STREET TYPOLOGY

2

Most cities have transportation systems that are designed for "auto-mobility" rather than for comfortably and safely moving people. Over time, as traffic demands have increased, street widths have increased, turning our urban roadways into "freeways" that are uncomfortable for anything other than "driving through." Every street is expected to serve all modes equally well, but in the end, the "car is king."

The need to think differently about mobility is a matter of "geometry" rather than ideology. In Glendale, most streets have been widened to the point where their widths can not be easily increased. Added lanes fill up faster than they can be built.

The essential strategy of the *Downtown Mobility Study* is to rethink the street network, identifying primary streets for different types of users. Each type of street – "primary pedestrian," "primary transit," and "primary auto" will have different performance and design criteria. While capacity will be increased where necessary, streets will be designed for the mobility of people.

2.1 PRINCIPLES

- Glendale's approach to streets should focus on moving people, not cars.
- Each street should have a primary purpose (auto traffic, transit, pedestrian, bicycle) and should be designed to maximize efficiency and comfort of that mode.
- The City should evaluate each type of street according to a set of standards that optimizes use of its primary mode.
- Glendale should have a system to balance between all modes.

2.2 SUMMARY OF RECOMMENDATIONS

Recommendation 2.1

a. Support and promote programs and projects that enhance downtown's access via regional transit (i.e. Rapid Bus, Busways, Light Rail).

b. Implement a program for adjusting the local and regional transit services to meet the recommended performance criteria for transit frequency, hours of operation, speed, reliability, and passenger loads on the Primary Transit Network.

Recommendation 2.2

Create a *Downtown Streetscape Plan*, consistent with this *Downtown Mobility Study*, to guide improvements such as enhanced lighting, street landscaping, crosswalks, and signage.

Recommendation 2.3

Adopt the recommended Downtown Street Typology to provide clearer policy guidance for future decisions on street design and operation.

Recommendation 2.4

Use performance measures as a guide for downtown streets, as follows:

a. Use auto performance measures for downtown streets to focus on optimizing the person-carrying capacity of streets rather than vehicle-carrying capacity.

b. Use transit performance measures as a guide for downtown streets, including a new performance indicator – Transit Quality and Level of Service – that complements existing transit performance indicators.

c. Use pedestrian and bicycle performance measures.

ABOVE: Downtown Glendale already has some excellent assets, like the Alex Theater. New development will build on and enhance these existing assets.

2.3 DISCUSSION OF RECOMMENDATIONS

New Approach

The City of Glendale faces a fundamental challenge, and a remarkable opportunity. Continued reinvestment is required for the ongoing vitality of downtown and the private sector appears more than ready to invest in new residences and shops, with the potential to improve Glendale's already high quality of life. However, Glendale already experiences the impacts of automobile traffic, both on local streets and on the freeways that ring downtown. New development, if it follows the same patterns and same transportation policies as previous development, will certainly exacerbate this traffic congestion.

Can Glendale build its way out of traffic congestion? The *Circulation Element* of Glendale's *General Plan*, adopted in 1998, answered the question in this way:

> *The more traditional capital-intensive road-widening projects are becoming less feasible as many crucial arterials have already been widened. Further widening greatly increases both construction and ancillary costs, which generally renders such proposals infeasible within the timeframe of this element.*

Today, in 2007, the prospects for simply building our way out of traffic congestion are no better. The strategy of widening roads has essentially reached its end in Glendale, as roads cannot be further widened without removing existing land uses and forever changing the character of the city. Overall, Glendale has already recognized that simply increasing roadway capacity is no longer a reasonable or sufficient approach to meeting the challenges of new development. While some capacity enhancements are included in this plan (see Chapter 3), they can provide at best a partial solution. If Glendale wishes to accommodate major investment in downtown, with little increase in traffic congestion, a new approach will be needed.

This *Downtown Mobility Study* provides that approach. The street typology described in this chapter is a crucial tool for accommodating traffic and for realizing the vision outlined in the *Downtown Specific Plan*, so that downtown residents, employees, and visitors can spend more time enjoying downtown Glendale and less time trying to get there.

Evolution Not Revolution

The *Downtown Mobility Study* proposes three key steps to increase the use of alternative modes without neglecting the needs of automobile drivers. They are:

- Establish a new street typology (i.e. a set of street types) for Glendale, including defining Primary Pedestrian Streets, Primary Transit Streets and Primary Auto Streets.
- Set new performance measures for streets and transit services.
- Adopt a rational, practical method for balancing the needs of different modes of transportation, as they compete for limited space on Glendale streets.

The essential strategy is simple. To encourage people to travel by foot, bike, or transit, there needs to be infrastructure designed to make those choices more attractive. By applying proven travel management tools, including appropriate pricing of parking, improving the visibility and performance of transit services, and encouraging the use of alternative modes, traffic congestion can be managed and new development can be accommodated without significant increases in congestion.

It should be noted that this chapter is about evolution, not revolution. As a given, it assumes the overall policy goals adopted by the City of Glendale in the *General Plan*, with particular attention given to the transportation goals and policies of the *Circulation Element*. The intention of this chapter is to provide tools for implementing those policies, and to suggest practical, financially feasible, and incremental steps toward their realization.

It should be stated clearly: The recommendations contained herein do not mean that the needs of automobile drivers are abandoned. Auto access will continue to be a key part of the economic health of the downtown. The solution is to clearly designate priorities for different types of streets, as outlined in this chapter, by creating a new set of street types (a street typology) for Glendale.

Capacity Enhancements

Within the greater downtown, there are still places where additional capacity can be added, mostly by removing on-street parking and narrowing sidewalks, but this strategy has two drawbacks. For commuters heading home, adding capacity at downtown intersections leading up to the freeway ramps may result in no net improvement in travel time from work to home: congestion is controlled by the metering lights, not by local street capacity. At rush hour, Caltrans uses metering lights to control the flow of traffic from Glendale onto the freeways. This is because the finite capacity of the freeway to accept additional rush-hour trips has been filled and further widening of the freeways is infeasible. Traffic destined for the freeway backs up onto Glendale's local streets, as they essentially serve as "storage" for cars awaiting permission to enter the freeway.

Second, attempting to satisfy all demands for road space by removing parking and narrowing sidewalks seriously conflicts with Glendale's goal of creating a more livable downtown, where both existing and new residents enjoy living in a walkable environment and strolling and shopping on foot.

Proven Strategies

Fortunately, numerous cities have demonstrated that even without new rail service, it is possible to control traffic, improve transit ridership, and improve quality of life during a period of growth (see Los Angeles case study at the end of this chapter).

Across the country, cities have adopted mobility plans that increase transportation choices and create a walkable, transit-oriented environment that encourages the use of alternative modes in a realistic way. In virtually every one of these cities, improving the pedestrian environment and improving speed, reliability, and frequency of transit service has been crucial. The sidebar on the following page and Appendix 2A describe several successful examples, demonstrating that it is clearly feasible for a city like Glendale to grow without increasing traffic.

Glendale, too, can make big gains by implementing a comprehensive package of mobility strategies. In most cities, key aspects of success have included the reform of parking policies and improvements to transportation demand strategies (as described in Chapter 5 and Chapter 6 of this *Study*, respectively), and providing additional transportation choices, particularly transit. To support improved transit, the design and classification of streets must also change, to devote new attention to providing transit priority on at least some key transit streets, and new attention to cyclists and pedestrians. Often, this requires new partnerships between transit planners and traffic engineers.

Finally, measurements of the performance of streets must be revised, to acknowledge the reality that since lanes can no longer be added to the freeways, performance measures need to focus on optimizing the person-carrying capacity of streets, rather than the vehicle-carrying capacity.

This chapter focuses primarily on these last two areas. In the next few pages, essential recommendations are given for: (a) measuring the performance of streets and transit services; (b) classifying streets; and (c) balancing the needs of competing users.

Examples of Success

Vancouver, Canada

In 1991, as a deliberate transportation strategy, the City of Vancouver increased housing capacity in the downtown area in order to place residents near jobs and simultaneously called for streets to be the "focal point of public life." Their plan included such changes as: public realm improvements (e.g. wider sidewalks, bike lanes, and maintaining curb parking as a buffer), a major expansion in transit, no road capacity increases, improved bicycle access both to and within downtown, short-term parking management, and maximum parking requirements. As a result, transit now carries the largest share (about 40%) of commuters to downtown. Walking and cycling trips make up 35% of all daily trips (in 1999). At the same time, car trips into downtown have remained relatively constant.

Downtown San Francisco

According to the San Francisco Planning Department, employment in downtown San Francisco doubled between 1968 and 1984, while the number of cars traveling into the downtown stayed the same. To achieve this, San Francisco encouraged a compact, walkable, highly dense downtown development pattern. An important part of their strategy was the creation of Transit Preferential Streets. Market Street, the spine of downtown, is the classic example. Bus-only lanes (though imperfectly enforced) give priority to transit. New curb cuts and garage entries are prohibited virtually everywhere along it, reducing the number of auto drivers with a reason to use it; the sidewalks are wide and the adjoining buildings are now required by design standards to provide pedestrian-friendly façades.

Boulder, Colorado: Just Buses

The successes of Boulder, Colorado are particularly notable for Glendale because of the similarities between the two cities. Boulder is set in a region dominated by auto commuting, with a population of about 100,000 people, no rail transit in the city, and no control over its main transit provider. Boulder made a concerted effort to invest in a package of alternative mobility strategies including a major investment in additional local transit services (the "Hop", "Skip," and "Jump" shuttles, among others), based upon the principle of investing in the most cost-effective programs to improve mobility. As a result, use of alternative modes increased from 35% in 1993 to 47% in 1997. At the same time, sales tax receipts in downtown Boulder during this period increased by more than 100%.

2.3.1 GLENDALE'S EXISTING POLICY FRAMEWORK

General Plan

The City of Glendale's *General Plan* forms the policy basis for the recommendations in this chapter. Based on that vision, the *Circulation Element* identifies the following primary transportation goals (particularly relevant objectives are noted as well):

- Goal 1: Preservation and enhancement of the quality of life in Glendale's unique communities.
- Goal 2: Minimization of congestion, air pollution, and noise associated with motor vehicles.
- Objective: Increase/support public and high-occupancy vehicle transportation system improvements through mitigation of traffic impacts from development.
- Goal 3: Reasonable access to services and goods in Glendale by a variety of transportation modes.
- Objective: Encourage growth in areas and in patterns which are or can be well served by public transportation.
- Goal 4: Functional and safe streetscapes that are aesthetically pleasing for both pedestrians and vehicular travel.
- Goal 5: Land use which can be supported within the capacity constraints of existing and realistic future infrastructure.

Glendale's Existing Street Classifications

Glendale has one of the most sophisticated street classification systems in California, improving upon the often oversimplified "arterial, collector, local" system so common in late-20th century suburban cities. The basic list of street classifications (a.k.a. street types), which are described in detail in the *Circulation Element* of the *General Plan*, is as follows:

- Freeways
- Major Arterials
- Minor Arterials
- Urban Collectors
- Community Collectors
- Neighborhood Collectors
- Local Streets
- 'Signature Street' Overlays

Essentially, this hierarchical system classifies streets by the volume of automobile traffic that they are intended to carry, from highest traffic volumes (freeways) to lowest (local streets).

While Glendale's existing street classification system is useful for many purposes, it also has some important limitations. Some of these are described below:

- The major existing street types do little to distinguish between a street that is extremely important for transit (a Primary Transit Street) and one that has no transit service at all. As defined, a ma-

jor arterial street may carry thousands of bus passengers per day (like Brand Boulevard and Broadway) or none at all.

- The Signature Street Overlays help somewhat to overcome the above problem, but the definition of this overlay, and the way in which it should affect the underlying basic street designation, is not entirely clear.
- The existing classifications specify that auto-oriented land uses (e.g. car washes, parking garages, body shops) should be encouraged to locate along major arterials. This makes sense for arterials with little transit and therefore few pedestrians, but is this desired along major transit corridors, since transit ridership generally benefits from high-density mixed-use land uses?
- In general, the existing street type definitions mix land use and transportation functions in somewhat inconsistent ways.
- The transportation and land use classifications are not consistently linked to one another.
- Tools that take into account all modes of transportation are not consistently provided to inform key design or street management decisions in a given corridor. If an arterial has thousands of transit passengers, does it need more frequent pedestrian crossings than an arterial with no one crossing to the bus stop?
- Tools are not provided to help balance modes that compete against one another, or transportation goals that compete with land use goals. If a street is very important to both transit and autos, how can one decide which mode takes priority in matters such as signal timing, lane designations (e.g., bus 'queue jumps' at signals), or streetscape design?

This chapter builds upon Glendale's existing efforts in order to address these gaps in the current street classification system.

ABOVE: The character of Brand Boulevard north of Milford is quite distinct than the rest of the street. The street carries four lanes northbound and daily traffic volumes are substantially higher than other sections.

BELOW: In the Alex Theater area, Brand Boulevard takes on much more of the character of a traditional Main Street.

Glendale's Existing Auto Performance Measures

The Glendale *General Plan* adopts Automobile Level of Service (LOS) as the primary quantitative measure with which to judge the performance of the street system. As the *Circulation Element* describes it:

> *Level of Service is a measurement of the ability of the street or intersection to accommodate its traffic. In order that a street provide an acceptable level of service to the driver, it is necessary that arterial or collector street service volume be considerably lower than the capacity of the street.*

Glendale's *Circulation Element* establishes the following performance target:

> *"A minimum desired level of service is 'D' during afternoon peak hours, except at intersections along major arterials, where a minimum desired level of service is 'E'."*

While useful for estimating the effects of congestion on motorists, Auto LOS and Volume-to-Capacity (V/C) ratios do not offer the full picture of a transportation network in a place as complex as downtown Glendale. Relying on this measure alone to measure transportation performance results in several shortcomings:

- Auto LOS and V/C ratios do little to measure progress toward Glendale's five primary *Circulation Element* goals, on themes such as preserving and enhancing quality of life, protecting the character of residential neighborhoods, and minimizing adverse environmental impacts.
- By focusing on spot locations, Auto LOS and V/C ratios say nothing about the ability of the overall transportation network to carry traffic. For example, they do not allow planners to estimate actual average travel time among various destinations. This constitutes a significant gap in the planning process, as travel time (along with travel costs) is the factor that travelers care most about.
- More importantly, these measures estimate delay only to vehicles, not people. A bus with 50 passengers on board is counted the same as an automobile with one passenger. In order to improve Auto LOS at a given intersection, for example, traffic engineers may feel obliged to remove transit priorities in order to give more accommodation for cars. The result may be that the intersection can handle more vehicles but fewer people. In the long-term, moreover, as the city grows, managing the transportation system with an exclusive focus on auto congestion paradoxically results in more auto congestion than an approach that considers all modes.
- A street system that is optimized for cars may not be optimized for transit. Due to their fundamental need to stop to board passengers, buses and streetcars travel a certain fraction slower than other vehicles under free-flow conditions in a given street. Synchronization of traffic lights, which may significantly speed up auto flow, may actually worsen transit speeds, as buses and streetcars fall behind "platoons" of cars and hit every light red.

As auto speeds improve and transit speeds worsen, two effects take hold: induced demand toward driving and mode shift most from transit. Since travel time is the primary factor by which most individuals decide to make trips and choose their travel mode, projects that reduce congestion by expanding capacity are often filled to capacity only a short time after opening – as new travelers are "induced" into using the new capacity. Similarly, as auto travel time improves relative to transit travel time, many individuals give up on transit and shift to driving. If cities respond to these shifts by continuing to expand auto capacity while allowing transit to deteriorate, the result is a spiral of ever-increasing congestion and steady reductions in the ability of the overall system to move people.

This chapter creates a framework to break this inefficient cycle by managing the transportation system as a whole, not just as a collection of unrelated modes.

Glendale's Existing Transit Performance Measures

Glendale's existing Beeline transit service performance measures include at least four route-level performance indicators:

- Riders per revenue hour
- Farebox recovery (ratio of operations revenue to operations cost)
- Passenger miles per revenue seat mile
- Passenger miles per revenue hour

All these indicators are important efficiency measures from the operator's perspective, but they do not take into account factors that transit passengers care most about: frequency, reliability, travel time, etc. Furthermore, Glendale currently uses only Auto Level of Service to measure the performance of the streets where transit runs. While simple to do, this results in measuring just one extremely limited aspect of transit service, namely if buses are caught in congestion.

This *Study* recommends adoption of new performance indicators for all transit services described in the "Performance Measures" section later in this chapter.

Recommendation 2.3
Adopt the recommended Downtown Street Typology to provide clearer policy guidance for future decisions on street design and operation.

2.3.2 STREET TYPOLOGY REDEFINED

The new street typology for Glendale includes primary auto streets, primary transit streets, and primary pedestrian streets. It closely links together land use and transportation. Most importantly, it provides a comprehensive classification system, which helps to sort out and intelligently prioritize the needs of different modes of transportation, street-by-street and block-by-block throughout Glendale, and especially on the major downtown corridors.

The classification system described here and in Appendix 2A creates a new comprehensive street typology for Glendale. It includes three key elements:

- **Function.** Function is the relative importance of the street for each mode of transportation. Glendale has already defined many functional priorities and has included these in its Geographic Information System database. Function is the starting point for the system-wide transportation performance measures in this chapter.
- **Context.** Context is the adjacent buildings and land uses. This is particularly important for downtown retail patterns and downtowns, which have special needs regarding traffic speed, pedestrian accommodation, and on-street parking. It is also a key factor in street design standards. Context informs system-wide transportation performance measures in this chapter.
- **Form.** Form is the physical shape of the right of way. Form is the starting point for street design standards, which are not thoroughly considered here. Designations such as "Alley" or "Boulevard" are primarily related to form.

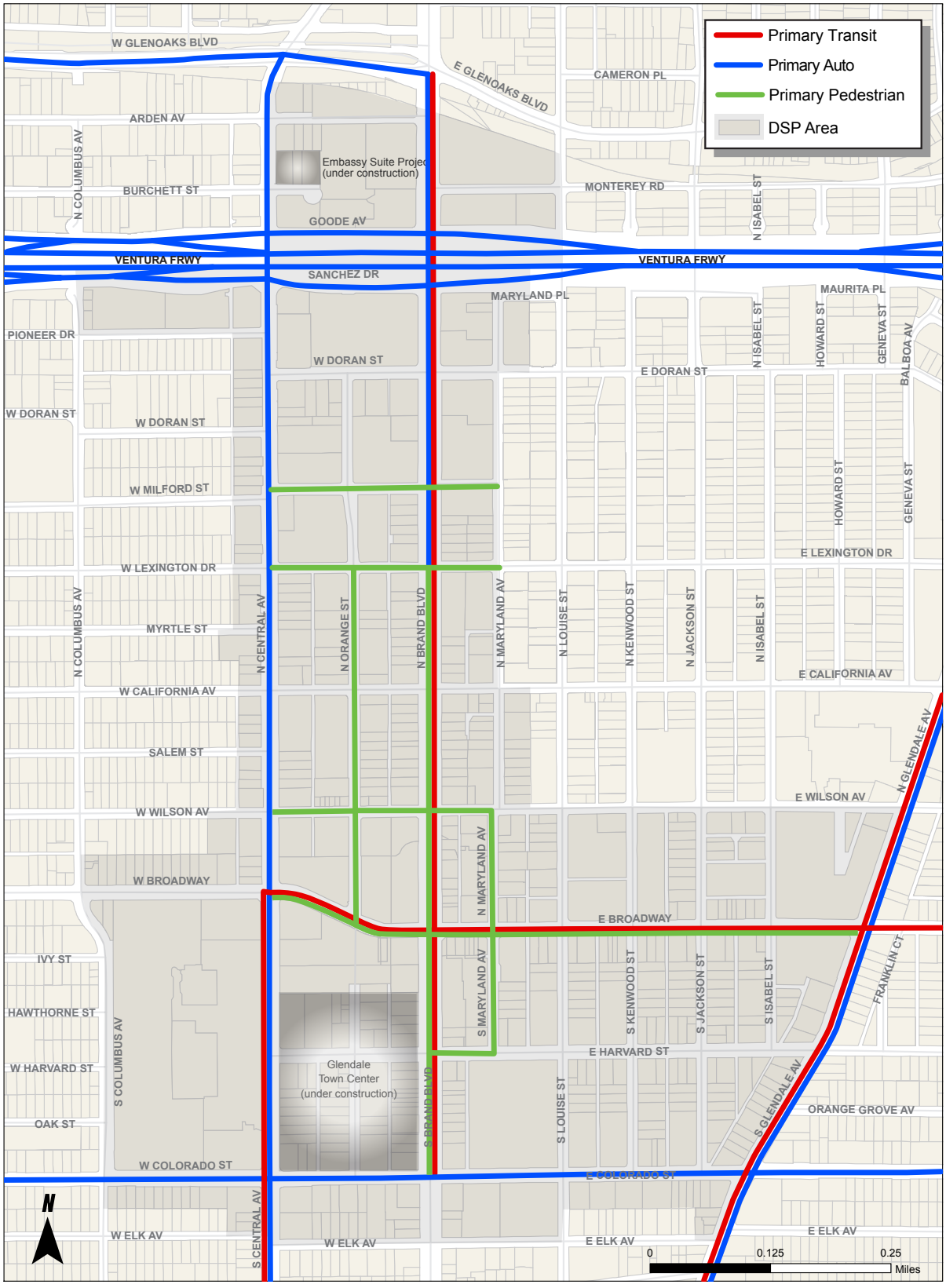
These elements are combined in different ways to inform decisions about street design and management. Specifically:

- When measuring the performance of a given corridor as part of the overall transportation network, the functional role of the corridor is paramount, followed by its adjacent land use context. The physical form of the street is less important.
- When considering the design standards for a corridor, the physical form is typically paramount. Context informs critical elements such as the provision of on-street parking, and function determines important details such as bicycle lanes, bus bulbouts, and intersection design.

Figure 2-1 illustrates the complete new recommended street typology including Primary Transit Streets, Primary Auto Streets, and Primary Pedestrian Streets.

The following sections describe each of these street types.

Figure 2-1 Street Classification Showing Primary Transit, Primary Auto, and Primary Pedestrian Streets



Nelson|Nygaard
consulting associates

Recommendation 2.1

a. **Support and promote programs and projects that enhance downtown's access via regional transit (i.e. Rapid Bus, Busways, Light Rail).**

b. **Implement a program for adjusting the local and regional transit services to meet the recommended performance criteria for transit frequency, hours of operation, speed, reliability, and passenger loads on the Primary Transit Network.**

ABOVE: Improving the pedestrian amenities on Primary Transit Streets is integral to the success of Glendale's multi-modal downtown.

Primary Transit Streets

In most cities where growth has occurred with little or no increase in traffic congestion, a fundamental part of that success was improving the visibility and reliability of transit service. This does not necessarily mean making a major investment in new transit technology, although the opening of a rail line, for example, does generate excitement. Existing bus technologies can be rebranded and repackaged to be attractive to more riders. MTA's Metro Rapid service is a good example of bus technology that was rebranded and gained significant ridership. Key to the gains on the implementation of Metro Rapid was improving transit reliability. For transit reliability to improve, the primary transit services, operating on a few key transit corridors, must be improved. A key part of most improvements is protecting transit vehicles from rising traffic congestion, which will otherwise cause steadily declining transit speeds, increasing unreliability, higher operating costs, and eventually deterioration of the entire transit network.

In addition, key corridors – including all transit corridors and connections between transit corridors and major destinations – should ideally give the highest possible level of comfort and safety for pedestrians. These goals need to be constantly balanced against the needs of auto drivers, which will continue to be an important part of travel downtown.

Primary Transit Streets give first priority to moving transit. These are the streets where, for example:

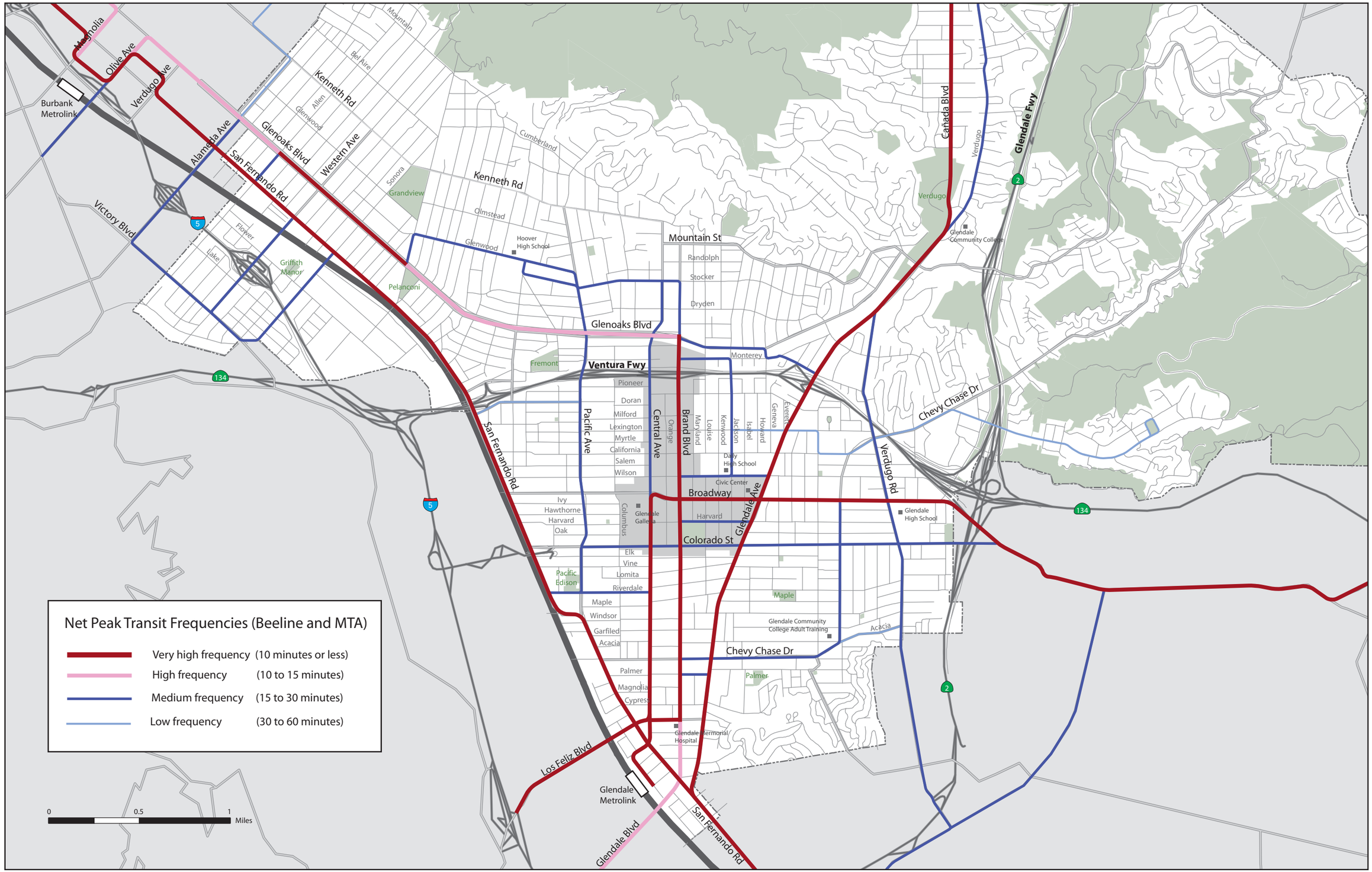
- Signal prioritization devices and traffic signal timing should give first priority to speeding up buses, even at the expense of some loss of performance or automobile level of service.
- Bus bulb-outs should be installed where needed, and where first priority is given for investments in transit amenities, such as better shelters.
- High priority must be given to creating excellent conditions for pedestrians, in the design of both streets and buildings.

The Primary Transit Streets combined create a Primary Transit Network. The recommended Primary Transit Network is shown in Figure 2-2.

As shown in the map of the frequencies of the *existing* transit services on Glendale streets (Figure 2-3), the streets designated as Primary Transit Streets are those which already have high-frequency transit, and which in the future will have even more frequent service. Streets with less frequent transit service, such as Colorado Street, are not designated as Primary Transit Streets. It is important to note that transit service is not eliminated from streets that are not designated as "primary transit streets" but that some streets with transit service will not warrant special treatment. In addition, it is worth noting that all streets with transit service must have some minimal level of safety and amenities for pedestrians and transit passengers.

Figure 2-2 Primary Transit Network

Figure 2-3 Frequency of Existing Transit Services



Not every street with transit service can be in the Primary Transit Network. Investments in the network would be concentrated on those corridors that serve the most riders and provide the highest quality of service. Transit will operate on other streets, but defining a primary network provides the basis for making investments in transit and pedestrian infrastructure. The Primary Transit Network should have performance criteria for the five key dimensions of transit quality:

- **Frequency.** The Primary Transit Network runs at least every 15 minutes considering all services on that corridor in combination.
- **Span.** The Primary Transit Network runs at the above frequency for at least 18 hours a day, 7 days a week.
- **Speed.** Primary Transit Network services have an average operating speed, including stops, of no less than 35% of the speed limit. For example, if the speed limit on the street is 30 miles per hour, transit services must operate at 10.5 miles per hour or greater including all stops.
- **Reliability.** Actual headways between consecutive buses will exceed scheduled headways by a coefficient of variation not to exceed 0.30.
- **Loading.** Standing loads but not crush loads are acceptable: peak hour loads should not exceed 85% of total seating and standing capacity averaged across all buses operating on the corridor.

Defining a Primary Transit Network does not require implementing rail service or other non-bus technologies, although any future streetcar or other rail service in Glendale would almost certainly meet the criteria for the primary transit network. Creating a Primary Transit Network serves to reinforce, on the level of policy, that certain bus service corridors are permanent, and will be supported with a high level of investment. This allows bus corridors to be the foundations of compact, transit-oriented neighborhoods.

Whether formed by light rail, streetcars or bus service, the Primary Transit Network is a foundational element of the City's infrastructure. For the high-density portions of the city, it will become as essential as power lines. Because it is designed to serve a large share of the city's population with a minimum of line miles, it can offer not just the best frequencies and spans of service, but also many other premium features, including:

- Priority for low-floor, high-capacity coaches and any new coach technologies that expedite comfort or operations.
- Premium shelters with many of the amenities associated with rail stations.
- Information features, including real-time information in shelters (the number of minutes until the next bus comes) and informational displays within buses (such as the time and the next stop).

ABOVE: A reliable, efficient transit system with vehicles that have bike racks can extend the range of bicycling significantly making it more comparable with auto use. Improvements in transit service could spur increased bicycle use as well.

- A distinct image that sets the Primary Transit Network apart from the less-frequent supporting services.
- Reinforced street pavement for smooth travel and fewer maintenance interruptions.

The Primary Transit Streets which pass through the *Downtown Specific Plan* area are:

- Brand Boulevard from Glenoaks to Colorado
- The corridor defined by the MTA Metro Rapid 780 buses: Broadway from just east of Verdugo Road to Central Avenue, Central Avenue from Broadway to Chevy Chase Drive
- Glendale Avenue from I-134 to Chevy Chase Drive

Primary Auto Streets

Primary Auto Streets give first priority to moving automobile traffic. In terms of measuring their performance and design, they essentially follow the existing definition of a primary arterial street in Glendale. On these streets, first priority is given to meeting automobile level of service standards (e.g., in signal prioritization). Other modes, while not entirely ignored, take second priority. The downtown streets designated as Primary Auto Streets are the blocks of the major arterial streets:[1]

- Colorado Street (throughout its length)
- Central Avenue (throughout its length)
- Glendale Avenue (throughout its length)

The Capacity Enhancements section (see Chapter 3) describes the specific capacity enhancements proposed for these Primary Auto Streets, for the freeway interchanges and certain associated streets (such as the frontage roads) serving downtown. These capacity enhancement projects will provide these primary auto streets with additional capacity to move traffic.

Design standards for Primary Auto Streets are the same as for primary arterial streets, as described at length in the *Circulation Element* of the *General Plan.* For the sake of brevity and since no new design elements for Primary Auto Streets are introduced by this plan, those standards are not repeated here.

Primary Pedestrian Streets

Primary Pedestrian Streets give first priority to creating excellent conditions for pedestrians. This designation is usually most important on primary retail and transit corridors, but also desirable on many residential streets. Typically, this means wide sidewalks, fine well-designed streetscapes, curb parking to buffer pedestri-

1 Note that portions of several streets, such as Brand Boulevard, are designated as both Primary Auto Streets *and* Primary Transit Streets.

ans from passing traffic, and frequent safe crossings. On Primary Pedestrian Streets, the removal of parking should be avoided, additional traffic lanes should not be added, and the existing curb-to-curb width of roadways should not be increased, since this diminishes the remaining space for sidewalks and landscape strips.

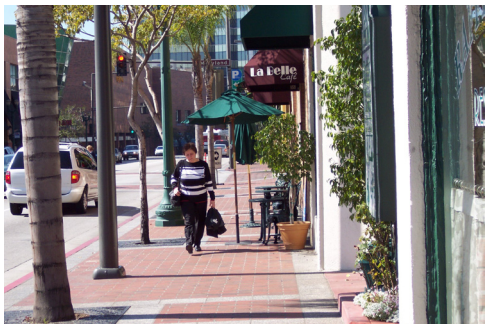
Improving pedestrian conditions has been a theme of Glendale planning in recent years. However, implementation of changes to enhance the pedestrian realm has only been partially executed or not at all. This is likely due to two factors. First, pedestrian planning is almost always part of another planning effort, so it is easily de-prioritized. Second, and perhaps more importantly, attempts to create high-quality pedestrian environments are often overruled by changes to downtown streets that prioritize cars over pedestrians. As a result, Glendale has few downtown streets that are ideal for pedestrians and others where conditions discourage pedestrian activity. To overcome this problem and genuinely implement the *Downtown Specific Plan*, prioritizing pedestrians in Glendale's planning and engineering decisions will become even more important.

Glendale's economic vitality hinges on its walkability. Downtown Glendale's competitive niche is as a charming, walkable, mixed use district. Downtown must leverage and enhance its existing assets to remain competitive with suburban shopping malls and auto-oriented commercial strips. If the visitors, residents, and workers who come to downtown to do their shopping and errands want to come back again, merchants will thrive.

Improving pedestrian conditions is also key to protecting safety and public health. In a statewide traffic report issued 5 years ago, the City of Glendale was ranked fifth highest for pedestrian fatalities among 45 cities with similar-sized populations (between 100,000 and 250,000). In addition, the city ranked 49th highest in a statewide comparison among all cities and counties (there are over 478 incorporated cities and towns and 58 counties in California). These safety statistics have quantifiable costs, as well as indicating human tragedy. Glendale taxpayers must pay for increased life safety and first responder resources, lost economic productivity for the City due to missed time at work for both the injured and their caretakers, lost wages, and the increased cost of health care and other public services for those that are injured and not insured.

Defining Primary Pedestrian Streets

The *Downtown Specific Plan* includes extensive land use and building guidelines to encourage a pedestrian friendly downtown, including:



ABOVE: Improving pedestrian conditions throughout Glendale is key to the success of its downtown.

BELOW: The sidewalks along the office towers along North Brand Blvd. are wide, however they provide quite limited ground-floor retail and there is relatively little of interest to the pedestrian.

- Land use standards and policies that focus on pedestrian-oriented ground floor commercial development, and a mix of uses that brings more residential development downtown and creates a 24-hour environment.
- Urban design policies and development standards for building height, floor-area-ratio, architectural features, minimum and maximum building setbacks, façades and frontages, entrance locations, building orientation, and parking entrance locations. These requirements vary throughout downtown to create a set of distinct districts, each with a unique scale and image.
- A plan for an open space network which is accessible within a 5-minute walk of any location downtown. This includes streets, parks, plazas, courtyards, and paseos, each with specifications for ratios, location, design, and landscaping.
- An urban art program.
- Pedestrian safety at midblock crossings and intersections.

Guidelines for Primary Pedestrian Streets

The Primary Pedestrian Street recommendations below are designed to complement these DSP standards and guidelines. These recommendations focus specifically on how pedestrians fit in with the overall transportation system. This includes improving pedestrian mobility and ensuring safe and fluid interface between pedestrians and other modes. Recommendations address: sidewalk conditions, intersection and crosswalk conditions, continuity and connectivity of the pedestrian network, and safety:

- Develop a network of Primary Pedestrian Streets (as shown in Figure 2-1) that provides access throughout downtown, linking the various downtown districts. High quality pedestrian routes should be established between offices, housing, restaurants, entertainment, recreation, and other prominent downtown destinations.
- The pedestrian network must integrate transit stops and stations to encourage fluid interface between walking and transit use.
- On pedestrian priority streets, pedestrian-orientation should guide all elements of street and sidewalk design and a higher level of pedestrian amenities should be provided.
- Designs should improve pedestrian safety to achieve a reduction in pedestrian injuries and fatalities.

Urban Design for Pedestrians

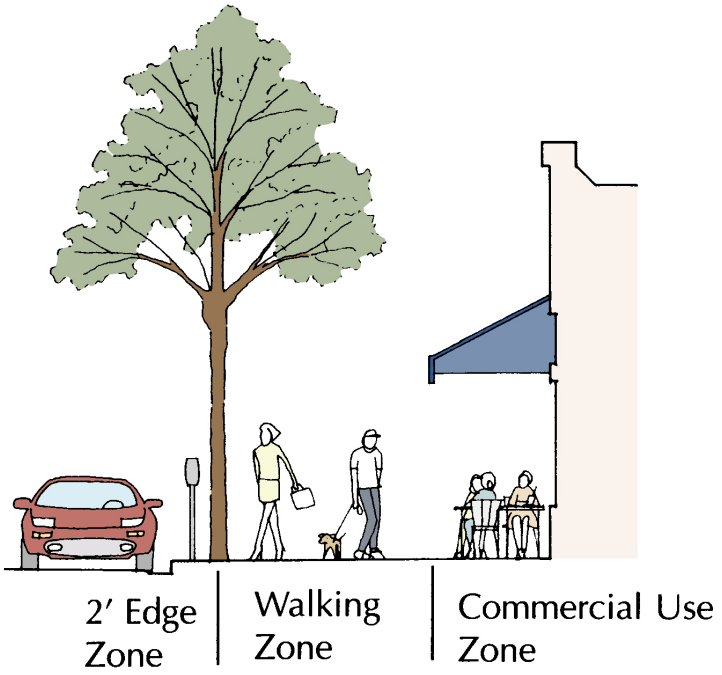
As Figures 2-4 through 2-10 illustrate, Primary Pedestrian Streets should include the following design features:

- **Sidewalk Widths:** Preserve and enhance current sidewalk widths. All Primary Pedestrian Streets should maintain a sidewalk width of at least 12-18 feet.

Figure 2-4 Examples of Design Strategies to Recreate a "Pedestrian Buffer" if On-Street Parking is Removed

ABOVE and RIGHT: Two examples of how landscaping and pedestrian-scale lighting standards can help to recreate a pedestrian buffer when on-street parking is removed.

Figure 2-5 Street Design for Pedestrians



ABOVE LEFT: Primary pedestrian streets should include widths of 12-18 feet and adequate buffers between moving cars and pedestrians.

Figure 2-6 Glendale Chess Park and Mid-block Passageway

BELOW LEFT: Example of a well-designed, active mid-block passage.

Figure 2-7 Santa Barbara Alleyway

ABOVE RIGHT: Example of the vitality of properly-designed and programmed alleyways.

BELOW: Pedestrian amenities such as landscaping and seating.

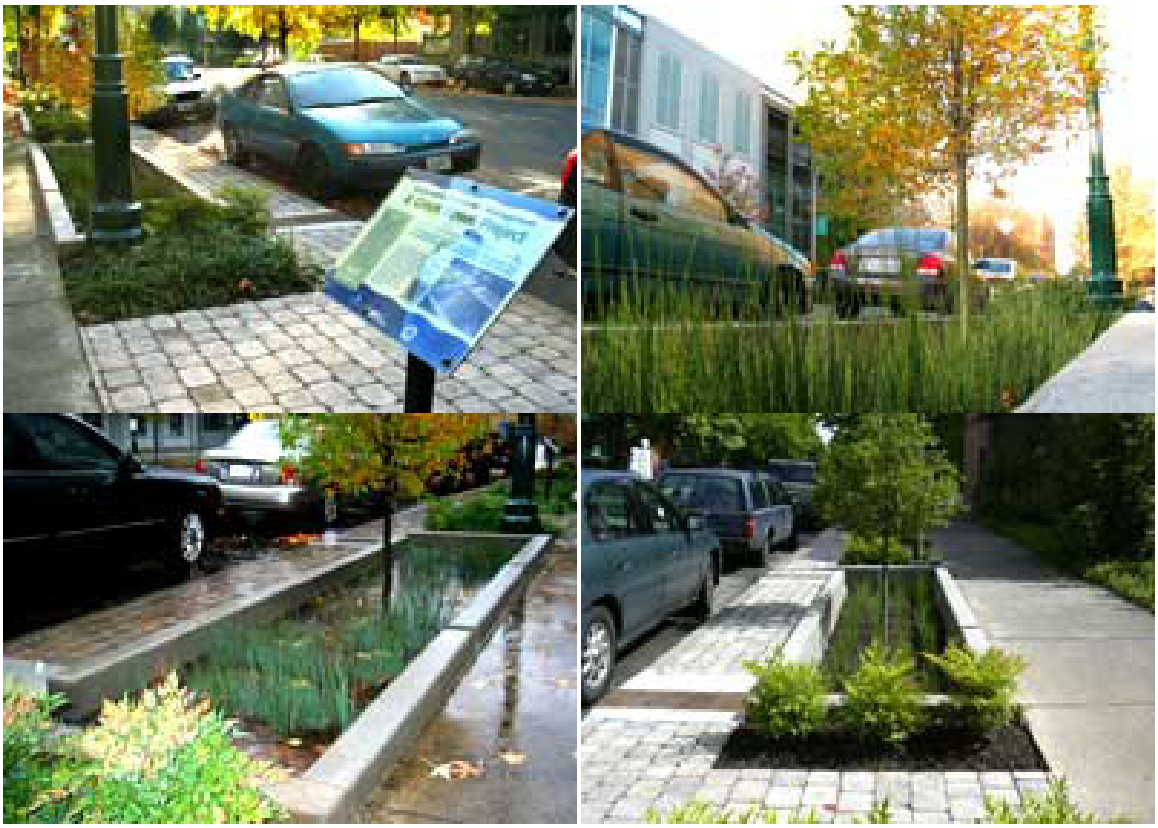
Figure 2-8 Pasadena Alleyway

Figure 2-9 Chicago's State Street

LEFT: Pedestrian-friendly design increases the economic activity and safety of urban streets. *Photo courtesy of Sky Scraper Page. Accessed at www.skyscraperpage.com on 1/18/07.*

BELOW: Ped-friendly streetscape design can incorporate "green" features to promote environmental sustainability. *Photo courtesy of Kevin Perry, City of Portland.*

Figure 2-10 Portland's SW 12th Avenue "Green Street" Project



- **Buffers from Moving Traffic:** Preserve on-street parking and other adequate buffers between moving cars and pedestrians where possible and add where absent.

Sidewalks

A truly pedestrian-friendly sidewalk includes more than simply space for pedestrians to walk through. First, providing a buffer between the road and the sidewalk through on-street parking or landscaping is one of the most important ways to increase real and perceived pedestrian safety. A sidewalk should also include space for comfortable pedestrian circulation as people shop and stroll; landscaping, street furniture, and other amenities like bike parking and newspaper boxes; and adequate space for businesses to expand onto the sidewalk with outdoor displays and seating, creating a more vital sidewalk environment.

Technically these activities can be divided into four zones:

- The edge zone where the sidewalk meets the street
- The furnishings zone which can provide a buffer to moving traffic (especially important in the absence of on-street parking)
- The throughway zone which is the clear area for pedestrian movement
- The frontage zone which is the area immediately adjacent to the building wall

Twelve to eighteen feet allows for flexibility to accommodate the features most necessary to maximize pedestrian comfort and pleasure.

Generally the *Downtown Specific Plan* specifications for setbacks from the sidewalk will accommodate these zones adequately. Depending on the type of street frontage, the *Downtown Specific Plan* calls for setbacks ranging from 12-24 feet. These requirements bear repeating because the sidewalk is the heart of the pedestrian realm. Inadequate sidewalk conditions will undermine any other improvements to pedestrian conditions.

The *Downtown Specific Plan* also includes general sidewalk prescriptions including: paving patterns, landscaping, street lighting, curb extensions, and sidewalk furniture.

Sidewalk Widths

Prioritizing sidewalk widths, even in the face of pressure to widen roads and increase auto throughput may be difficult. It will require leadership and maintaining focus on Glendale's goals for its downtown. However, success of all modes relies upon an excellent and complete pedestrian network. A walkable environment improves overall quality of life and is central to the success of the

DSP. Therefore, degradation of pedestrian conditions should be avoided at all costs.

Intersections

Primary Pedestrian Streets must also provide safe and convenient pedestrian crossings at all downtown intersections. Intersection design elements should include: high visibility pavement markings; decreased pedestrian crossing distances by minimizing curb radii and/or providing curb bulb outs; and heightened visibility for pedestrians and drivers wherever possible.

In a pedestrian-oriented district like Downtown Glendale, intersections must be designed with pedestrian accessibility and safety as the priority. The first strategy to protect pedestrians is to limit the time they must be in the intersection by decreasing crossing distances. Curb radii must be considered according to context and uses of the street as a whole because it affects not only pedestrian crossing distance, but also vehicle speeds and ease of turning movements for transit and other large vehicles. Curb radii must accommodate turning vehicles, especially into one-lane "exits." Sidewalk bulb-outs are an alternative to smaller curb radii. In addition to shortening crossing distances, they enhance the visibility of pedestrians and drivers and provide additional sidewalk space for pedestrian movement and amenities.

Pedestrian Safety

Other key factors in pedestrian safety that should be considered in intersection design are:

- Wide visible crosswalk striping
- Advance stop bars
- Pedestrian count-down signals
- Signal timing that is adequate to allow pedestrians to cross and signal cycles that are frequent enough to discourage jaywalking
- In-pavement crosswalk lighting at mid-block crossings and unsignalized intersections

At each intersection, Glendale will need to balance the needs of different modes to determine the correct configuration for the intersection. However, on all Primary Pedestrian Streets, pedestrians should take priority where conflicts with autos arise.

- **Mid-block Crossings:** Preserve and create mid-block crossings and pedestrian passageways. On major streets, these crossings should be signal controlled.
- **Curb Cuts and Loading Zones:** Minimize interruptions to the pedestrian realm, like areas for loading and trash collection and curb cuts for driveways and parking garage entrances.

Pedestrians are particularly sensitive to indirect routes because they are moving at slow speeds and thus longer distances make for much longer travel times. Increasing connectivity of pedestrian routes by providing pedestrian pass-throughs, mid-block crossings, and cul-de-sac connectors can significantly increase the attractiveness of walking. Ideally, downtowns have short block lengths and high street network connectivity. However, as in many cities, this is not the case in all parts of Glendale. This makes the mid-block crossing a useful tool. It shortens pedestrian walking distances, increases directness of routes, and lessens the temptation to cross at unprotected locations. Generally, mid-block crossings should be provided whenever block lengths are greater than 300 feet and located where justified by demand. For safety, these mid-block crossings should be controlled by pedestrian-activated signals on major streets.

Continuity

The continuity of the pedestrian realm is similarly important. Minimizing interruptions and obstacles to walking makes for a more pleasant pedestrian experience. If necessary at all, curb cuts should occur no more than every 200 feet on primary pedestrian streets. One way to eliminate curb cuts is by interlinking parking facilities and sharing parking to decrease the need for separate entrances. This topic is also discussed at length in the *Downtown Specific Plan* in the pedestrian network and urban design guidelines.

Accessibility

Provide for the special mobility requirements of the young, the elderly, and wheelchair or mobility impaired users of the sidewalk network. All downtown streets must satisfy disability access standards, including crosswalk treatments, sidewalk widths and curb ramp design, as required by the Americans with Disabilities Act.

Ultimately, Glendale should undertake a full streetscape plan to ensure implementation and expansion of all the elements described here and to ensure the success of the DSP's vision for a walkable, vibrant downtown.

Recommendation 2.2
Create a *Downtown Streetscape Plan*, consistent with this *Downtown Mobility Study*, to guide improvements such as enhanced lighting, street landscaping, crosswalks, and signage.

Primary Bicycle Streets

Primary Bicycle Streets are the key streets in the bicycle network. The bike routes recommended in the *1995 Bikeway Master Plan* have never been implemented. The first step Glendale should take is to update and implement the *1995 Bikeway Master Plan*.

For the sake of brevity and clarity in this chapter, bicycle recommendations are touched on only lightly here, and should be considered in more detail in future planning efforts.

Conflicts and Trade-Offs

The designation of different street types raises a major question. If a portion of Central Avenue, for example, is designated both a Primary Auto Street and a Primary Transit Street, at least in some blocks, which mode should take priority? In these cases, priorities need to be clear: only a small handful of streets in the entire city are designated as Primary Transit Streets, and on these few streets, first priority must be given to speeding up transit, to meet the City's goals for increasing transit ridership. However, on streets with shared designation, the techniques needed to speed up transit will largely be the same techniques that would speed and increase traffic flow.

In many places, trade-offs are required to address conflicts between modes. A highly constrained right-of-way (e.g. Broadway at Brand) may be designated as both a Primary Transit Street and a Primary Pedestrian Street, while still needing to serve some automobile traffic. Something has to give. In the case of Broadway at Brand, four lanes are created by removing parking – providing enough street capacity to keep autos and transit moving – while pedestrians gain a finely detailed streetscape, but lose the buffer the parking had provided. This design, probably necessarily, resolves the conflict by giving first priority to transit over pedestrians.

When removal of the on-street parking pedestrian buffer is absolutely necessary to achieve transit performance measures, several design strategies - such as installation of additional landscaping, pedestrian-scaled lighting, street furniture, public art, and/or vertical signage elements - can be implemented to re-establish some semblance of a pedestrian buffer. Examples of these strategies are shown in Figure 2-4. It is critical to note that adequate sidewalk widths and clear travel paths should be maintained in conjunction with the deployment of these pedestrian buffer design strategies, per minimal ADA requirements and sidewalk width standards, especially for Primary Pedestrian Streets.

2.3.3 PERFORMANCE MEASURES FOR A NEW STREET TYPOLOGY

Glendale's existing primary transportation performance measure, Automobile Level of Service (LOS), is an important performance measure, and this *Study* does not propose that it should be abandoned. Measuring auto performance remains key, and should remain the primary measure of performance on the Primary Auto Streets. However, Glendale needs additional performance measures, to be able to measure how well other modes of transportation are doing, and in particular, how well transit is performing on the Primary Transit Network.[2]

The City of Glendale is most interested in allowing its transportation system to accommodate planned growth in a sustainable manner, with a strong focus on quality of life. For Glendale, achieving this will require a new focus, including performance measures, that concentrates on moving people rather than automobiles, particularly on the streets of the Primary Transit Network. Overall, the focus that is proposed in this *Study*, which we recommend should be adopted in the *General Plan*, environmental compliance guidelines, congestion management program, and elsewhere as appropriate, is the following:

- Level of Service should reflect "person delay" rather than "vehicle delay."
- Volume-to-Capacity ratios should examine "person capacity" rather than "vehicle capacity."

Recommended Transit Performance Measures

The new performance indicators for all transit services operating in downtown Glendale, including both regional and local service, (with the proposed goal indicated in parentheses) are as follows:

- **Mode Split**: Increase the transit mode share for trips within downtown Glendale (10%), and also between Glendale and neighboring cities (8%).
- **Productivity for Shuttle Service**: Measured in Passengers per Revenue Service Hour (Buzz = 20 passengers/hour, Beeline = 15 passengers/hour).
- **Travel Speeds on Transit Priority Streets**: Measured as percentage of posted speed limit (transit speed greater than or equal to 35% of the posted speed limit for all services combined).
- **Connectivity**: Transit ridership will increase to the extent that transit services can be packaged as a single system.
- **Fares**: Measured in farebox recovery (Buzz is free; all other fares to recover at least 15% from farebox).

Recommendation 2.4

Use performance measures as a guide for downtown streets, as follows:

a. Use auto performance measures for downtown streets to focus on optimizing the person-carrying capacity of streets rather than vehicle-carrying capacity.

b. Use transit performance measures as a guide for downtown streets, including a new performance indicator – Transit Quality and Level of Service – that complements existing transit performance indicators.

c. Use pedestrian and bicycle performance measures.

2 These additional performance measures would be used as a guide, rather than for analysis.

A complete explanation of these standards, including all variations for local and regional service, can be found in the section entitled "Measuring Success" at the end of Chapter 4 (Transit Service).

Other Performance Measures

To implement this overall approach, Appendix 2A examines the following specific level of service measures, which cover each of the various modes in turn:

- Vehicle Level of Service (adopted)
- Transit Quality of Service and Level of Service
- Pedestrian Level of Service
- Bicycle Level of Service
- Freight Level of Service

This approach recognizes that no transportation planning process for any mode takes place in isolation. Smart transportation planning must take into account other modes sharing (and competing for) space on each major street. Based on this recognition, this *Study* provides a process that focuses on bringing the different modes together in consideration of the land use context along each street. By considering the transportation modes together with the context, it provides the opportunity to:

1. Balance the often competing needs of the different modes within different street/building contexts.
2. Inform a process of compromise in decisions about street design and operation whereby the net public gain for the community can be maximized while the net impact on different modes and street/building contexts can be minimized.

2.3.4 CONCLUSIONS

Downtown Glendale already has many of the features that make for a great place to walk: it is compact and mixed-use, providing many of the necessities of daily life within a five-minute walk; it has an established network of traditional streets, blocks, and buildings that are generally conducive to walking; and the *Downtown Specific Plan* provides guidelines for architecture and urban design that help create good pedestrian conditions. By implementing the guidelines in this chapter for Primary Pedestrian Streets and Primary Transit Streets, Glendale will broaden its focus on moving people rather than simply moving vehicles.

By establishing the Primary Transit Network and designating the Primary Transit Streets on which this network must move, Glendale will achieve reliability and speed for its transit services. Because the buses operating on these Primary Transit Streets carry the majority of the system's riders, the improvements made on the streets will have a magnified impact on both ridership and service costs. By reworking the Primary Transit Streets to improve speed and reliability, Glendale will achieve the greatest savings in service hours, and will reduce travel times and schedule variability for the greatest number of riders. By investing in pedestrian improvements and transit stop improvements on these streets, the City will target scarce transportation dollars toward improvements that benefit the greatest number of transit passengers.

On Primary Pedestrian Streets, the conditions most important to pedestrians will be improved, encouraging more people to "park once" or take other modes and walk through downtown. Increased pedestrian activity is good for business, as pedestrians become "window shoppers" and eventually customers. Increased pedestrian activity increases everyone's safety by providing more "eyes on the street." Perhaps most important, increased pedestrian activity makes a city a real "place" — not just a place to pass through.

On the Primary Auto Streets, the proposed capacity enhancements (detailed in Chapter 3) will provide, insofar as is possible given the physical constraints of the existing downtown environment, additional automobile capacity.

Overall, the investments and policy changes described in this chapter will improve the safety, convenience, and joy of walking in downtown Glendale, increase the efficiency of the transportation system, and help Glendale achieve its goals for ongoing revitalization of downtown without significantly increasing traffic congestion.

Los Angeles Metro Rapid Program

As a local example of quickly deployed investment in transit, it is worth noting the success of the Metro Rapid Program. This partnership between the Los Angeles County Metropolitan Transportation Authority (MTA) and the city of Los Angeles Department of Transportation (LADOT) resulted in major improvements in street design, designed to protect the speed and reliability of transit, with investment in frequent service, better buses, and less frequent stops.

In basic terms, on the transit provider side (primarily under the MTA's control), the key attributes are: frequent service, headway-based schedules, simple route layouts, less frequent stops, level boarding and alighting, and carefully branded, color-coded buses. On the street design side (primarily under the LADOT's control), the key attributes are: bus signal priority and improved stops designed to emulate light rail transit stations (with amenities such as bus bulb-outs and better shelters, real-time arrival displays, etc.).

The program is a primary example of how close cooperation between city traffic engineers (the professionals who design streets, set street standards, and set measures for the performance of streets) and transit planners (who route and schedule buses) can result in a major increase in the performance of transit service - even when relatively little funding is available, and the prospects for rail transit funding appear distant.

According to the Federal Transit Administration (FTA), the result is an express arterial bus service that has reduced passenger travel times by as much as 29%, with ridership increases of nearly 40%. According to the FTA, approximately one-third of the reduction in travel time results from the bus signal priority system, with the majority of the balance attributed to fewer stops and headway-based schedules.

MetroRapid images courtesy of Suisman Urban Design and LA MTA.