | 52%        | 183,307   | 52%        |
| 14           | 753          | 57         | 112,126        | 538,333                     | 61,850                            | 55%        | 284,980   | 53%        |
| 15           | 447          | 56         | 14,921         | 143,122                     | 9,788                             | 66%        | 92,501  | 65%        |
| <b>Total</b> | <b>8,273</b> | <b>852</b> | <b>791,641</b> | <b>4,289,829</b>            | <b>382,384</b>                    | <b>48%</b> | <b>2,139,465</b>                                    | <b>50%</b> |

*Note: Shelters are assumed to be placed at the most heavily used stops in each Council District.*



**Table A.3. Scenario 3 - Shelter coverage based on a distribution of shelters to the stops with the greatest use.**

| District     | Stops        | Shelters   | Boardings      | Person-Minutes of Wait Time | Boardings at Stops With a Shelter | %          | Person-Minutes of Wait Time at Stops With a Shelter | %          |
|--------------|--------------|------------|----------------|-----------------------------|-----------------------------------|------------|---|------------|
| 1            | 477          | 59         | 74,631         | 275,370                     | 32,422                            | 43%        | 126,043   | 46%        |
| 2            | 534          | 40         | 18,169         | 231,987                     | 6,960                             | 38%        | 89,402  | 39%        |
| 3            | 598          | 48         | 20,352         | 241,720                     | 8,267                             | 41%        | 95,931  | 40%        |
| 4            | 521          | 50         | 55,778         | 240,976                     | 29,432                            | 53%        | 122,237   | 51%        |
| 5            | 618          | 53         | 48,290         | 288,389                     | 21,876                            | 45%        | 141,801   | 49%        |
| 6            | 402          | 21         | 20,430         | 125,100                     | 7,375                             | 36%        | 53,103  | 42%        |
| 7            | 413          | 52         | 26,831         | 247,353                     | 15,516                            | 58%        | 143,602   | 58%        |
| 8            | 641          | 58         | 59,350         | 275,922                     | 22,459                            | 38%        | 100,993   | 37%        |
| 9            | 924          | 110        | 126,737        | 628,151                     | 63,993                            | 50%        | 339,064   | 54%        |
| 10           | 543          | 80         | 94,580         | 341,032                     | 54,251                            | 57%        | 183,472   | 54%        |
| 11           | 441          | 46         | 30,136         | 231,679                     | 16,947                            | 56%        | 138,022   | 60%        |
| 12           | 465          | 24         | 7,823          | 127,119                     | 2,911                             | 37%        | 47,192  | 37%        |
| 13           | 496          | 83         | 81,487         | 353,576                     | 52,306                            | 64%        | 221,546   | 63%        |
| 14           | 753          | 101        | 112,126        | 538,333                     | 75,076                            | 67%        | 354,677   | 66%        |
| 15           | 447          | 27         | 14,921         | 143,122                     | 6,946                             | 47%        | 68,103  | 48%        |
| <b>Total</b> | <b>8,273</b> | <b>852</b> | <b>791,641</b> | <b>4,289,829</b>            | <b>416,737</b>                    | <b>53%</b> | <b>2,225,188</b>                                    | <b>52%</b> |

**Table A.4** The 626 bus stops in Los Angeles with the highest amounts of use and no bus shelter.

Sorted by Person-Minutes of Wait Time

Source: Los Angeles Metropolitan Transportation Authority.

| BUS STOP                           | PERSON-MINUTES<br>OF WAIT TIME | TOTAL<br>BOARDINGS | COUNCIL<br>DISTRICT |
|------------------------------------|--------------------------------|--------------------|---------------------|
| N BROADWAY & 7TH                   | 23404                          | 4873               | 14                  |
| N SPRING & 8TH                     | 20090                          | 4125               | 14                  |
| N BROADWAY & 1ST                   | 15871                          | 3295               | 9                   |
| N OLIVE & 7TH                      | 15128                          | 2000               | 9                   |
| N BROADWAY & 5TH                   | 14829                          | 3026               | 14                  |
| N SPRING & ARCADIA                 | 13903                          | 2256               | 14                  |
| N SPRING & TEMPLE                  | 13730                          | 2611               | 9                   |
| N OLIVE & 5TH                      | 12246                          | 1452               | 9                   |
| N SPRING & 1ST                     | 11371                          | 1178               | 9                   |
| N HOLLYWOOD & WESTERN              | 10942                          | 839                | 13                  |
| N HOLLYWOOD & VERMONT              | 10686                          | 1015               | 13                  |
| N BROADWAY & 3RD                   | 10674                          | 2080               | 14                  |
| E 6TH & BROADWAY                   | 10615                          | 2342               | 14                  |
| W WILSHIRE & WESTERN               | 9406                           | 4496               | 10                  |
| S BROADWAY & 7TH                   | 9241                           | 3026               | 14                  |
| N BROADWAY & 8TH                   | 8262                           | 1923               | 14                  |
| W CESAR CHAVEZ & BROADWAY          | 8007                           | 2300               | 1                   |
| S SPRING & 7TH                     | 7884                           | 1988               | 14                  |
| S IMPERIAL STATION & DOCK 3        | 7728                           | 653                | 15                  |
| N LAUREL CANYON & VENTURA          | 7500                           | 317                | 5                   |
| N RESEDA & VENTURA                 | 7463                           | 623                | 11                  |
| N BROADWAY & VENICE                | 7262                           | 1452               | 9                   |
| W SANTA MONICA & WESTERN           | 7224                           | 2229               | 13                  |
| W 5TH & SPRING                     | 7109                           | 2773               | 9                   |
| W SHERMAN & VAN NUYS               | 7024                           | 867                | 11                  |
| E 7TH & BROADWAY                   | 6809                           | 2211               | 14                  |
| N SPRING & 6TH                     | 6757                           | 1262               | 9                   |
| E PICO & RIMPAU                    | 6496                           | 2507               | 10                  |
| S SOTO & OLYMPIC                   | 6302                           | 927                | 14                  |
| W 8TH & BROADWAY                   | 6157                           | 1836               | 14                  |
| N SEPULVEDA & SHERMAN              | 6073                           | 365                | 11                  |
| N HOLLYWOOD & ALVARADO             | 5999                           | 470                | 13                  |
| S BROADWAY & 5TH                   | 5882                           | 1820               | 14                  |
| S BROADWAY & 1ST                   | 5691                           | 1641               | 9                   |
| E SANTA MONICA & WESTERN           | 5626                           | 1491               | 13                  |
| S LAUREL CANYON & VAN NUYS         | 5530                           | 220                | 7                   |
| E VENTURA & SEPULVEDA              | 5484                           | 655                | 5                   |
| N VERMONT & 3RD                    | 5469                           | 1350               | 4                   |
| W NORDHOFF & VAN NUYS              | 5418                           | 522                | 7                   |
| N SPRING & 5TH                     | 5370                           | 1015               | 9                   |
| S WESTERN & SANTA MONICA           | 5296                           | 1698               | 13                  |
| E VENTURA & LANKERSHIM             | 5259                           | 663                | 4                   |
| W USC MED CTR & OUT PATIENT CLINIC | 5208                           | 494                | 14                  |
| W VANOWEN & VAN NUYS               | 5113                           | 557                | 11                  |
| S ALVARADO & SUNSET                | 5099                           | 1107               | 13                  |
| S BROADWAY & 6TH                   | 4973                           | 1581               | 14                  |
| E HOLLYWOOD & VINE                 | 4899                           | 1010               | 13                  |
| S VERMONT & 3RD                    | 4859                           | 1895               | 4                   |
| E 103RD & GRAHAM                   | 4656                           | 569                | 15                  |
| S SPRING & 4TH                     | 4647                           | 1343               | 9                   |
| E HOLLYWOOD & HIGHLAND             | 4644                           | 1037               | 13                  |
| N VAN NUYS & ROSCOE                | 4592                           | 630                | 7                   |
| E LAX TRANSIT CENTER & DOCK 5      | 4504                           | 563                | 6                   |
| E VENTURA & TOPANGA CANYON         | 4469                           | 588                | 11                  |
| W ORD & BROADWAY                   | 4462                           | 564                | 1                   |
| N AVALON & ANAHEIM                 | 4458                           | 287                | 15                  |
| S TOPANGA CANYON & ROSCOE          | 4430                           | 180                | 3                   |
| N FAIRFAX & WILSHIRE               | 4414                           | 1049               | 5                   |
| W SANTA MONICA & VERMONT           | 4413                           | 1353               | 13                  |
| E ROSCOE & VAN NUYS                | 4368                           | 421                | 7                   |
| W HUNTINGTON & MONTEREY            | 4259                           | 829                | 14                  |
| N HILL & COLLEGE                   | 4222                           | 493                | 1                   |
| E ROSCOE & SEPULVEDA               | 4213                           | 407                | 7                   |
| S VERMONT & HOLLYWOOD              | 4201                           | 2011               | 13                  |
| S BROADWAY & 4TH                   | 4199                           | 1231               | 14                  |
| N VAN NUYS & VICTORY               | 4180                           | 928                | 11                  |
| S SOTO ST & CESAR CHAVEZ AV        | 4154                           | 862                | 14                  |
| E 9TH & BROADWAY                   | 4151                           | 1678               | 14                  |
| S SEPULVEDA & ROSCOE               | 4108                           | 248                | 7                   |
| W VERNON & CENTRAL                 | 4107                           | 572                | 9                   |
| S GRAND & ADAMS                    | 4076                           | 727                | 9                   |
| S RESEDA & SHERMAN                 | 4044                           | 377                | 3                   |

| BUS STOP                            | PERSON-MINUTES<br>OF WAIT TIME | TOTAL<br>BOARDINGS | COUNCIL<br>DISTRICT |
|-------------------------------------|--------------------------------|--------------------|---------------------|
| S BROADWAY & 3RD                    | 4042                           | 1138               | 14                  |
| W VENTURA & RESEDA                  | 3983                           | 419                | 11                  |
| S SPRING & 6TH                      | 3975                           | 825                | 9                   |
| N VAN NUYS & VANOWEN                | 3936                           | 847                | 11                  |
| S SAN FERNANDO & FLETCHER           | 3927                           | 608                | 1                   |
| E CIRCLE DR & CSU BUSWAY STATION    | 3889                           | 208                | 14                  |
| N SEPULVEDA & ROSCOE                | 3888                           | 233                | 7                   |
| N BROADWAY & 4TH                    | 3836                           | 949                | 14                  |
| S BROADWAY & 8TH                    | 3811                           | 1242               | 14                  |
| N NORMANDIE & VENICE                | 3792                           | 678                | 10                  |
| N SPRING & 3RD                      | 3779                           | 663                | 9                   |
| W MARENGO & STATE                   | 3732                           | 488                | 14                  |
| E SUNSET & ECHO PARK                | 3725                           | 1102               | 13                  |
| S VAN NUYS & VANOWEN                | 3724                           | 824                | 11                  |
| N WESTERN & WILSHIRE                | 3723                           | 1210               | 10                  |
| S IMPERIAL STATION & DOCK 6         | 3712                           | 328                | 15                  |
| S VAN NUYS & NORDHOFF               | 3685                           | 766                | 7                   |
| S LAUREL CANYON & VANOWEN           | 3675                           | 141                | 2                   |
| S SUNLAND & SAN FERNANDO            | 3673                           | 364                | 7                   |
| E SLAUSON & HOOVER                  | 3665                           | 530                | 9                   |
| N BROADWAY & 6TH                    | 3657                           | 999                | 14                  |
| N SOTO & OLYMPIC                    | 3651                           | 850                | 14                  |
| W OLYMPIC & VERMONT                 | 3638                           | 957                | 10                  |
| S WESTERN & WILSHIRE                | 3627                           | 1193               | 10                  |
| S FIGUEROA & YORK                   | 3627                           | 671                | 14                  |
| N LAUREL CANYON & VAN NUYS          | 3625                           | 142                | 7                   |
| N AVIATION STATION & BUS BAY 7      | 3623                           | 176                | 6                   |
| N VERMONT AV & CENTURY FWY OFF RAMP | 3601                           | 1001               | 15                  |
| S RESEDA & ROSCOE                   | 3593                           | 339                | 3                   |
| W SUNSET & ALVARADO                 | 3589                           | 1044               | 13                  |
| W VERNON & VERMONT                  | 3555                           | 528                | 9                   |
| S VAN NUYS & CHASE                  | 3515                           | 583                | 7                   |
| W SANTA MONICA & VINE               | 3481                           | 1019               | 4                   |
| W DIAMOND LANE & CSU BUSWAY STATION | 3457                           | 281                | 14                  |
| N TOPANGA CANYON & SHERMAN          | 3445                           | 124                | 3                   |
| S SEPULVEDA & NORDHOFF              | 3438                           | 205                | 7                   |
| W 3RD & VERMONT                     | 3407                           | 1303               | 4                   |
| W LAX TRANSIT CENTER & DOCK 8       | 3405                           | 324                | 6                   |
| N BROADWAY & OLYMPIC                | 3401                           | 709                | 9                   |
| W VENTURA & VAN NUYS                | 3362                           | 476                | 5                   |
| N VAN NUYS & CHASE                  | 3352                           | 506                | 7                   |
| N FAIRFAX & 3RD                     | 3323                           | 785                | 5                   |
| S NORMANDIE & SANTA MONICA          | 3316                           | 574                | 8                   |
| W VAN NUYS & SAN FERNANDO           | 3297                           | 690                | 7                   |
| N ALVARADO & WILSHIRE               | 3294                           | 712                | 1                   |
| W VERNON & LONG BEACH               | 3287                           | 593                | 9                   |
| W SLAUSON & VERMONT                 | 3283                           | 439                | 9                   |
| E SLAUSON & CRENSHAW                | 3272                           | 436                | 6                   |
| N FAIRFAX & SANTA MONICA            | 3252                           | 797                | 5                   |
| S LAUREL CANYON & ROSCOE            | 3250                           | 133                | 2                   |
| E HOLLYWOOD & IVAR                  | 3235                           | 662                | 13                  |
| S SEPULVEDA & CENTURY               | 3224                           | 190                | 6                   |
| S FAIRFAX & SANTA MONICA            | 3194                           | 800                | 5                   |
| W 5TH & HILL                        | 3188                           | 1152               | 14                  |
| N WESTERN & SANTA MONICA            | 3158                           | 669                | 10                  |
| E 6TH & HILL                        | 3156                           | 461                | 14                  |
| S BROADWAY & 9TH                    | 3155                           | 1081               | 14                  |
| E WILSHIRE & LORRAINE               | 3132                           | 972                | 10                  |
| E SANTA MONICA & VINE               | 3122                           | 888                | 4                   |
| S DE SOTO & VINTAGE                 | 3114                           | 116                | 12                  |
| S FAIRFAX & APPLE                   | 3093                           | 230                | 10                  |
| E VANOWEN & VAN NUYS                | 3078                           | 328                | 11                  |
| N SANBORN & SUNSET                  | 3060                           | 193                | 13                  |
| E SHERMAN & SEPULVEDA               | 3036                           | 338                | 11                  |
| E VENTURA & LAUREL CANYON           | 3035                           | 300                | 5                   |
| N TOPANGA CANYON & VENTURA          | 3030                           | 178                | 11                  |
| W WASHINGTON & GRAND                | 3027                           | 627                | 9                   |
| N VERMONT & WILSHIRE                | 3024                           | 1442               | 10                  |
| S VERMONT & MONROE                  | 3018                           | 1324               | 13                  |
| S ST GEORGE & TRACY                 | 3015                           | 187                | 4                   |
| W VENICE & VERMONT                  | 3013                           | 1028               | 1                   |
| S LAUREL CANYON & OSBORNE           | 3010                           | 120                | 7                   |
| S ALVARADO & TEMPLE                 | 3007                           | 656                | 13                  |
| W LAX TRANSIT CENTER & DOCK 11      | 2985                           | 102                | 6                   |
| W HOLLYWOOD & HIGHLAND              | 2961                           | 464                | 13                  |
| N WESTERN & PICO                    | 2955                           | 985                | 10                  |

| BUS STOP                                    | PERSON-MINUTES<br>OF WAIT TIME | TOTAL<br>BOARDINGS | COUNCIL<br>DISTRICT |
|---|--------------------------------|--------------------|---------------------|
| N LAUREL CANYON & VICTORY                   | 2940                           | 121                | 2                   |
| E MANCHESTER & SEPULVEDA                    | 2940                           | 558                | 6                   |
| W HOLLYWOOD & WESTERN                       | 2937                           | 671                | 13                  |
| S VAN NUYS & VICTORY                        | 2922                           | 686                | 11                  |
| E CESAR CHAVEZ & SOTO                       | 2920                           | 583                | 14                  |
| S NORMANDIE & 3RD                           | 2911                           | 510                | 4                   |
| W CESAR CHAVEZ & SOTO                       | 2911                           | 605                | 14                  |
| S VERMONT & WILSHIRE                        | 2906                           | 1384               | 10                  |
| N BROADWAY & 11TH                           | 2902                           | 764                | 9                   |
| N WOODMAN & VENTURA                         | 2895                           | 111                | 5                   |
| S FLOWER & 7TH                              | 2892                           | 104                | 9                   |
| N SEPULVEDA & NORDHOFF                      | 2883                           | 173                | 7                   |
| N WESTERN & VENICE                          | 2883                           | 894                | 10                  |
| S WESTERN & 3RD                             | 2864                           | 932                | 4                   |
| N SAN FERNANDO & FLETCHER                   | 2860                           | 414                | 1                   |
| S SEPULVEDA & PARTHENIA                     | 2858                           | 172                | 7                   |
| N GLENDALE & MONTANA                        | 2856                           | 391                | 13                  |
| N OLIVE & 1ST                               | 2854                           | 186                | 9                   |
| S NORMANDIE & HOLLYWOOD                     | 2851                           | 489                | 13                  |
| E HOLLYWOOD & CAHUENGA                      | 2850                           | 598                | 13                  |
| S LA BREA & WILSHIRE                        | 2831                           | 471                | 4                   |
| E ANAHEIM & AVALON                          | 2823                           | 248                | 15                  |
| N OLIVE & PICO                              | 2789                           | 317                | 9                   |
| E 8TH & VERMONT                             | 2780                           | 978                | 10                  |
| E ROSCOE & RESEDA                           | 2770                           | 271                | 3                   |
| S NORMANDIE & WILSHIRE                      | 2770                           | 465                | 10                  |
| E WASHINGTON & GRAND                        | 2769                           | 351                | 9                   |
| W 7TH & HILL                                | 2756                           | 1252               | 9                   |
| E SUNSET & FIGUEROA                         | 2736                           | 715                | 9                   |
| N ARLETA & VAN NUYS                         | 2730                           | 131                | 7                   |
| N FIGUEROA & AVE 26                         | 2697                           | 619                | 1                   |
| E 8TH & WESTERN                             | 2694                           | 932                | 10                  |
| S WESTERN & HOLLYWOOD                       | 2693                           | 846                | 13                  |
| S PASEO RANCH CASTILLO & STUDENT UNION BLDG | 2668                           | 138                | 14                  |
| E SHERMAN & RESEDA                          | 2648                           | 302                | 3                   |
| E SANTA MONICA & FAIRFAX                    | 2637                           | 852                | 5                   |
| N LAUREL CANYON & VANOWEN                   | 2635                           | 110                | 2                   |
| S STATE & USC MED CTR                       | 2632                           | 415                | 14                  |
| E 3RD & WESTERN                             | 2629                           | 959                | 4                   |
| S BROADWAY & VENICE                         | 2604                           | 777                | 9                   |
| E ADAMS & HILL                              | 2590                           | 427                | 9                   |
| W 103RD & GRAHAM                            | 2587                           | 255                | 15                  |
| N LAUREL CANYON & OSBORNE                   | 2585                           | 104                | 7                   |
| W HUBBARD & SIMSHAW                         | 2581                           | 159                | 12                  |
| E VERNON & VERMONT                          | 2559                           | 483                | 9                   |
| S LA BREA & SANTA MONICA                    | 2546                           | 415                | 5                   |
| W ROSCOE & SEPULVEDA                        | 2535                           | 302                | 7                   |
| N VERMONT & 6TH                             | 2533                           | 641                | 10                  |
| S RESEDA & VANOWEN                          | 2529                           | 224                | 3                   |
| E 6TH & SPRING                              | 2516                           | 720                | 9                   |
| W LAX TRANSIT CENTER & DOCK 12              | 2495                           | 232                | 6                   |
| N HOOVER & VENICE                           | 2493                           | 546                | 1                   |
| E MARENGO & CUMMINGS                        | 2488                           | 305                | 14                  |
| E FLORENCE & CRENSHAW                       | 2486                           | 616                | 6                   |
| N OLIVE & OLYMPIC                           | 2483                           | 393                | 9                   |
| S LA BREA & PICO                            | 2482                           | 426                | 10                  |
| N PACIFIC & 7TH                             | 2477                           | 171                | 15                  |
| S NORMANDIE & BEVERLY                       | 2474                           | 430                | 4                   |
| S WESTERN & PACIFIC COAST                   | 2470                           | 195                | 15                  |
| N OLIVE & 2ND                               | 2458                           | 423                | 9                   |
| E SHERMAN & DE SOTO                         | 2440                           | 291                | 3                   |
| S SEPULVEDA & RAYEN                         | 2440                           | 146                | 7                   |
| W OLYMPIC & SOTO                            | 2439                           | 934                | 14                  |
| S VERMONT & 1ST                             | 2426                           | 878                | 13                  |
| S LAUREL CANYON & SAN FERNANDO MISSION      | 2420                           | 93                 | 7                   |
| E WASHINGTON & LONG BEACH                   | 2413                           | 192                | 9                   |
| W VENICE & WESTERN                          | 2407                           | 827                | 10                  |
| N ALVARADO & 6TH                            | 2403                           | 522                | 1                   |
| N VERMONT & OLYMPIC                         | 2401                           | 1140               | 10                  |
| S SOTO & WHITTIER                           | 2398                           | 588                | 14                  |
| N LAUREL CANYON & ROSCOE                    | 2390                           | 101                | 2                   |
| N INDIANA & WHITTIER                        | 2390                           | 133                | 14                  |
| W WILSHIRE VERMONT STA &                    | 2386                           | 165                | 10                  |
| E 7TH & ALVARADO                            | 2376                           | 547                | 1                   |
| E DIAMOND LANE & CSU BUSWAY STATION         | 2371                           | 216                | 14                  |
| S RESEDA & DEVONSHIRE                       | 2367                           | 225                | 12                  |

| BUS STOP                              | PERSON-MINUTES OF WAIT TIME | TOTAL BOARDINGS | COUNCIL DISTRICT |
|---------------------------------------|-----------------------------|-----------------|------------------|
| E DEVONSHIRE & DE SOTO                | 2353                        | 114             | 12               |
| N DALY & BROADWAY                     | 2351                        | 608             | 1                |
| S BROADWAY & ORD                      | 2347                        | 607             | 1                |
| W SHERMAN & RESEDA                    | 2337                        | 272             | 3                |
| W 8TH & SPRING                        | 2322                        | 919             | 14               |
| S LA BREA & SUNSET                    | 2320                        | 363             | 4                |
| N SOTO ST & CESAR CHAVEZ AV           | 2314                        | 503             | 14               |
| N BROADWAY & PICO                     | 2312                        | 565             | 9                |
| E HOLLYWOOD & NORMANDIE               | 2307                        | 518             | 13               |
| E HOLLYWOOD & WILCOX                  | 2302                        | 469             | 13               |
| W 1ST & MAIN                          | 2299                        | 292             | 9                |
| E NORDHOFF & HASKELL                  | 2298                        | 198             | 12               |
| N ALVARADO & OLYMPIC                  | 2293                        | 497             | 1                |
| E SLAUSON & WESTERN                   | 2293                        | 332             | 8                |
| S NORMANDIE & SUNSET                  | 2292                        | 401             | 13               |
| W SANTA MONICA ONRAMP & FAIRFAX       | 2290                        | 130             | 10               |
| N TAMPA & SHERMAN                     | 2280                        | 76              | 3                |
| W SANTA MONICA & FAIRFAX              | 2276                        | 700             | 5                |
| W KING & CRENSHAW                     | 2273                        | 413             | 8                |
| E HUNTINGTON & MONTEREY               | 2273                        | 125             | 14               |
| S ALVARADO & BEVERLY                  | 2258                        | 482             | 13               |
| N PARKMAN & SUNSET                    | 2256                        | 98              | 13               |
| E FLORENCE & VERMONT                  | 2252                        | 533             | 8                |
| S SPRING & 3RD                        | 2252                        | 815             | 9                |
| E KING BL & FIGUEROA ST               | 2246                        | 121             | 9                |
| N CRENSHAW & SLAUSON                  | 2243                        | 553             | 6                |
| W SLAUSON & CRENSHAW                  | 2242                        | 323             | 6                |
| N SAN FERNANDO & VAN NUYS             | 2235                        | 401             | 7                |
| E VICTORY & WINNETKA                  | 2229                        | 197             | 3                |
| E ROSCOE & TOPANGA CANYON             | 2223                        | 218             | 3                |
| E KING & VERMONT                      | 2217                        | 693             | 8                |
| S DALY & BROADWAY                     | 2214                        | 489             | 1                |
| S LANKERSHIM BLVD & UNIVERSAL TERRACE | 2208                        | 247             | 4                |
| E VENTURA & WOODMAN                   | 2206                        | 210             | 5                |
| S FAIRFAX & MELROSE                   | 2203                        | 515             | 5                |
| W OLYMPIC & HILL                      | 2200                        | 605             | 9                |
| S LAUREL CANYON & FOX                 | 2195                        | 104             | 7                |
| E CESAR CHAVEZ & VIGNES               | 2189                        | 411             | 14               |
| N BROADWAY & ORD                      | 2188                        | 637             | 1                |
| E WILSHIRE & WESTWOOD                 | 2184                        | 1212            | 5                |
| N SPRING & 4TH                        | 2181                        | 373             | 9                |
| S SEPULVEDA & SHERMAN                 | 2178                        | 133             | 11               |
| W PICO & VERMONT                      | 2177                        | 873             | 1                |
| N LAUREL CANYON & BURBANK             | 2165                        | 82              | 5                |
| W VAN NUYS & LAUREL CANYON            | 2165                        | 437             | 7                |
| S S GRAND AV & W 7TH ST               | 2159                        | 152             | 9                |
| E TEMPLE & EDGEWARE                   | 2157                        | 347             | 1                |
| N WINNETKA & VENTURA                  | 2148                        | 127             | 11               |
| W WILSHIRE & VERMONT                  | 2145                        | 1209            | 10               |
| S DE SOTO & NORDHOFF                  | 2144                        | 127             | 12               |
| N VERMONT & PICO                      | 2128                        | 1024            | 1                |
| S IMPERIAL STATION & DOCK 1           | 2115                        | 75              | 15               |
| E PICO & VERMONT                      | 2109                        | 743             | 1                |
| N OLIVE & 8TH                         | 2101                        | 399             | 9                |
| N WOODMAN & VANOWEN                   | 2100                        | 87              | 5                |
| N LANKERSHIM & CAHUENGA               | 2098                        | 207             | 4                |
| W VERNON & AVALON                     | 2094                        | 351             | 9                |
| E 8TH & IROLO                         | 2092                        | 843             | 10               |
| W BEVERLY & ALVARADO                  | 2090                        | 449             | 13               |
| E 6TH & WESTERN                       | 2078                        | 604             | 10               |
| N MAIN & 7TH                          | 2074                        | 304             | 14               |
| W OXNARD & VAN NUYS                   | 2070                        | 69              | 11               |
| S SEPULVEDA & DEVONSHIRE              | 2063                        | 126             | 2                |
| S FIGUEROA & JEFFERSON                | 2059                        | 221             | 8                |
| N FAIRFAX & PICO                      | 2059                        | 532             | 10               |
| N WOODMAN & BURBANK                   | 2055                        | 81              | 5                |
| W VICTORY & VINELAND                  | 2051                        | 208             | 2                |
| S LA CIENEGA & 3RD                    | 2045                        | 388             | 5                |
| W WABASH & EVERGREEN                  | 2043                        | 151             | 14               |
| W KING & FIGUEROA                     | 2041                        | 518             | 9                |
| W LAX TRANSIT CENTER & DOCK 10        | 2033                        | 85              | 6                |
| W 3RD & ALVARADO                      | 2030                        | 684             | 1                |
| E WASHINGTON & VERMONT                | 2028                        | 421             | 1                |
| W NORDHOFF & SEPULVEDA                | 2013                        | 197             | 7                |
| W SANTA MONICA & NORMANDIE            | 2011                        | 759             | 13               |
| E FOOTHILL & JARDINE                  | 2010                        | 67              | 2                |

| BUS STOP                            | PERSON-MINUTES<br>OF WAIT TIME | TOTAL<br>BOARDINGS | COUNCIL<br>DISTRICT |
|-------------------------------------|--------------------------------|--------------------|---------------------|
| W SLAUSON & WESTERN                 | 1997                           | 286                | 8                   |
| N VERMONT & KING BL                 | 1994                           | 959                | 8                   |
| N VERMONT & 8TH                     | 1994                           | 970                | 10                  |
| S EASTERN & HUNTINGTON              | 1993                           | 125                | 14                  |
| N IROLO & 8TH                       | 1992                           | 338                | 10                  |
| E OLYMPIC & MUIRFIELD               | 1990                           | 638                | 10                  |
| N FIGUEROA ST & HARBOR GRN LINE STA | 1982                           | 383                | 15                  |
| E VENICE & LINCOLN                  | 1981                           | 597                | 6                   |
| S FLOWER & 5TH                      | 1979                           | 202                | 9                   |
| W VERNON & BROADWAY                 | 1969                           | 285                | 9                   |
| W MONTANA & GLENDALE                | 1957                           | 430                | 13                  |
| N ALVARADO & 3RD                    | 1955                           | 428                | 1                   |
| S VINE & SANTA MONICA               | 1952                           | 534                | 4                   |
| E BEVERLY & WESTERN                 | 1952                           | 441                | 4                   |
| E WILSHIRE & FLOWER                 | 1952                           | 148                | 9                   |
| S VERMONT & SUNSET                  | 1949                           | 904                | 13                  |
| E 3RD & CATALINA                    | 1946                           | 726                | 4                   |
| E 6TH & MAIN                        | 1942                           | 403                | 9                   |
| W 5TH & BROADWAY                    | 1941                           | 647                | 14                  |
| N WESTERN & 8TH                     | 1936                           | 640                | 10                  |
| N VINELAND & MAGNOLIA               | 1935                           | 203                | 4                   |
| S IROLO & 8TH                       | 1934                           | 338                | 10                  |
| N VINE & HOLLYWOOD                  | 1932                           | 241                | 13                  |
| E HOLLYWOOD & GOWER                 | 1930                           | 382                | 13                  |
| E 6TH & HOPE                        | 1929                           | 328                | 9                   |
| S SAN VICENTE & SANTA MONICA        | 1925                           | 154                | 5                   |
| E VENTURA & HAYVENHURST             | 1925                           | 206                | 11                  |
| E 7TH & SPRING                      | 1922                           | 748                | 14                  |
| E LASSEN & DE SOTO                  | 1920                           | 64                 | 12                  |
| S ALVARADO & 7TH                    | 1915                           | 414                | 1                   |
| W VICTORY & RESEDA                  | 1911                           | 235                | 3                   |
| S LAUREL CANYON & BRAND             | 1910                           | 78                 | 7                   |
| S S GRAND AV & W 6TH ST             | 1905                           | 176                | 9                   |
| E BUSWAY ENT & ALAMEDA              | 1895                           | 139                | 14                  |
| N ALVARADO & 7TH                    | 1891                           | 416                | 1                   |
| S VAN NUYS & LANARK                 | 1890                           | 356                | 7                   |
| E BEVERLY & NORMANDIE               | 1889                           | 437                | 4                   |
| W 7TH & MAIN                        | 1888                           | 781                | 14                  |
| E NORDHOFF & CANOGA                 | 1885                           | 149                | 12                  |
| S FAIRFAX & SUNSET                  | 1882                           | 451                | 5                   |
| S NORMANDIE & MELROSE               | 1880                           | 331                | 4                   |
| W MANCHESTER & VERMONT              | 1880                           | 397                | 8                   |
| E VENTURA & WHITE OAK               | 1875                           | 189                | 11                  |
| E NORDHOFF & LINDLEY                | 1873                           | 131                | 12                  |
| E MELROSE & WESTERN                 | 1872                           | 379                | 4                   |
| N WOODMAN & ROSCOE                  | 1870                           | 96                 | 2                   |
| S NORMANDIE & 42ND                  | 1864                           | 330                | 9                   |
| S TOPANGA CANYON & VENTURA          | 1861                           | 72                 | 11                  |
| W ROSCOE & RESEDA                   | 1860                           | 193                | 3                   |
| E SUNSET & HIGHLAND                 | 1858                           | 511                | 4                   |
| E 3RD & LA CIENEGA                  | 1853                           | 768                | 5                   |
| S CRENSHAW & PICO                   | 1851                           | 417                | 10                  |
| W 1ST & HILL                        | 1847                           | 105                | 9                   |
| W MANCHESTER & BROADWAY             | 1841                           | 374                | 8                   |
| N LA BREA & PICO                    | 1840                           | 294                | 10                  |
| W HOLLYWOOD & NORMANDIE             | 1838                           | 421                | 13                  |
| S VERMONT & PICO                    | 1829                           | 871                | 1                   |
| W HOLLYWOOD & ORANGE                | 1828                           | 410                | 13                  |
| S SOTO & MARENGO                    | 1827                           | 314                | 14                  |
| W 1ST & BROADWAY                    | 1825                           | 114                | 9                   |
| E WABASH & EVERGREEN                | 1820                           | 93                 | 14                  |
| E HOLLYWOOD & WHITLEY               | 1817                           | 363                | 13                  |
| W JEFFERSON & VERMONT               | 1810                           | 223                | 8                   |
| S FIGUEROA & PICO                   | 1807                           | 243                | 9                   |
| S SEPULVEDA & VANOWEN               | 1806                           | 111                | 11                  |
| W VAN NUYS & WOODMAN                | 1803                           | 245                | 2                   |
| S BROADWAY & ADAMS                  | 1802                           | 606                | 9                   |
| W SHERMAN & LANKERSHIM              | 1798                           | 220                | 7                   |
| W KING & WESTERN                    | 1794                           | 529                | 8                   |
| W 8TH & ALVARADO                    | 1793                           | 543                | 1                   |
| W CSU BUSWAY STATION &              | 1790                           | 124                | 14                  |
| S AVERILL & 8TH                     | 1790                           | 96                 | 15                  |
| E 3RD & FAIRFAX                     | 1788                           | 650                | 5                   |
| S SYLMAR SF METROLINK &             | 1785                           | 107                | 7                   |
| E WILSHIRE & VETERAN                | 1784                           | 534                | 11                  |
| E VANOWEN & SEPULVEDA               | 1777                           | 181                | 11                  |

| BUS STOP                             | PERSON-MINUTES<br>OF WAIT TIME | TOTAL<br>BOARDINGS | COUNCIL<br>DISTRICT |
|--------------------------------------|--------------------------------|--------------------|---------------------|
| E SHERMAN & WOODLEY                  | 1776                           | 209                | 2                   |
| W VANOWEN & SEPULVEDA                | 1774                           | 241                | 11                  |
| E WABASH & SOTO                      | 1774                           | 148                | 14                  |
| S VERMONT & VERMONT                  | 1771                           | 841                | 13                  |
| N WOODMAN & MAGNOLIA                 | 1770                           | 63                 | 5                   |
| N LORENA & WHITTIER                  | 1758                           | 62                 | 14                  |
| E SANTA MONICA & VERMONT             | 1754                           | 584                | 13                  |
| S FAIRFAX & BEVERLY                  | 1753                           | 423                | 5                   |
| S CRENSHAW & VENICE                  | 1748                           | 439                | 10                  |
| N FALLBROOK & LEONORA                | 1743                           | 190                | 3                   |
| W 7TH & SPRING                       | 1743                           | 814                | 14                  |
| N PACIFIC & 11TH                     | 1742                           | 131                | 15                  |
| N VERMONT & VERNON                   | 1732                           | 813                | 9                   |
| S WESTERN & BEVERLY                  | 1729                           | 580                | 4                   |
| W SUNSET & HYPERION                  | 1726                           | 515                | 13                  |
| S RESEDA & VICTORY                   | 1723                           | 167                | 3                   |
| N OLIVE & WASHINGTON                 | 1721                           | 348                | 9                   |
| N LAUREL CANYON & SHERMAN            | 1720                           | 74                 | 2                   |
| W SHERMAN & LAUREL CANYON            | 1718                           | 209                | 2                   |
| W 103RD & CENTRAL                    | 1718                           | 206                | 8                   |
| E ADAMS & VERMONT                    | 1715                           | 391                | 8                   |
| N WOODMAN & SHERMAN                  | 1710                           | 68                 | 11                  |
| N HIGHLAND & SUNSET                  | 1709                           | 419                | 4                   |
| E JEFFERSON & WESTERN                | 1709                           | 217                | 8                   |
| N VAN NUYS & KITTRIDGE               | 1709                           | 369                | 11                  |
| E VAN NUYS & SAN FERNANDO            | 1708                           | 327                | 7                   |
| E WASHINGTON & FIGUEROA              | 1708                           | 178                | 9                   |
| N VERMONT & 1ST                      | 1708                           | 410                | 13                  |
| E SUNSET & ALVARADO                  | 1705                           | 473                | 13                  |
| E ALISO & LOS ANGELES                | 1702                           | 131                | 9                   |
| S CRENSHAW & KING BL                 | 1700                           | 335                | 8                   |
| S N FIGUEROA ST & N AVE 54           | 1698                           | 358                | 1                   |
| W VENICE & FAIRFAX                   | 1693                           | 446                | 10                  |
| W WASHINGTON & HILL                  | 1685                           | 253                | 9                   |
| E 6TH & VERMONT                      | 1682                           | 536                | 10                  |
| S TOPANGA CANYON & SCHOOLCRAFT       | 1678                           | 91                 | 3                   |
| N VERMONT & FLORENCE                 | 1677                           | 793                | 8                   |
| S TOPANGA CANYON & LASSEN            | 1677                           | 72                 | 12                  |
| W VANOWEN & RESEDA                   | 1674                           | 164                | 3                   |
| S BROADWAY & 11TH                    | 1673                           | 497                | 9                   |
| S LA CIENEGA & SANTA MONICA          | 1670                           | 306                | 5                   |
| E WASHINGTON & WESTERN               | 1665                           | 347                | 10                  |
| W WILSHIRE & KINGSLEY                | 1664                           | 944                | 10                  |
| E ZONAL & MISSION                    | 1662                           | 237                | 14                  |
| E OLYMPIC & ALVARADO                 | 1661                           | 477                | 1                   |
| N NORMANDIE & 3RD                    | 1654                           | 285                | 4                   |
| W JEFFERSON & WESTERN                | 1654                           | 212                | 8                   |
| S MISSION & DALY                     | 1651                           | 221                | 14                  |
| S NORMANDIE & PICO                   | 1650                           | 287                | 1                   |
| N TAMPA & VANOWEN                    | 1650                           | 55                 | 3                   |
| N VERMONT & MANCHESTER               | 1649                           | 791                | 8                   |
| W ADAMS & CENTRAL                    | 1644                           | 296                | 9                   |
| E BEVERLY & KENMORE                  | 1642                           | 407                | 13                  |
| N DE SOTO & BURBANK                  | 1633                           | 108                | 3                   |
| E 7TH & HILL                         | 1632                           | 678                | 9                   |
| N WESTERN & WASHINGTON               | 1628                           | 502                | 10                  |
| W SUNSET & NORMANDIE                 | 1626                           | 546                | 13                  |
| W PICO & FLOWER                      | 1625                           | 632                | 9                   |
| W AVE 26 & FIGUEROA                  | 1621                           | 155                | 1                   |
| W HOLLYWOOD & VINE                   | 1621                           | 261                | 13                  |
| S WOODMAN & SHERMAN                  | 1620                           | 68                 | 11                  |
| S HARBOR FRWY & I 105 GREEN LINE STA | 1620                           | 98                 | 15                  |
| W MELROSE & WESTERN                  | 1619                           | 346                | 4                   |
| E VERNON & FIGUEROA                  | 1619                           | 309                | 9                   |
| E FLORENCE & BROADWAY                | 1617                           | 385                | 9                   |
| N AVALON & PACIFIC COAST             | 1617                           | 116                | 15                  |
| S TOPANGA CANYON & DEVONSHIRE        | 1612                           | 73                 | 12                  |
| N OLIVE & 9TH                        | 1607                           | 126                | 9                   |
| S LA BREA & VENICE                   | 1607                           | 262                | 10                  |
| S GATEWAY PLAZA RDWY & BUS BAY 7     | 1606                           | 171                | 14                  |
| W SANTA MONICA & LA BREA             | 1605                           | 499                | 5                   |
| N WOODMAN & RIVERSIDE                | 1605                           | 54                 | 5                   |
| W VICTORY & LAUREL CANYON            | 1604                           | 175                | 2                   |
| E DIAMOND LANE & USC MED CTR BUS STA | 1603                           | 107                | 14                  |
| N GATEWAY PLAZA RDWY & BUS BAY 1     | 1600                           | 55                 | 14                  |
| N VALLEY CIRCLE & MARIANO            | 1599                           | 56                 | 3                   |

| BUS STOP                      | PERSON-MINUTES<br>OF WAIT TIME | TOTAL<br>BOARDINGS | COUNCIL<br>DISTRICT |
|-------------------------------|--------------------------------|--------------------|---------------------|
| S HILL & COLLEGE              | 1595                           | 201                | 1                   |
| N LAUREL CANYON & OXNARD      | 1595                           | 64                 | 2                   |
| E MELROSE & FAIRFAX           | 1595                           | 370                | 5                   |
| S LANKERSHIM & SHERMAN        | 1593                           | 143                | 7                   |
| S GRAND & PICO                | 1589                           | 196                | 9                   |
| E VERNON & BROADWAY           | 1587                           | 339                | 9                   |
| E VANOWEN & TOPANGA CANYON    | 1576                           | 183                | 3                   |
| N NORMANDIE & SANTA MONICA    | 1576                           | 265                | 8                   |
| W VENICE & COURTLAND          | 1568                           | 560                | 1                   |
| W HOLLYWOOD & WHITLEY         | 1568                           | 297                | 13                  |
| S WESTERN & 6TH               | 1567                           | 496                | 10                  |
| W HOLLYWOOD & IVAR            | 1564                           | 299                | 13                  |
| W HYDE PARK & CRENSHAW        | 1563                           | 148                | 6                   |
| W ARROYO & FOOTHILL           | 1560                           | 52                 | 7                   |
| S WESTERN & PICO              | 1559                           | 521                | 10                  |
| S FIGUEROA & ADAMS            | 1553                           | 235                | 8                   |
| W BEVERLY & RENO              | 1553                           | 303                | 13                  |
| E VANOWEN & RESEDA            | 1550                           | 162                | 3                   |
| E PACIFIC COAST & WBSTERN     | 1550                           | 136                | 15                  |
| S VALLEY CIRCLE & MARIANO     | 1545                           | 54                 | 3                   |
| N FIGUEROA & 7TH              | 1544                           | 43                 | 9                   |
| W TEMPLE & ALVARADO           | 1544                           | 326                | 13                  |
| E DEVONSHIRE & VARIEL         | 1543                           | 91                 | 12                  |
| E SUNSET & FAIRFAX            | 1542                           | 353                | 5                   |
| E JEFFERSON & LA BREA         | 1541                           | 186                | 10                  |
| S LAUREL CANYON & SHERMAN     | 1540                           | 63                 | 2                   |
| E TEMPLE & ALVARADO           | 1538                           | 297                | 13                  |
| S RESEDA & SATICOY            | 1536                           | 127                | 3                   |
| S CRENSHAW & OLYMPIC          | 1531                           | 383                | 10                  |
| E MELROSE & VERMONT           | 1531                           | 296                | 13                  |
| W CESAR CHAVEZ & BOYLE        | 1526                           | 301                | 14                  |
| E WILSHIRE & FAIRFAX          | 1522                           | 828                | 5                   |
| S CRENSHAW & VERNON           | 1521                           | 382                | 8                   |
| S DALY & PASADENA             | 1519                           | 357                | 1                   |
| E WASHINGTON & ALAMEDA        | 1510                           | 90                 | 9                   |
| W 8TH & VERMONT               | 1510                           | 465                | 10                  |
| E VICTORY & RESEDA            | 1507                           | 171                | 3                   |
| N AVALON & VERNON             | 1502                           | 417                | 9                   |
| N VERMONT & ADAMS             | 1501                           | 735                | 8                   |
| S BROADWAY & 12TH             | 1501                           | 522                | 9                   |
| E OXNARD & FULTON             | 1500                           | 50                 | 5                   |
| E LAX TRANSIT CENTER & DOCK 6 | 1500                           | 50                 | 6                   |
| E DEVONSHIRE & LURLINE        | 1500                           | 51                 | 12                  |
| S FAIRFAX & 3RD               | 1499                           | 362                | 5                   |
| E VENICE & CADILLAC           | 1499                           | 358                | 10                  |
| S SEPULVEDA & PLUMMER         | 1498                           | 89                 | 2                   |
| W VICTORY & SEPULVEDA         | 1498                           | 202                | 11                  |
| N WESTERN & MELROSE           | 1497                           | 479                | 4                   |
| S WESTERN & 8TH               | 1497                           | 499                | 10                  |
| N SAN FERNANDO & VERDUGO      | 1495                           | 259                | 1                   |
| S VINE & MELROSE              | 1495                           | 332                | 4                   |
| S VERMONT & VERNON            | 1489                           | 710                | 9                   |
| E VERNON & WESTERN            | 1481                           | 292                | 8                   |
| E VERNON & LEIMERT            | 1481                           | 262                | 8                   |
| S SEPULVEDA & VICTORY         | 1481                           | 89                 | 11                  |
| W SANTA MONICA & WILTON       | 1480                           | 458                | 13                  |
| E SANTA MONICA & GOWER        | 1480                           | 386                | 13                  |
| W WHITTIER & SOTO             | 1478                           | 493                | 14                  |
| W VERNON & MAIN               | 1477                           | 213                | 9                   |
| S VERMONT & OLYMPIC           | 1476                           | 718                | 10                  |
| W SLAUSON & HOLMES            | 1473                           | 229                | 9                   |
| W FIRESTONE & CENTRAL         | 1471                           | 294                | 8                   |
| W SLAUSON & MAIN              | 1468                           | 192                | 9                   |
| E WILSHIRE & WESTERN          | 1464                           | 804                | 10                  |
| W 7TH & FLOWER                | 1463                           | 474                | 9                   |
| E OLYMPIC & SOTO              | 1462                           | 90                 | 14                  |
| N WINNETKA & CALVERT          | 1460                           | 93                 | 3                   |
| N WESTERN & BEVERLY           | 1458                           | 466                | 4                   |
| N CRENSHAW & HYDE PARK        | 1456                           | 416                | 6                   |
| E WASHINGTON & 10TH           | 1452                           | 302                | 10                  |
| W HOLLYWOOD & EDGEMONT        | 1451                           | 311                | 4                   |
| S LAUREL CANYON & BRANFORD    | 1450                           | 56                 | 7                   |
| N LAUREL CANYON & TERRA BELLA | 1450                           | 56                 | 7                   |
| W 8TH & HILL                  | 1450                           | 386                | 14                  |
| W 3RD & WESTERN               | 1446                           | 552                | 4                   |
| S VERMONT & ROSEWOOD          | 1446                           | 718                | 13                  |



| BUS STOP                    | PERSON-MINUTES<br>OF WAIT TIME | TOTAL<br>BOARDINGS | COUNCIL<br>DISTRICT |
|-----------------------------|--------------------------------|--------------------|---------------------|
| N NORMANDIE & OLYMPIC       | 1445                           | 249                | 10                  |
| E CHANDLER & LAUREL CANYON  | 1442                           | 357                | 5                   |
| N TOPANGA CANYON & ROSCOE   | 1440                           | 57                 | 3                   |
| N BROADWAY & ADAMS          | 1440                           | 471                | 9                   |
| S TAMPA & PARTHENIA         | 1440                           | 48                 | 12                  |
| W VENICE & CRENSHAW         | 1437                           | 486                | 10                  |
| N SEPULVEDA & SATICOY       | 1436                           | 87                 | 2                   |
| N BROADWAY & VERNON         | 1434                           | 642                | 9                   |
| N EAGLE ROCK & YORK         | 1434                           | 390                | 14                  |
| W HOLLYWOOD & HARVARD       | 1433                           | 325                | 13                  |
| W CENTURY & AVALON          | 1432                           | 176                | 8                   |
| W WASHINGTON & WESTERN      | 1429                           | 294                | 10                  |
| E SLAUSON & NORMANDIE       | 1417                           | 213                | 8                   |
| E FLORENCE & SAN PEDRO      | 1417                           | 338                | 9                   |
| S INDIANA & WHITTIER        | 1417                           | 102                | 14                  |
| E OLYMPIC & RIMPAU          | 1416                           | 390                | 10                  |
| S CENTRAL & VERNON          | 1413                           | 337                | 9                   |
| S WESTERN & LEXINGTON       | 1412                           | 510                | 13                  |
| E MARENGO & STATE           | 1412                           | 245                | 14                  |
| E PICO & UNION              | 1411                           | 542                | 1                   |
| W OXNARD & VINELAND         | 1410                           | 47                 | 2                   |
| W CENTURY & WESTERN         | 1409                           | 181                | 8                   |
| S SAN PEDRO & WASHINGTON    | 1406                           | 433                | 9                   |
| E 8TH & ALVARADO            | 1402                           | 613                | 1                   |
| W FLORENCE & CENTRAL        | 1402                           | 343                | 9                   |
| N VERMONT & VENICE          | 1399                           | 682                | 1                   |
| E HOLLYWOOD & LAS PALMAS    | 1398                           | 296                | 13                  |
| S LANKERSHIM & PEORIA       | 1395                           | 117                | 7                   |
| E ROSCOE & WILLIS           | 1393                           | 145                | 7                   |
| N MAIN ST & CESAR CHAVEZ AV | 1391                           | 204                | 1                   |
| E 6TH & CATALINA            | 1391                           | 426                | 10                  |
| E NORDHOFF & TAMPA          | 1390                           | 117                | 12                  |
| E AVE 26 & FIGUEROA         | 1389                           | 284                | 1                   |
| N WESTERN & EXPOSITION      | 1388                           | 338                | 8                   |
| N VERMONT & WASHINGTON      | 1385                           | 653                | 1                   |
| W BEVERLY & NORMANDIE       | 1385                           | 342                | 4                   |
| W OLYMPIC & SANTA FE        | 1385                           | 697                | 14                  |
| E SLAUSON & MAIN            | 1384                           | 192                | 9                   |
| N BROADWAY & 12TH           | 1383                           | 286                | 9                   |
| W JEFFERSON & HOOVER        | 1382                           | 219                | 8                   |
| E TEMPLE & RAMPART          | 1382                           | 278                | 13                  |
| N WESTERN & MANCHESTER      | 1381                           | 392                | 8                   |
| N WESTERN & SLAUSON         | 1380                           | 443                | 8                   |
| E SANTA MONICA & NORMANDIE  | 1380                           | 424                | 13                  |
| N CENTRAL & FIRESTONE       | 1377                           | 277                | 8                   |
| S WINNETKA & ROSCOE         | 1376                           | 93                 | 3                   |
| E ROSCOE & WINNETKA         | 1375                           | 139                | 3                   |
| E MAIN & DALY               | 1372                           | 230                | 14                  |
| W CENTURY & BROADWAY        | 1371                           | 177                | 8                   |
| N HILL & ALPINE             | 1370                           | 190                | 1                   |
| W VENICE & LA BREA          | 1368                           | 431                | 10                  |
| W ROSCOE & LINDLEY          | 1365                           | 107                | 3                   |
| W IMPERIAL & SAN PEDRO      | 1365                           | 142                | 15                  |
| W JEFFERSON & MCCLINTOCK    | 1360                           | 153                | 8                   |
| E ADAMS & WESTERN           | 1359                           | 293                | 10                  |
| S VAN NUYS & DELANO         | 1356                           | 306                | 11                  |
| E OXNARD & LAUREL CANYON    | 1355                           | 69                 | 2                   |
| S WESTERN & VENICE          | 1352                           | 458                | 10                  |
| W 7TH & ALVARADO            | 1351                           | 349                | 1                   |
| E 7TH & GRAND               | 1351                           | 463                | 15                  |
| N LAUREL CANYON & PEORIA    | 1350                           | 58                 | 2                   |
| E BEVERLY & BENTON          | 1350                           | 290                | 13                  |
| E MANCHESTER & NORMANDIE    | 1349                           | 290                | 8                   |
| E SLAUSON & AVALON          | 1348                           | 197                | 9                   |
| W 3RD & NORMANDIE           | 1347                           | 542                | 4                   |
| N CENTRAL & VERNON          | 1347                           | 302                | 9                   |
| S CRENSHAW & ADAMS          | 1346                           | 314                | 10                  |
| W POLK & FOOTHILL           | 1346                           | 83                 | 12                  |
| W ADAMS & SAN PEDRO         | 1345                           | 236                | 9                   |
| S MISSION & BROADWAY        | 1342                           | 171                | 1                   |
| S CENTRAL & OLYMPIC         | 1339                           | 335                | 14                  |
| E VICTORY & SEPULVEDA       | 1337                           | 145                | 11                  |
| E 6TH & BONNIE BRAE         | 1336                           | 465                | 1                   |
| W SUNSET & SILVERLAKE       | 1332                           | 407                | 13                  |
| N AVALON & FLORENCE         | 1331                           | 362                | 9                   |
| N FAIRFAX & VENICE          | 1331                           | 334                | 10                  |

| <b>BUS STOP</b>            | <b>PERSON-MINUTES<br/>OF WAIT TIME</b> | <b>TOTAL<br/>BOARDINGS</b> | <b>COUNCIL<br/>DISTRICT</b> |
|----------------------------|--|----------------------------|-----------------------------|
| E MELROSE & ARDEN          | 1330                                   | 272                        | 4                           |
| E SUNSET & LUCILE          | 1329                                   | 334                        | 13                          |
| N SOTO & 1ST               | 1329                                   | 312                        | 14                          |
| S TOPANGA CANYON & SHERMAN | 1327                                   | 186                        | 3                           |
| E 8TH & SOTO               | 1325                                   | 63                         | 14                          |
| E EXPOSITION & WESTERN     | 1320                                   | 63                         | 8                           |
| E HOLLYWOOD & ORANGE       | 1320                                   | 321                        | 13                          |
| E CESAR CHAVEZ & BOYLE     | 1313                                   | 258                        | 14                          |
| S INDIANA & 1ST            | 1312                                   | 87                         | 14                          |
| E ROSCOE & VANALDEN        | 1308                                   | 134                        | 3                           |
| W SHERMAN & ETHEL          | 1306                                   | 151                        | 2                           |
| S OWENSMOUTH & VANOWEN     | 1305                                   | 118                        | 3                           |
| N ST GEORGE & ALOHA        | 1305                                   | 75                         | 4                           |
| W ADAMS & FIGUEROA         | 1305                                   | 273                        | 8                           |
| W ANAHEIM & WILMINGTON     | 1305                                   | 131                        | 15                          |
| E WASHINGTON & HILL        | 1302                                   | 92                         | 9                           |
| W BEVERLY & BENTON         | 1302                                   | 275                        | 13                          |
| S DE SOTO & ROSCOE         | 1300                                   | 84                         | 3                           |
| W SLAUSON & BROADWAY       | 1300                                   | 177                        | 9                           |
| E SANTA MONICA & LA BREA   | 1299                                   | 388                        | 5                           |
| E VAN NUYS & WOODMAN       | 1298                                   | 158                        | 2                           |
| N BROADWAY & FLORENCE      | 1298                                   | 585                        | 9                           |

**Figure A.1.** The 626 MTA Bus Stops in Los Angeles with the Highest Amounts of Use and No Bus Shelter.

