



**PACE**

**DEVELOPMENT GUIDELINES**

Revised November, 1999

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[Dedication](#)

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## I. EXECUTIVE SUMMARY

Pace, the Suburban Bus Division of the Regional Transportation Authority (RTA), has prepared the *Development Guidelines* to encourage the coordination of real estate development and transit service. The recommendations in this manual are designed to help municipalities and the development community accommodate transit service in their development plans. In numerous instances, Pace has not been able to serve locations due to street layouts and designs that do not support bus service. By designing for public transportation in initial development plans, Pace transit vehicles will be accommodated thereby promoting transit as a viable means of suburban transportation. Coordinated planning not only can result in effective transit service but may also lead to the reduction of traffic congestion and associated environmental impacts.

While adherence to these guidelines is strictly voluntary, municipalities, developers and other interested individuals are encouraged to follow these recommendations, where appropriate. Pace encourages municipalities and developers to take the lead in planning for public transportation in conjunction with new development. By submitting development plans to Pace for no-cost reviews, design options that promote a transit serviceable environment and support services mandated by the Americans With Disabilities Act (ADA) can be included during initial planning phases. Transit service also can be tailored for the future users.

To be effective in reducing traffic congestion, the public and private sectors must work together to develop programs that enhance mobility and encourage the use of alternative forms of transportation. This document is a step in that direction. The need for coordination is particularly important in light of the Clean Air Act Amendments of 1990 (CAAA). The availability and use of transit service can aid in achieving mandated reductions in air pollution emissions.

The *Development Guidelines* present design elements that are more conducive to the provision of effective and efficient transit service. These guidelines are designed to facilitate mobility and enhance transit accessibility and convenience. Also provided are land use planning considerations that effect population/employment densities, traffic patterns, congestion, transit use and transit service capabilities.

In addition to the aforementioned design and land use planning techniques, demand management strategies are offered and encouraged to reduce rush hour traffic congestion. These strategies include the promotion of shared-ride programs and public transit services as well as management policies that encourage variable work hours and establish parking controls. Together with site design and land use measures, these guidelines can be effective in achieving reductions in traffic congestion and enhancing mobility.

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## II. INTRODUCTION

Recent suburban growth has ushered in a new era of traffic problems and raised additional transportation issues. Many of the amenities that have attracted business and individuals to the suburbs are being lost or overshadowed by traffic inconveniences. It has become apparent that with growth comes the need to adopt transportation policies and plans to help maintain the quality of life and aesthetics of suburban communities. Coordinated efforts between transit service providers, municipalities, businesses and the development community are necessary to find effective solutions to traffic congestion and to improve suburban mobility.

Recently enacted legislation has further increased the need for a cooperative effort between businesses and transit agencies. The Clean Air Act Amendments of 1990 define national air quality standards that non-attainment areas must achieve. This legislation is a bold effort to improve the nation's air quality by reducing harmful emissions. Northeastern Illinois is classified as a severe non-attainment area for ozone and must meet prescribed requirements outlined in the CAAA. The public and private sectors must work together to reduce vehicle emissions and improve the region's transportation system, including public transit service provision.

In addition, the Americans With Disabilities Act mandates equal access to all public transportation services. While fixed route buses must be wheelchair accessible, Pace must also provide curb-to-curb services to disabled persons who cannot use accessible fixed route vehicles. This service must be scheduled and provided in the same geographic areas as fixed route systems. Development design that accomodates Pace dial-a-ride vehicles and provides easy access to this service is vital for serving the suburban population.

Public transportation, as a means for improving mobility, maintaining employment, conserving natural resources as well as reducing traffic congestion and associated emissions, can be--and should be-- coordinated with land use planning. Consideration of public transportation during initial development planning stages can increase a community's success as an attractive and vital location for business and residence. *Site design techniques* for buildings, roadways, walkways and waiting facilities can be applied to reduce obstacles to public transportation use. These design measures allow transit to reach its markets and offer convenient and more effective pedestrian access to and through developments.

In conjunction with site design techniques, *corporate transportation policies* can be adopted to alleviate traffic congestion problems in suburban locations. These policies can encourage employee use of public transportation and other shared-ride options as an alternative to single occupant vehicles. They also can promote additional demand management strategies--like variable work hours--to reduce rush hour traffic congestion.

Site design and management policies alone cannot encourage the use of public transportation; transit service providers must offer service that is comfortable, efficient and effective. To achieve this goal, transit service must be designed to meet the needs of the suburban traveler. Transit providers, businesses and municipalities must work together to develop innovative service options targeted to traveler needs.

Pace, the suburban bus division of the RTA, recognizes the need to coordinate efforts to identify transit service needs, promote land use planning techniques that provide transit and pedestrian access, and develop management policies that reduce rush hour traffic congestion. Design considerations, management policies and transportation alternatives can provide a workable solution to traffic problems.

The Development Guidelines have been established in Pace's effort to work with suburban communities, developers, planners and businesses to reduce congestion and resulting emissions. These guidelines are designed to promote the incorporation of public transportation considerations into development plans and demand management techniques into management policies. While not regulations or specifications, the guidelines in this manual are designed to create a more transit and pedestrian oriented environment in an effort to promote transit use and reduce traffic congestion. These guidelines can be applied wherever roadway or structure improvements--both public and private--are contemplated. They are recommended for suburban settings that generally have employment and population densities less than 8000 people per square mile. However, there will be circumstances under which these recommendations do not apply; their application is dependent on site and traffic characteristics. And, as with all transportation control measures, these guidelines should be used judiciously.

This manual identifies the *design and operating specifications*, transit design recommendations for roadways, bus stop areas and pedestrian facilities have been developed and are presented here. Also described are *site design considerations* for residential, retail, office and industrial developments. These considerations are offered to enhance a site's transit serviceability and improve pedestrian access to service as well as help relieve traffic congestion in suburban areas. To further enhance understanding of the transit recommendations, appropriate drawings have been produced and incorporated in this manual. They are for illustrative purposes only; however, developers and others wishing to incorporate Pace recommendations should encourage involved architectural and engineering professionals to design similar transit elements into their projects in order to meet existing and future requirements.

*Demand management techniques* are presented in this document as a means of reducing traffic congestion and addressing transit issues. These techniques can be promoted by businesses, developers, municipalities and other interested organizations to encourage employee use of public transportation, shared-ride programs and employee participation in other programs designed to reduce rush hour traffic.

Pace will provide further assistance to municipalities and developers who wish to incorporate transit design elements into their development plans. A no-cost service providing *technical assistance and transit information* has been established by Pace to answer transit related design questions and to conduct development plan reviews. Pace recommendations are for general suburban application; interested individuals are directed to CTA and Metra for questions specific to those systems.

To promote the coordination of transit facilities with private and/or public sector development, Pace is pursuing *joint-venture development opportunities*. Joint projects can support economic growth and transit use while providing investment opportunities to the development community. Pace encourages the joint use of transit properties for high density residential, office, commercial or industrial development to reduce tripmaking and alleviate congestion in suburban areas, particularly those that are experiencing population and employment growth. Pace is committed to giving careful consideration to joint development proposals and encourages the private and public sectors to propose development projects that are linked to transit operations.

Pace's Joint Development Policy can be found in Appendix D. Those who are interested in pursuing joint partnerships with Pace should contact the Capital Planning and Construction Manager at (847)228-4260.

A. [Background](#)

B. [Purpose](#)

C. [Benefits](#)

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## **A. BACKGROUND**

Development has been tied to available means of transportation throughout history. Cities consisted of small compact centers when walking was the principal form of transportation. As transportation systems advanced, urban centers grew. These centers began relying on mass transportation. Residential development expanded out of urban centers as public transit progressed into suburban areas.

However, over the past 70 years mass produced automobiles have become the major form of transportation and have increased pressure for roadway construction. Since that time, the automobile has shaped our environment. Housing expanded even farther from urban centers into the suburbs, soon followed by commercial and industrial development. To satisfy travel demand and continued growth, roadway construction advanced. Population and employment shifted from dense, compact centers to dispersed, low density developments that were and still are automobile oriented.

Traditionally, public transportation has had a difficult time servicing these sprawling, low density areas. In an effort to reach suburban development, transit agencies have expanded services. This has led to rising operating costs and, at times, reduced revenues due to the nature of the dispersed development patterns and low population and employment densities.

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## **B. PURPOSE**

In Chicago's suburbs, Pace now provides public transportation in the form of fixed route bus, express bus, dial-a-ride, ADA curb-to-curb services, subscription bus, vanpool and circulator operations. Pace, the Suburban Bus Division of the RTA, is a public agency established by an act of the Illinois Legislature in 1984. Having jurisdiction in Cook, DuPage, Kane, Lake, McHenry and Will counties ([Figure II-1](#)), Pace provides public transportation service throughout suburban northeastern Illinois.

Pace's service area has a total population of over four million and an employment base of nearly two million. Pace serves over 39 million customers on an annual basis. As of 1993, Pace supported 234 routes, 58 dial-a-ride operations, 10 ADA curb-to-curb service projects for people with disabilities and numerous custom services, using both publicly and privately owned carriers under contract to provide the various operations.

Pace is continually expanding and restructuring its transit service to reach newly developed areas. However, public transit is not achieving the levels of use necessary to reduce congestion in some suburban areas. Part of the problem lies in the fact that suburban travelers are very selective regarding their mode of transportation and generally prefer private vehicles. To encourage ridership, Pace must be competitive in terms of travel time, comfort, convenience and cost as compared to the automobile. Fast, direct and reliable service must be offered. Schedules must be flexible to meet the changing needs of the suburban transit user and service must be easily accessible and frequent. Additionally, transit facilities must be, both in perception and reality, safe and accessible.

Pace is tailoring its service to meet the ever-changing demands of the suburban traveler in an effort to provide better service to its customers, increase ridership levels and to help reduce the traffic congestion that the suburbs are experiencing. Yet, as Pace expands its service to meet development expansion and population needs, it is finding that site development greatly--and usually adversely--affects transit's ability to provide service. Often, developments are not accessible or conducive to public transportation and Pace is experiencing difficulty in reaching the population it is trying to serve; walking distances to transit stops are long and indirect and roadway design and construction precludes transit vehicles from serving a development.

The design of transit-oriented developments is needed for Pace to be successful in meeting traveler needs and providing fast, efficient service. Pace depends on the support of the public and private sectors because development decisions are generally made outside the realm of the transit industry. To develop site designs which incorporate public transit and offer high accessibility, safety and convenience to transit users, the cooperative efforts of developers, municipal officials, planners and transit providers are necessary.

Pace has developed this manual, *Pace Development Guidelines*, to encourage development designs that incorporate public transportation considerations and the use of demand management techniques for controlling traffic congestion, improving job accessibility and conserving public and private resources. The manual outlines transit vehicle operating and physical characteristics and also offers design options for transit vehicle accommodation. In addition, other traffic mitigation techniques are offered for consideration. These guidelines are designed for use by municipalities and individuals within the development and business communities who are interested in encouraging traffic reduction and facilitating the regional development process. The purpose of these guidelines is not to supersede the authority of local governments, employers and developers, but rather to offer complementary criteria for the design of the suburban environment.

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### **C. BENEFITS**

The *Development Guidelines* support Pace's charter to promote "...public health, safety and welfare, economic well being, maintenance of full employment, conservation of sources of energy and land for open space, reduction of traffic congestion and to provide and maintain a healthful environment for the benefit of present and future generations in the metropolitan region." Pace therefore encourages the coordination of development with transit service and feels that it offers broad-based benefits to municipalities, developers, businesses and transit users. These benefits are detailed below.

#### ***Municipalities***

- Enhanced quality of life and development of a pedestrian oriented environment.
- Decreased automobile trips and traffic congestion, leading to reduced travel times for commuters and improved access for emergency and municipal services.
- Increased appeal of municipalities and their developments to the residential and business communities since access to transit is enhanced, passenger convenience and comfort are improved and needed services and workplaces are more accessible by public transportation.
- Reduced environmental impacts from air pollution, roadway expansions into open space and excessive energy consumption.

#### ***Developers***

- Increased compatibility between transit service and the development's internal roads, walkways and transit facilities.
- Decreased need for parking facilities which, in turn, decreases the construction and maintenance costs related to parking.
- Increases developable land as parking space needs decrease.
- Increased attractiveness of the site to prospective buyers or tenants because the site is accessible to a broad population.

#### ***Businesses***

- Increased potential to expand business labor pools to a greater number of locations and to those individuals who do not own private vehicles.
- Enhanced access to customers.
- Increased travel alternatives for employees which can result in a reduced number of on-site vehicles and vehicle congestion.
- Increased access by employees that can improve employee punctuality and attendance.
- Decreased need for parking facilities which, in turn, decreases construction and maintenance costs related to parking.

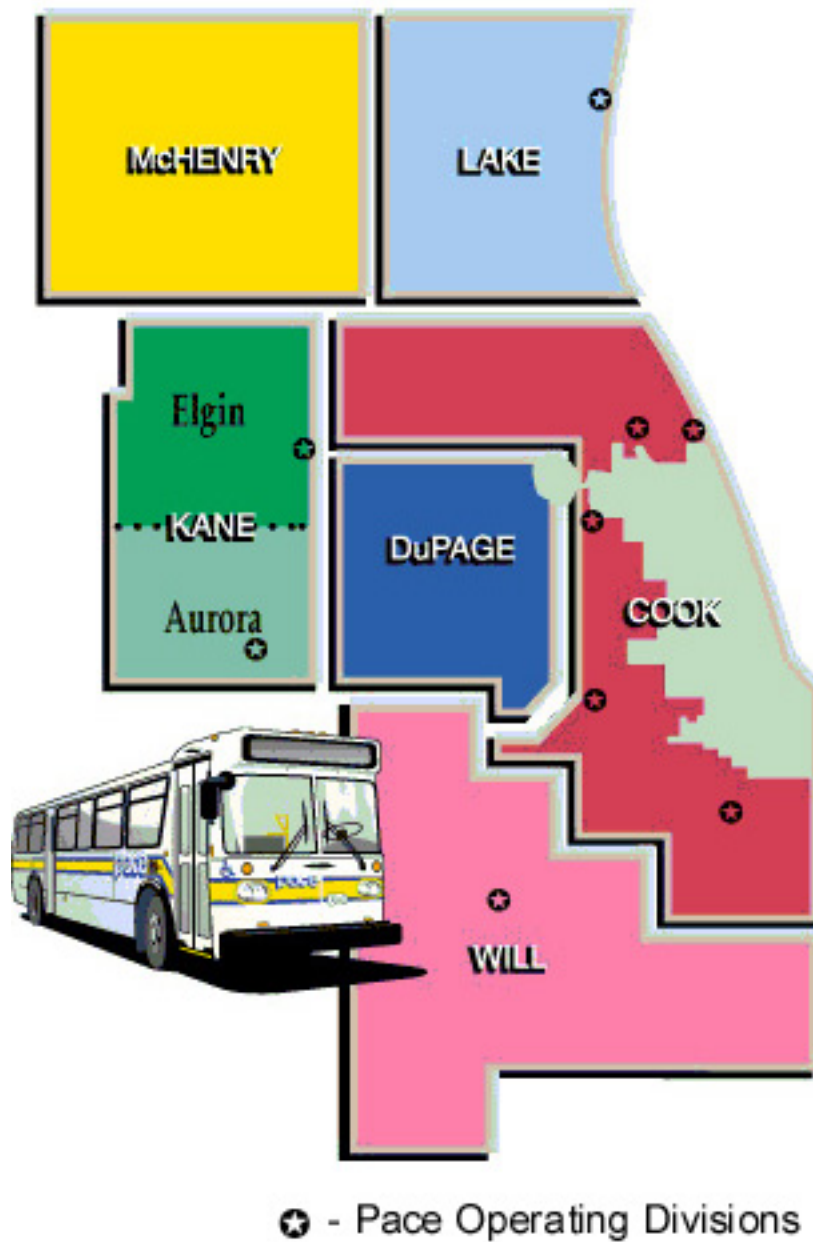
#### ***Transit Users***

- Enhanced access to transit by the pedestrian and mobility limited population.
- Improved passenger convenience and comfort.
- Increased accessibility to needed services and work places by public transportation.
- Increased travel alternatives.

While benefits can be gained from public transportation, they can only occur through the cooperative efforts of transportation agencies, municipalities and the development and business communities. The following sections of this document provide specific techniques that can be applied to increase mobility and reduce congestion in suburban northeastern Illinois.

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**FIGURE II - 1**  
**Pace Service Area**



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### III. VEHICLE CHARACTERISTICS

When designing roadways, intersections and transit facilities that will be used by Pace vehicles, transit vehicle characteristics should be considered. Vehicle height, width, weight and turning radii are among the items that will help determine roadway and transit facility design.

Designing to accommodate these vehicle characteristics will ensure efficient maneuverability of Pace buses and enhance service provision as well as improve passenger comfort. Proper design minimizes transit vehicle encroachment into other lanes of traffic, decreases property and vehicle damage, reduces travel times, improves passenger comfort particularly during turning movements and helps maintain pavement surfaces.

The effectiveness of transit services heavily depends on land use and development design<sup>(1)</sup>. While various land uses, like mixed-use developments and high densities support public transportation, transit services must also be integrated into development design to be an effective travel alternative to the single passenger automobile. Therefore, Pace vehicle specifications and bus turning radii are illustrated in this Section to aid in the design of developments and roadways. In addition to the Pace fleet, these specifications generally accommodate emergency vehicle movements and promote efficient snow removal by public works vehicles.

Although Pace is primarily interested in the efficient and effective operation of its vehicles in the suburban environment, designing developments to accommodate transit service delivery also enhances lifestyle options for suburban residents and workers. "How these places are developed and designed--their densities, mixture of uses, site layout, parking provisions, and so on--sets the stage for virtually all commuting behavior."<sup>(2)</sup>

For this reason, strong consideration must be given to not only local needs but also regional goals in promoting ridesharing and non-motorized transportation.

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#### A. [Vehicle Specifications](#)

#### B. [Vehicle Turning Radius](#)

1. American Public Transit Association, *Building Better Communities* (Washington, D.C., 1989), pp. 3-5.

2. Cervero, Robert, *America's Suburban Centers* (Unwin Hyman, Boston, MA: 1989) pg. 18.

*Revised: November, 1999.*



## **A. VEHICLE SPECIFICATIONS**

Pace currently operates a vehicle fleet ranging from vans to 40-foot long buses. These vehicles provide a variety of transit services--vanpool, dial-a-ride, ADA curb-to-curb services, feeder bus, subscription bus and standard fixed route operations. To guarantee a developments serviceability by all Pace vehicles, Pace recommends that, whenever possible, pavement design, curbs, building overhangs, etc., be designed to accommodate the vehicle specifications of the entire Pace fleet.

Typical design specifications for current Pace vehicles are illustrated in [Figure III-I](#). These vehicle dimensions should be considered in development design so that roadway and building elements are functional with all Pace vehicles including those used by contracted carriers. As fleet changes occur, Pace will maintain selected vehicle specifications so that roadway and building elements remain compatible with the new Pace fleet.

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### **B. VEHICLE TURNING RADIUS**

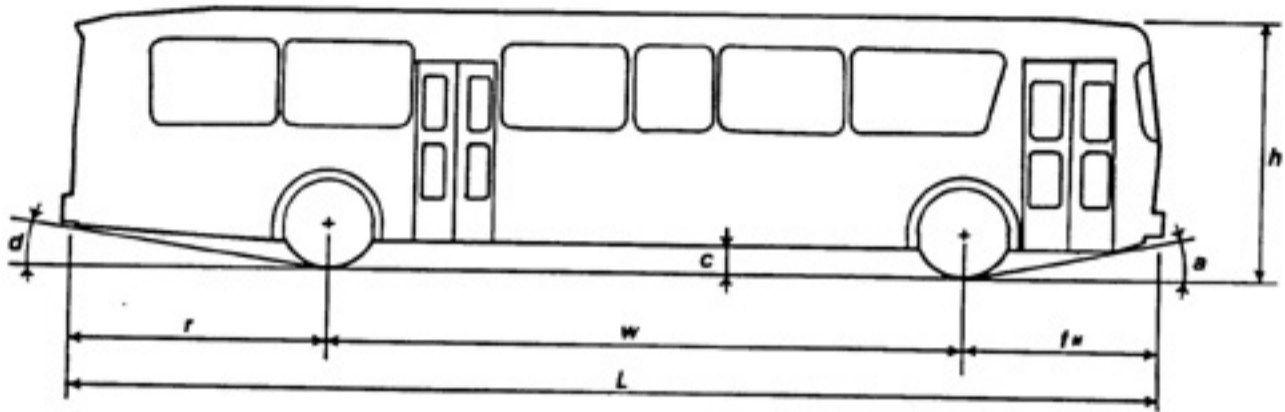
The transit vehicle turning radius should be considered when constructing roadways, intersections and transit facilities that will accommodate Pace transit vehicles. Pace recommends designing for a minimum 50-foot outside turning clearance to ensure proper maneuverability of all Pace vehicles. This turning radius is represented in [Figure III-2](#). A template, that can be used for project design, is provided in Appendix E. The template presents the turning radius at 20' and 50' scales in order to meet your design needs.

The 50-foot design radius meets Pace's vehicle turning needs under ideal operating conditions. Minimum clearances are generally sufficient for ideal conditions at speeds of less than 10 miles per hour.

Additional leeway should be provided where higher vehicle speeds may be encountered, in areas of severe traffic congestion, and where sight lines are restricted. A radius greater than the 50-foot minimum dimension is recommended to produce smooth vehicle turns, reduce encroachment by the bus into adjacent areas, and permit adequate margins for snow accumulation conditions found in northeastern Illinois.

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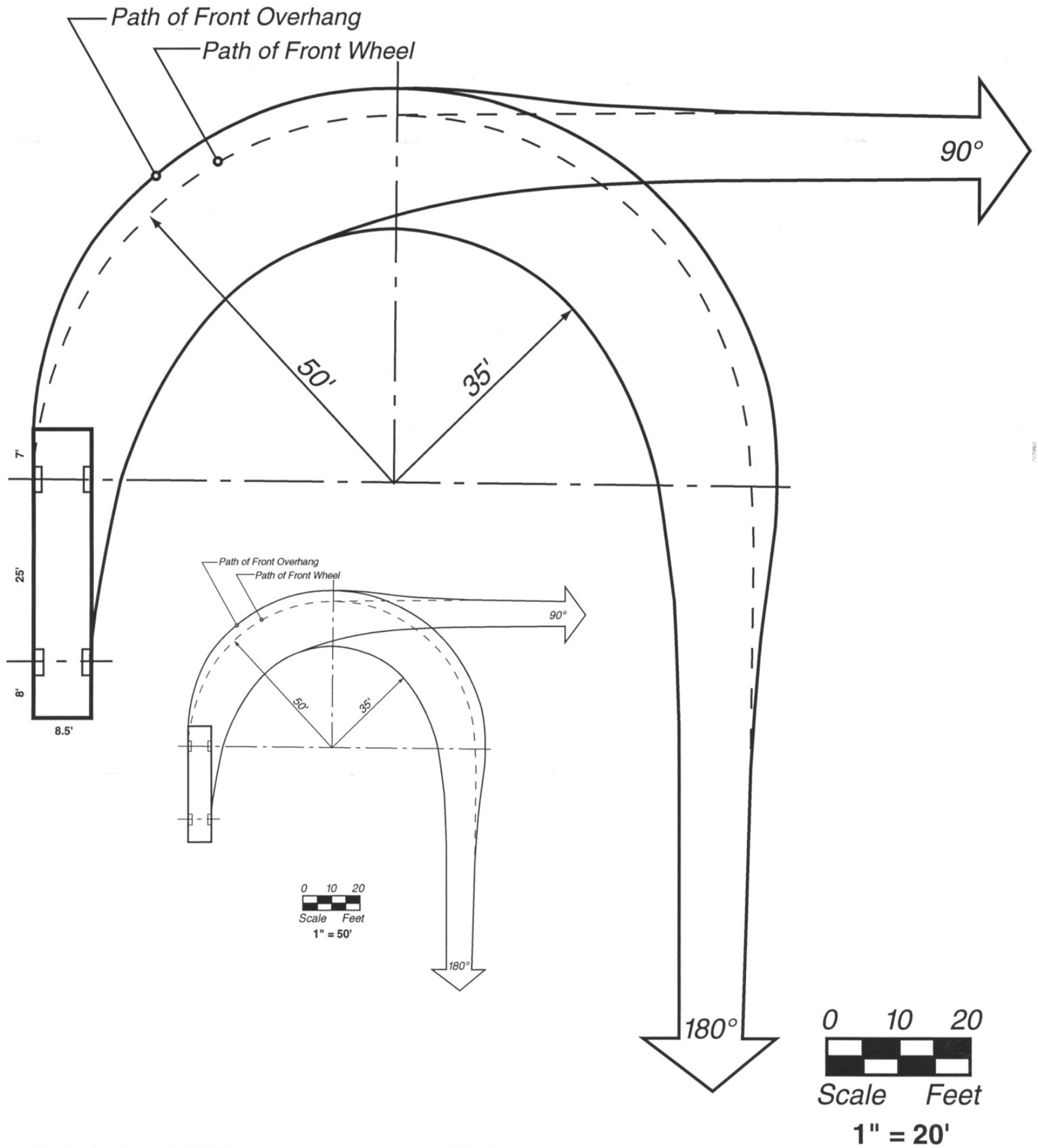
**FIGURE III - 1**
**Transit Vehicle Components**


<b>Symbol</b>	<b>Vehicle Feature</b>	<b>Maximum Dimension</b>
$l$	Length	40 Feet
	Overall Length	40.7 Feet with bumpers
	Width	8.5 Feet
	Overall Width	10 Feet with mirrors
$h$	Height	10.5 Feet
	Empty Weight	26,780 lbs. (13.3 tons)
	Loaded Weight	37,790 lbs. (18.9 tons)
	Seating Capacity	50 Passengers
	Standing Capacity	37 Passengers
	Front Step Height	9.5 inches
	Rear Step Height	12 inches
	Wheelchair Lift Platform	30 inch Width, 45 inch Length
$a$	Approach Angle	9 Degrees
$d$	Departure Angle	9 Degrees
$w$	Wheelbase	25 Feet
$f$	Front Overhang	7 Feet
$r$	Rear Overhang	8 Feet
$c$	Ground Clearance	11 inches

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**FIGURE III - 2**

**Bus Turning Template  
50' Design Radius**



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## IV. ROADWAY DESIGN

Site layout and roadway design should incorporate the bus design and operation characteristics described in this manual. Proper design will enhance bus operations and traffic flow, help maintain roadway surfaces and reduce obstacles for motorists and bus operators. Anticipated vehicle speeds, traffic volume, on-street parking conditions and intersection radii are factors that should be considered when designing a site that will be serviced by Pace transit vehicles.

Where appropriate transit facilities, such as bus turnouts, berths and turnarounds, can be incorporated into roadway designs to provide more convenient and effective off-street service points that do not interfere with traffic movement and to provide for vehicle's re-entry into traffic flow. These facilities should be designed to accommodate standard 40-foot transit vehicles and allow for necessary vehicle acceleration and deceleration.

### A. [Roadway Characteristics](#)

- [Lane Width](#)
- [Roadway Grade](#)
- [Curb Height](#)

### B. [Intersection Radii](#)

### C. [Bus Turnouts](#)

### D. [Bus Berths](#)

### E. [Bus Turnarounds](#)

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## **A. ROADWAY CHARACTERISTICS**

Roadway width, grade, pavement design and curb detail are important factors to consider when designing for efficient and effective operation of Pace vehicles and the maintenance of roadway surfaces. Pace recommends the following roadway design features which generally conform to or exceed Illinois Department of Transportation (IDOT) minimum design standards while meeting Pace vehicle requirements. These standards are not intended to supersede local regulations established by municipalities, counties and IDOT. These agencies should be contacted during the development design stage to ensure compliance with local, state and federal regulations.

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## Lane Width

For both public and private roadways that accommodate transit vehicles, Pace recommends a 12-foot lane width<sup>(1)</sup> for the curb lane to insure proper maneuverability of its vehicles.

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1. Institute of Transportation Engineers, *Guidelines for Urban Major Street Design* (Washington, D.C.: 1984), pg. 3.

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## Pace Development Guidelines

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### Roadway Grade

Pace recommends grades of 6% or less for roadways serviced by Pace vehicles. Also, changes in grade should be gradual so that buses can easily negotiate changes with adequate ground clearance to promote passenger comfort.

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# Pace Development Guidelines

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## **Curb Height**

To guarantee clearance by Pace vehicles, curb heights of 6 inches are recommended. This curb height also is appropriate for Pace vehicle step heights and wheelchair lift platforms. This curb height also allows transit users to more easily board and alight vehicles.

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## **B. INTERSECTION RADII**

The radius of an intersection should be designed to facilitate turning movements and minimize lane encroachment by buses. Proper intersection design will allow appropriate bus operating speeds, decreased conflicts between buses and other vehicles at intersections, reduced travel times and improved passenger comfort. Major factors that should be considered when determining intersection radii include on-street parking arrangements, the angle of intersection, transit vehicle turning radii, number and width of roadway lanes and vehicle operating speeds.

During turning movements, transit vehicle encroachment into adjacent lanes of traffic is to be avoided whenever possible to reduce vehicle conflicts. To accommodate the transit vehicle's 50-foot radius turn, parking should either be restricted or arranged to allow the vehicle to make smooth, unobstructed movements. Pace recommends a 60-foot parking setback on the bus' approach to the bus stop and a 40-foot parking setback on the entry road. These setbacks are to begin at the respective corner tangent points and are sufficient to allow a 40-foot bus to pull up to the curb just beyond the bus stop sign. Parking setbacks will reduce conflicts between transit vehicles and parked cars thereby allowing proper transit vehicle turns. The bus stop locations and parking setbacks are illustrated in Section V, [Figure V-1](#).

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### **C. BUS TURNOUTS**

Bus turnouts are bus stop areas that are recessed from the thoroughfare. The turnout provides an en route bus with an off-street service point that does not interfere with traffic movement and provides a safe waiting area for transit users. These facilities should be designed so that bus operators have clear rear-vision capabilities necessary for safe re-entry into traffic.

The recommended width for turnout designs is 15 feet for arterials and 20 feet for highways. These dimensions provide bus operators with ample space to properly maneuver and stop their vehicles particularly during the winter season when snow and ice are present.

[Figure IV-2](#) identifies the recommended taper, bus bay and acceleration/deceleration lane dimensions of a bus turnout based on vehicle speed. A bus turnout should be constructed with a concrete landing pad that covers the entire turnout area. Concrete pavement is necessary due to the deterioration of asphalt pavements from petroleum distillate deposits and frequent bus starts and stops.

Acceleration and deceleration lanes should be provided to accommodate speed changes necessary for the bus to enter and exit traffic. These lanes vary in length depending on traffic speeds and volumes and include tapers that guide the vehicles' removal from the roadway. Also, the number of 50-foot bus bays placed in a turnout will vary depending on service volume and transfer needs. However, the actual design of a turnout will depend on local site conditions, the volume of service and passenger transfer needs; space constraints may limit the size of turnouts while service volumes may necessitate their expansion (the addition of more bus bays) to accommodate additional buses. If more than 1 bus bay is required, bus berth designs should be followed.

Bus turnouts are needed in areas where passenger volumes are high and the flow of traffic could be significantly impeded by stopped transit vehicles. However, these turnouts should be located only at mid-block bus stop locations, allowing buses to re-enter traffic more easily during gaps in the traffic flow. This is particularly important since the bus will be merging with traffic. (Construction of bus turnouts at near-side and far-side bus stop areas are generally not recommended).

The construction of bus turnouts on highways requires additional buffering from traffic due to the increased speeds on these roadways. Pace recommends the use of AASHTO bus turnout dimensions for highways<sup>(1)</sup> as a general guide for their construction. A 20-foot bus bay width allows adequate space to pass a standing bus. A minimum 8-foot buffer and 10-foot shoulder must be constructed to separate the continuous traffic flow from transit vehicles that are decelerating and accelerating. A passenger waiting area also must be provided for the convenience of transit users. While the dimensions of the entire waiting area will vary depending on the site, the passenger loading area and shelter dimensions should be consistent with those described in Section V, [Figure V-3](#).

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1. American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets* (Washington, D.C.: 1990), pg. 405-407.

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## **D. BUS BERTHS**

Bus berths are recessed bus stop areas designed to accommodate more than one transit vehicle. Similar in concept to bus turnouts, bus berths provide convenient, off-street service points and bus staging areas that do not interfere with traffic movement. The bus berth should be constructed with concrete landing pads to prevent the buckling of pavement. To avoid confusion to motorists and bus drivers, bus bays should be clearly defined with pavement markings and identification signs. Where necessary for operating efficiency/ or to meet highway standards, bus berths should be barrier separated from the adjacent roadway. Barriers may be particularly important on high speed roadways.

Bus berths can be used in areas where transit routes intersect and bus waiting areas are appropriate. These transit facilities should be located at mid-block locations rather than intersections to avoid conflicts with turning vehicles and to take advantage of gaps in traffic produced by traffic signals. Bus berth designs also can be incorporated into transportation center, transfer facility and park-n-ride site plans for passenger loading and unloading as well as for bus layovers.

To allow buses to more effectively re-enter traffic, bus berths should be designed so that vehicle operators have clear rear-vision capabilities. Bus berth widths of 15 feet--with appropriate pavement markings and signage--are desired for more effective and proper vehicle maneuverability where no barrier separation exists. Typical dimensions for bus berths can be found in [Figure IV-3](#). However, Pace will evaluate barrier separation needs on a case by case basis.

The bus berth dimensions described in [Figure IV-3](#) are for 40-foot buses. Since many factors are involved in the design and location of these facilities, developers should consult Pace for assistance during the site plan development stage.

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## **E. BUS TURNAROUNDS**

Bus turnarounds are roadway facilities that expedite a bus' return to the service route. These facilities can be used at the termini of routes to turn transit vehicles or they can be incorporated into a development's design to allow transit service to operate onto the site. Turnarounds can improve schedule adherence and service reliability since a continuous route is available for the transit vehicle. (These roadway facilities also provide effective, off-street waiting and service areas for transit users). Site considerations and passenger requirements will determine the location of the passenger waiting area. Examples of bus turnarounds that will accommodate 40-foot buses and meet driver and passenger needs are shown in [Figure IV-4](#).

Bus turnarounds should be designed so the bus can be turned in a counter-clockwise direction to improve the drivers' visual capabilities. Additionally, the design should allow adequate space for a bus to pass a standing transit vehicle. A 30-foot roadway width facilitates service in the event of a mechanical breakdown and permits passing at terminals used by buses from several routes.

The "jug handle" bus turnaround design can be used at appropriate mid-block bus terminal locations to turn a transit vehicle. Proper signage or traffic signals along the roadway and at the turnaround may be needed for traffic control purposes and to expedite the return of the transit vehicle to its route.

The "cul de sac" and "loop" designs are acceptable for developments that do not have internal roadway networks to return a bus efficiently to an arterial roadway. Note, however, that transit operations are most efficient when provided on through streets such as the roadway design in Chapter VI. Therefore, "cul de sac" and "loop" turnarounds are preferred only at the end of bus routes in appropriate locations.

*Revised: November, 1999.*



## Roadway Pavement

Generally, municipal subdivision street pavement design standards for local/collector roads are appropriate to handle Pace vehicle design and service volume. To insure that these standards are adequate for transit service, Pace recommends that pavement be constructed to handle vehicles with loads of 20,000 lbs. per axle. Rigid (concrete) and flexible (asphalt) pavement designs have been recommended for roadways, driveway aprons, access aisles where heavy bus use is anticipated and at bus stop areas. These pavement designs, illustrated in [Figure IV-1](#), have the ability to retain pavement shape, drainage capabilities and skid resistance. Developers can contact Pace to determine the need for roadway modifications and for assistance.

For bus stop areas, including bus turnouts and terminals, the rigid design is strongly recommended. Due to loads and shear forces applied to pavement surfaces during bus starting and stopping movements, this pavement surface has the best potential to retain its shape. The pavement should be designed with a minimum 8" portland cement concrete jointed reinforced pavement on a 4" subbase of stabilized granular material. [\(1\)](#)

This pavement design conforms to IDOT standards for Class II roadways. However, if local ordinances exceed this requirement for commercial and industrial driveways or parking areas, that standard should be followed.

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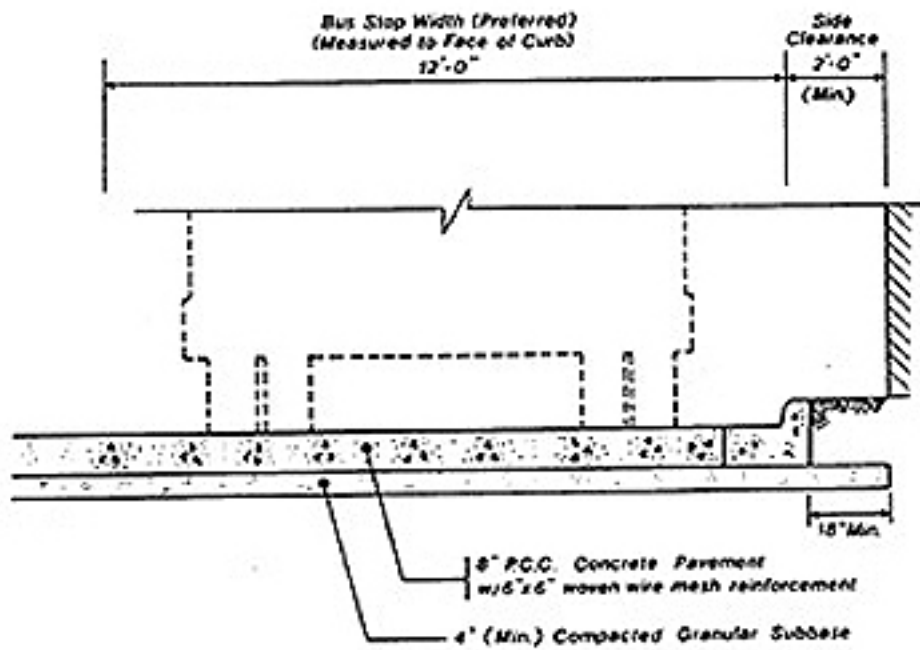
1. Illinois Department of Transportation, Bureau of Design, *Design Manual* (Springfield, Illinois: May 1982), Table 7-100.07.

*Revised: November, 1999.*

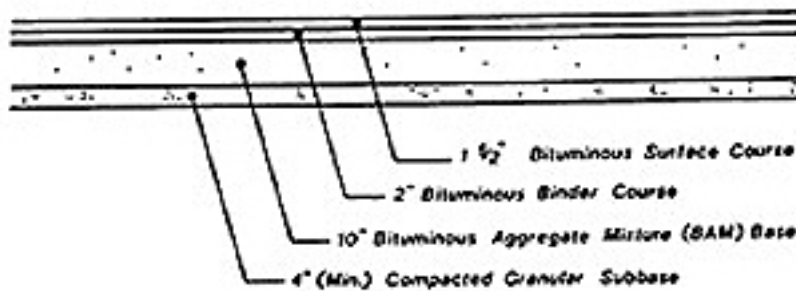
[Development Guidelines Title Page](#) | [Table of Contents](#)

**FIGURE IV - 1**

**Recommended Transit Pavement Cross Sections**



**RIGID: P.C.C. Pavement Design**



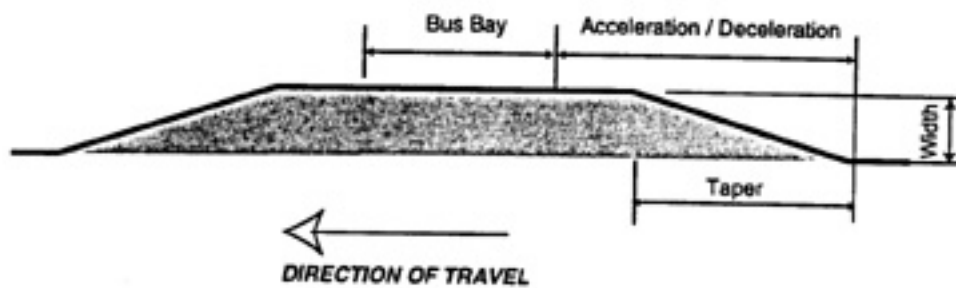
**FLEXIBLE: Bituminous Pavement Design**

Revised: November, 1999.



## FIGURE IV - 2

### Bus Turnout Design and Specifications

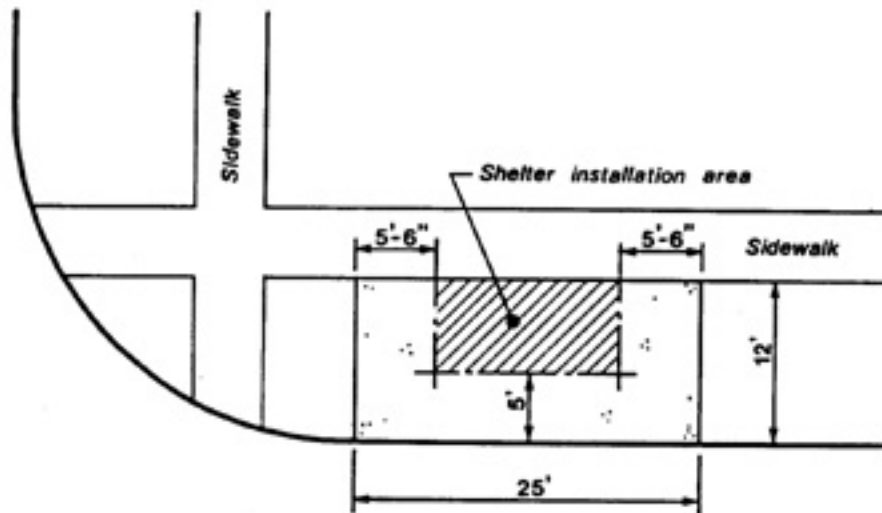


Speed	Taper Length	Bus Bay Length	Bus Bay Width	Acceleration/Deceleration Lanes
30 mph	50' each	50' each	15'	100' each
40 mph	50' each	50' each	15'	125' each
50 mph	50' each	50' each	15'	175' each
55 mph	50' each	50' each	20'	200' each
60 mph	50' each	50' each	20'	250' each

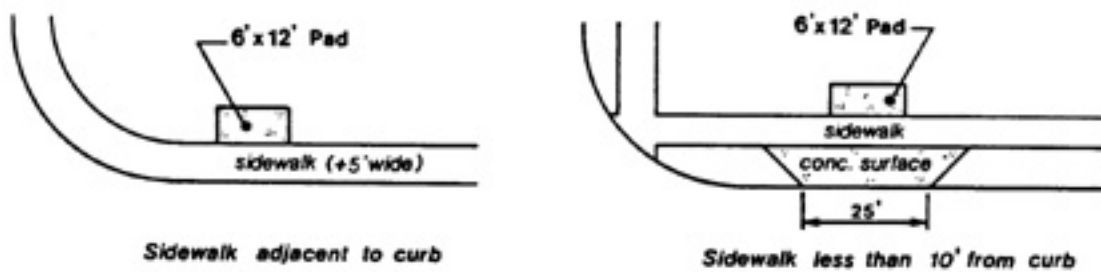
Revised: November, 1999.

**FIGURE V - 3**

**Paved Passenger Waiting Area**



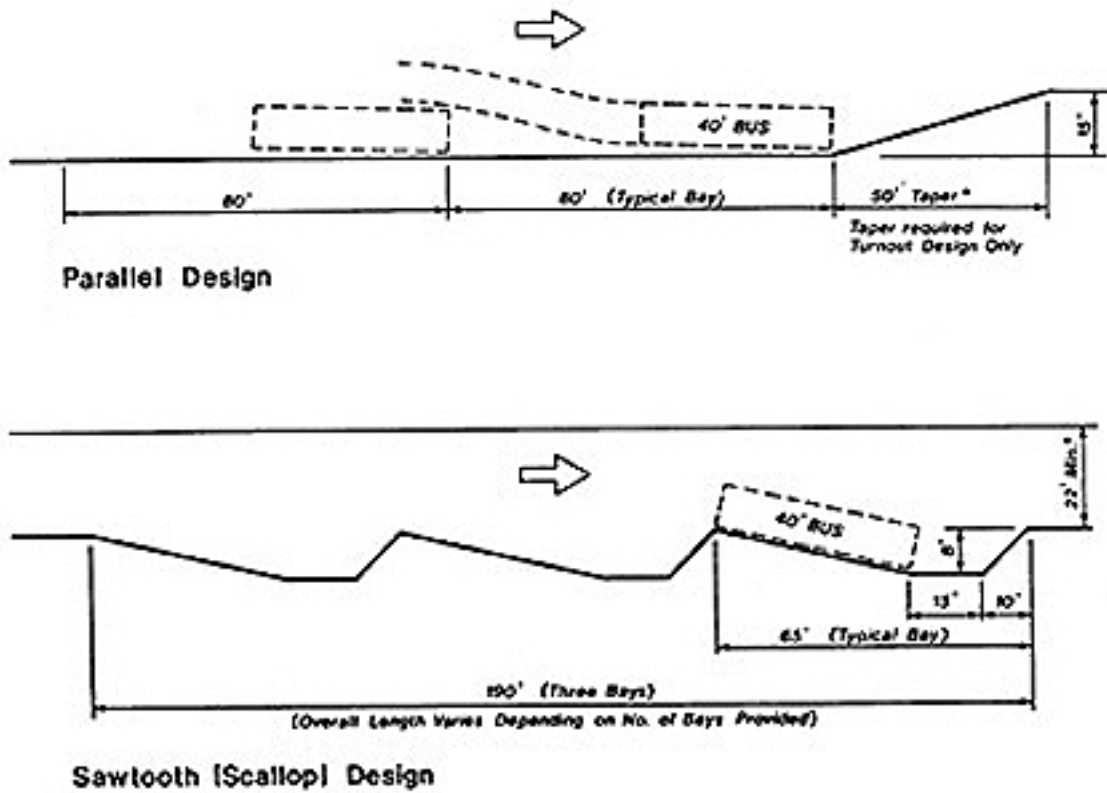
**TYPICAL PAD PLACEMENT/DIMENSIONS**



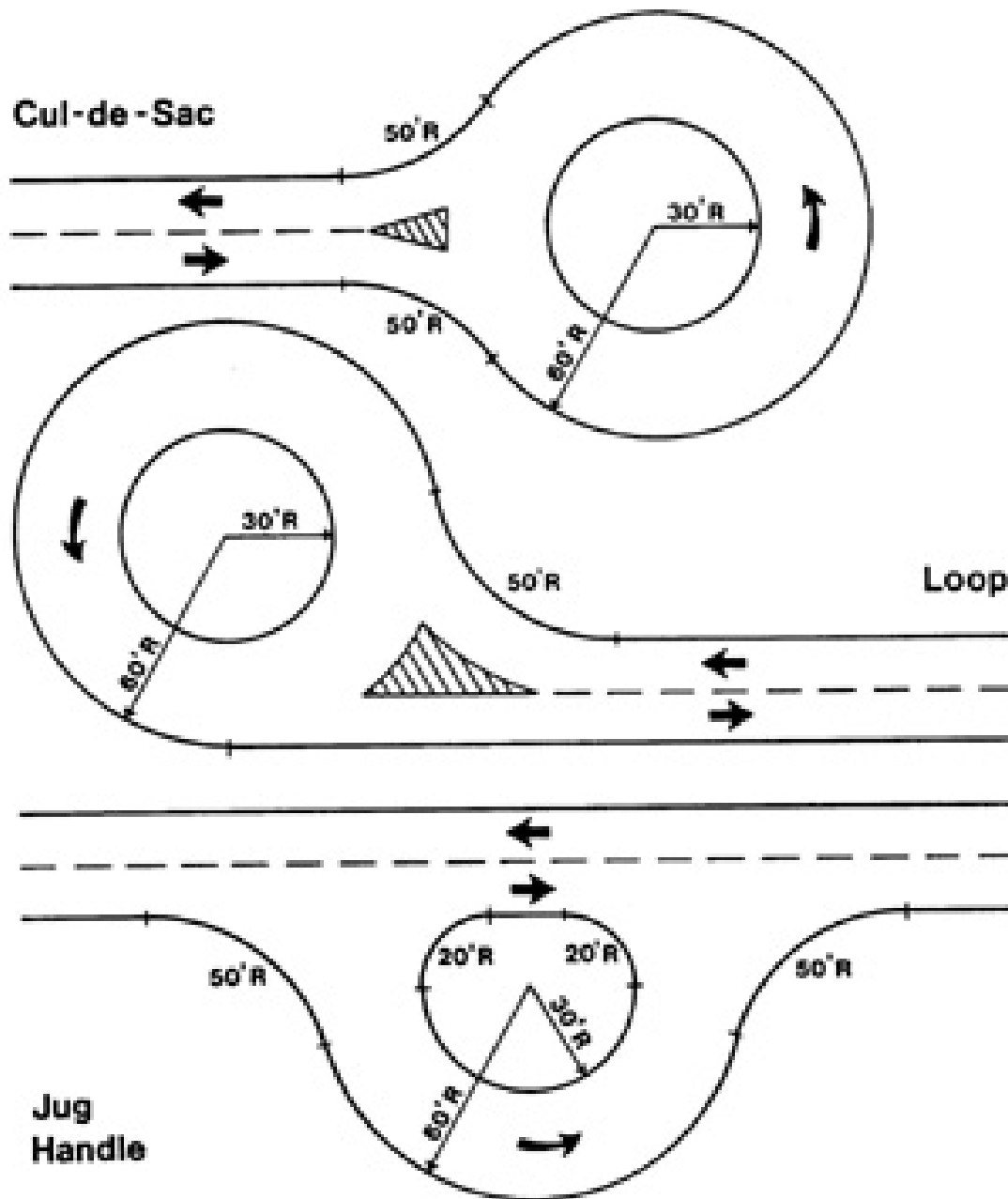
**ALTERNATIVE LOCATIONS**

*Revised: November, 1999.*

**FIGURE IV - 3**  
**Bus Berth Design**



*Revised: November, 1999.*

**FIGURE IV - 4****Bus Turnaround Designs**

*Revised: November, 1999.*



## V. BUS STOP ZONES

Population and employment densities influence transit route viability and the location of bus stop areas. High densities support transit service and justify frequent bus stop areas and scheduling. Conversely, low density development produces minimal transit demand and receives less frequent service. While density is a major consideration in bus stop location, it also is dependent on such factors as traffic volume, space availability, operating requirements and considerations. Therefore, Pace should be consulted during the design phase of any development regarding the location of bus stop areas.

When designing the bus stop zone, special consideration should be given for people with disabilities and for general passenger, access and comfort. Amenities such as paved waiting areas and adequate lighting should be provided for passenger and comfort, while waiting for transit service. User access, convenience and comfort also can be enhanced by the construction of access ramps for the mobility limited, shelters, benches, natural windbreaks and route schedule/information displays. These amenities will help attract the suburban traveler and present public transportation as a viable alternative to the private automobile.

A. [Bus Stop Spacing](#)

B. [Bus Stop Location](#)

C. [Passenger Waiting Area](#)

*Revised: November, 1999.*

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**A. BUS STOP SPACING**

Pace guidelines for bus stop spacing are based on land use characteristics and population densities. Typically, bus stops will be placed every 660 feet (a standard city block) if an area is primarily commercial or population densities are high.<sup>(1)</sup>

Table V-1 identifies the bus stop spacing dimensions based on various employment and population densities. Overall population densities per acre also are provided in this Table and are based on the entire developed site (1 square mile).

Special bus stop spacing considerations can be arranged to serve major generators such as employment centers and high density residential developments. Pace should be contacted regarding the location of these bus stop areas.

**TABLE V-1**

**BUS STOP SPACING GUIDELINES**

<u>POPULATION/EMPLOYMENT DENSITY</u>	<u>SPACING DIMENSIONS</u>
<p><b>High</b></p> <p>&gt;4000 people/square mile</p> <p>Overall average density: &gt;5 persons per acre)</p> <p>(Units per acre: 4 or more units)</p>	660 feet
<p><b>Medium</b></p> <p>2000-4000 people/square mile</p> <p>(Overall average density: 3-5 persons per acre)</p> <p>(Units per acre: 3 units)</p>	1320 feet
<p><b>Low</b></p> <p>&lt;2000 people/square mile</p> <p>(Overall average density: &lt;3 persons per acre)</p> <p>(Units per acre: 1-2 units)</p>	Flag Stop Areas

1. Pace, *Service Criteria and Performance Guidelines for Fixed Route Service* (Arlington Heights: February 1990), pg. 10.

Revised: November, 1999.

## **B. BUS STOP LOCATION**

Bus stops are placed in one of three locations: near-side (located immediately before an intersection); far-side (located immediately after an intersection); and mid-block (located between intersections). [Figure V-1](#) illustrates each of the bus stop locations along with parking setbacks and bus stop signs. Each of these locations offer advantages to vehicle drivers and pedestrians. However, the final decision on bus stop locations dependent on ease of operation, transfer situations, space availability, traffic volumes. Pace performs on-site evaluations of proposed bus stop to analyze operating conditions and identify appropriate bus stop locations.

A majority of Pace's bus stops are on the near-side of intersections. Near-side bus stop sign placement is generally 10 feet from the corner tangent point and 5 feet from the outer curb. However, site characteristics will ultimately dictate exact sign location. Where site limitations exist, the sign should be setback a minimum of 2 feet.

Near-side locations offer a number of features to pedestrians and vehicle drivers. This location allows pedestrians to cross in front of the bus. This location also allows transit users to load and alight from buses close to crosswalks and intersections, thereby minimizing, walking distances to connecting transit service.

Far-side bus stop locations are recommended on routes in which buses make left turns at intersections. Once a bus negotiates a left turn, a far-side stop provides a more appropriate service point. Far-side stops also are recommended in locations where dedicated right turn lanes are present. Far-side stops may facilitate easier bus re-entry into traffic due to gaps created by intersection traffic signals.

Another bus stop location is the mid-block stop. A mid-block location is generally less congested than an intersection. Bus turnouts are most effectively located in a mid-block bus stop zone. Mid block stops are applicable at T-intersections or locations generating a larger passenger volume.

Pace currently provides and installs bus stop signs on Pace routes at no cost to communities and developers. These signs identify the location of Pace's service points as well as the route(s) serving the bus stop. Developers should consult Pace during their initial development planning stages to identify potential bus stop locations and to request Pace signs (see [Figure V-2](#)). For assistance, please contact Pace's Section Manager of Operating Services at (847)228-2488.

Pace encourages municipalities to place "No Parking" signs at bus stop locations and requests that the local police departments strictly enforce parking restrictions in these zones. Parking restrictions are necessary so that buses can gain access to their service points.

*Revised: November, 1999.*

### **C. PASSENGER WAITING AREA**

A variety of amenities can be provided at bus stop locations to enhance the attractiveness of public transportation. Designing waiting facilities with amenities that increase passenger's comfort levels and feelings of security can encourage suburban travelers to use public transit. Bus stop locations that are designed with paved waiting pads, shelters, benches, windbreaks and lighting can furnish comfortable, safe waiting areas for transit users.

Bus stops also can be designed to make transit more convenient, accessible and aesthetically appealing to transit users. These measures are necessary if public transportation is to compete effectively with other transportation modes. The proper design of bus stop zones and adjacent curbs can increase transit access and convenience by eliminating barriers, especially for those individuals with mobility limitations. The appeal of public transportation can be increased further by providing convenience items such as public telephones and transit information kiosks. Further discussion of these features can be found in the following narrative.

\*The incorporation of a ***paved passenger waiting area*** into the sidewalk design of appropriate near-side corners of both collector and arterial street intersections is recommended to provide a safe, comfortable and convenient waiting area for all transit users and to promote access for the mobility limited. Pace anticipates more extensive use of fixed route service by mobility limited individuals as wheelchair accessible equipment is integrated into the fleet. The Americans With Disabilities Act (ADA) mandates equal access to mass transit for every U.S. citizen, thereby requiring every new bus to be wheelchair accessible. By 1997, the fleet must be in compliance with the mandate.

Pace particularly recommends the construction of paved waiting areas at high-volume transit stops and in new developments that potentially will generate a high volume of transit use. Paved waiting areas should have a minimum 4-inch thick concrete pad ideally extending 25 feet back from the corner tangent point, being complete between the curb and sidewalk. Paving of the area between the corner tangent point and the intersection of the sidewalk and corner curb is optional. [Figure V-3](#) illustrates the location and dimension of a paved waiting area.

\****Access ramps*** for individuals with mobility limitations should be provided at all corner curbs to increase accessibility to transit service. These ramps should be designed with special pavement textures that contrast with surrounding surfaces. Contrasting surfaces help the visually impaired identify the location of access ramps and warn individuals of grade changes. These surfaces should comply with the American National Standards Institute, Inc. (ANSI) Section 4.7.<sup>(1)</sup>

\****Passenger shelters*** are recommended for bus stop areas that are high volume boarding sites. The size and design of passenger shelters will vary depending on space availability and the number of passenger boardings. However, the standard shelter that is accessible to individuals with mobility limitations is 13.5 feet by 6.5 feet. The location of the shelter will vary depending on space availability, utility placement, passenger counts and driver visibility needs. Shelters should have a minimum 5-foot setback from the street. When possible, bus stop information is provided on the shelter rather than on a freestanding sign. Currently, Pace identifies the route number on many of its shelters.

Pace shelters are available to communities at no cost. They are comprised of anodized aluminum frames and either safety glass or polycarbonate glazing. These structures are designed to be constructed on concrete pads that have a minimum 4 inch thickness (see Paved Passenger Waiting Area summary). If requested, Pace will install the shelters. However, Pace encourages municipalities to maintain these enclosures.

If desirable, developers and municipalities can provide shelters that are architecturally consistent with particular development designs. Shelter placement should be reviewed by Pace and the local jurisdiction (i.e. IDOT, county or municipality) to avoid visual obstructions to vehicle drivers as well as interference with utilities. The maintenance of these shelters is usually the responsibility of the developer, municipality or other appropriate party. To increase passenger comfort and convenience, shelters should be designed with the following considerations:

- Wheelchair access and maneuverability.
- Visibility of approaching traffic for 1000 feet.
- Adequate lighting.
- Seating capabilities.
- Quick access to the bus.
- Route and schedule display.
- Protection from weather.

For additional information regarding Pace's shelter program, please contact the Operating Services Section Manager at (847)228-2488.

\****Building lobbies*** can be designed as interior waiting areas for transit users. To allow adequate time for passengers to gain access to the bus stop, these lobbies should be located within 150 feet of a Pace bus stop and face the service area. Transit users should be able to view approaching buses for a 1000-foot distance. For passenger comfort, seating should be provided in the lobby.

\****Transit route information*** can be displayed on shelters, in business lobbies, along development walkways and in other appropriate areas to provide accurate route and schedule information to the public. [Figure V-4](#) provides examples of free-standing and mountable bus information signs. Depending on sign location and type, approval from local municipalities, IDOT or Pace may be required for sign display.

\****Benches*** can be located in transit areas having moderate use and where shelters are not feasible. They should be placed within the confines of the bus shelter dimensions as shown in Figure V-3. The bench design should be compatible with the surrounding environment and constructed with vandal-resistant materials. The design should not create a hazard nor contain advertising that is distracting to motorists.

\*Adequate ***lighting*** should be provided at bus stops and waiting areas for passengers. A well lit waiting area will not only increase a pedestrian's feelings of security but also will allow a transit vehicle driver to clearly see the bus stop area. The driver then is able to identify waiting passengers and possible obstructions in the bus stop zone.

Pace generally does not encourage electric service inside passenger shelters. However, the placement of freestanding municipal lighting fixtures is recommended by Pace. Local municipalities establish lighting standards for their jurisdictions. Lighting plans for bus stop areas as well as those for the entire development must be coordinated with appropriate municipalities.

\****Landscape features*** can be used at transit waiting areas to increase passenger comfort and to develop an attractive transit waiting area. Earth berming, trees and other plantings can be used to provide shade, act as windbreaks and offer an aesthetically appealing environment to transit users. However, passenger security as well as the corner sight-distance triangle must be considered when designing these features.

\****Convenience amenities*** can be provided at transit stops to reduce the number of trips a pedestrian must make to obtain convenience items and increase the appeal of the transit stop location. Public phones, automatic teller machines (ATMs), transit information kiosks, trash receptacles and newspaper vending boxes are a few of the items that will enhance passenger waiting areas. Care should be taken to integrate these amenities to minimize visual and physical clutter at the stop and to avoid obstructions to the corner sight-line.

On a larger scale, convenience services can be coordinated with transportation facilities. Dry cleaning, photo processing, deli or other food service and child care centers are a few of the businesses that can be located at or nearby transportation centers, transfer facilities or park-n-ride lots to provide the transit user with convenient and accessible services that do not require an automobile trip.

\****Bicycle storage facilities*** can be provided near bus stop locations to encourage bicycle use to and from transit and provide convenient and safe storage. These facilities are especially useful at park-n-ride lots where various transit services or routes are available. Stationary racks that provide stable support for bicycles or enclosed bicycle lockers with locking doors can be installed for storage purposes.

Weather protection and security from theft and vandalism should be considered when selecting the bicycle storage device and to determine its location.<sup>(2)</sup> The facility should be located in a well-lit area that has a high degree of visibility. If possible, a monitored location should be used.

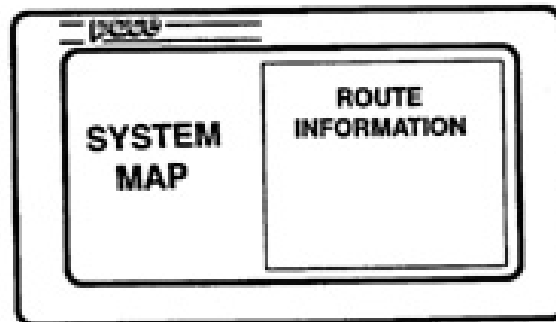
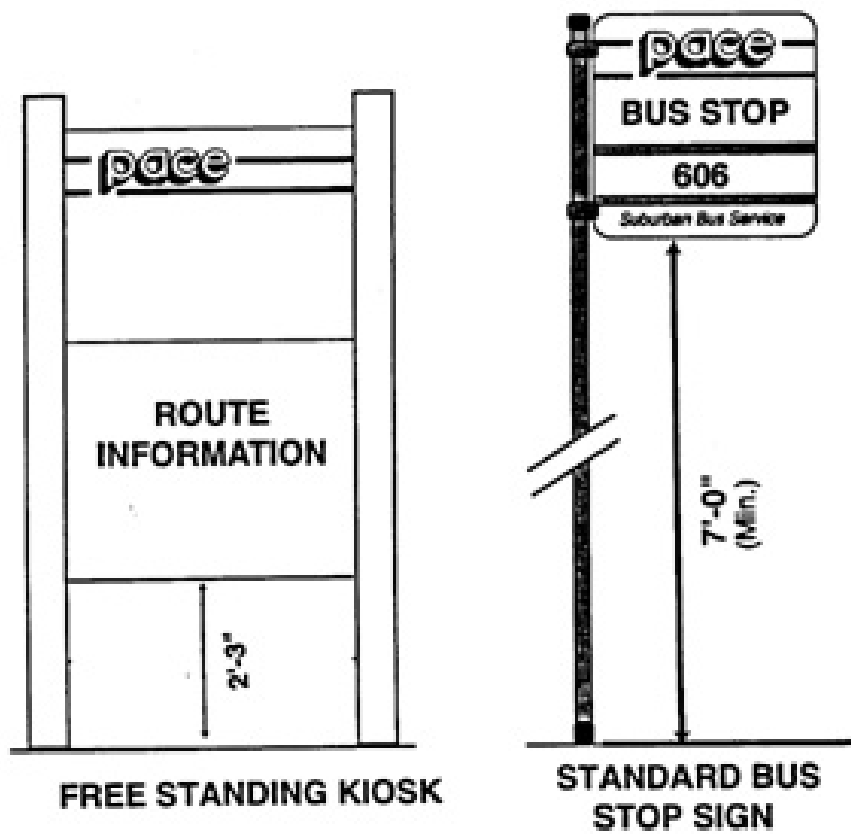
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1. American National Standards Institute, Inc., ***American National Standard for Buildings and Facilities***

2. Northeastern Illinois Planning Commission, ***Development Guidelines That Promote Bicycle Use*** (Chicago: August 1990), pp. 17-18.

**FIGURE V - 2****Pace Bus Stop Sign**

*Revised: November, 1999.*

**FIGURE V - 4****Bus Information Signs****WALL MOUNTED INFO BOARD**

*Revised: November, 1999.*

## **VI. LAND USE CONSIDERATIONS**

Site design can have a substantial impact on access to public transportation for the transit user and the ability of transit to reach its market. It is important that developments be designed with consideration to the transit user and to transit vehicle specifications and service criteria. Proper site and building design as well as appropriate roadway and walkway systems can increase a development's serviceability by transit and a pedestrian's access to transit. Obstacles that prevent transit vehicles from servicing a site can be eliminated and the convenience and appeal of public transportation can be enhanced to encourage the use of public transportation and reduce the need for private vehicle trips that add to traffic congestion. Development design also can generate the densities necessary to provide efficient transit service. If densities are low, facilities such as park-n-ride lots can be incorporated into or nearby developments to offer better access to public transportation.

To effectively improve transit access and promote its use, site design measures must address the primary concerns of both the transit user and service provider. For the transit user, a major concern is the distance that must be walked/traveled to a transit stop. Since this distance is an important factor in the decision to use public transportation, walking distance should be minimized. If transit service is not convenient, the suburban traveler will use an alternative form of transportation --usually the automobile.

In providing transit service, a major concern of the transit agency is access to a market. Many times, development design hinders access by transit vehicles and thereby reduces service capabilities. If a development is to be efficiently served by public transportation, it must be designed to accommodate transit vehicles and facilitate transit service.

In addition, population and employment densities are important to transit service provision. These densities determine route layout and service frequency. For example, high density development, having densities of 4 or more dwelling units per acre (or greater than 4000 people per square mile), is compatible with public transportation. In these locations, transit users are concentrated and ridership levels generally justify frequent, regular service. Conversely, medium and low density developments, having densities of less than 4 du/acre, often are not conducive to traditional public transportation (due to their sprawling nature and low population densities). Generally, the volume of ridership in these areas is too low to support regular fixed route operations. Also, walking distances to fixed route services often are too great for pedestrians and walkways are not available. These conditions tend to restrict transit access and use. To provide this population with convenient access to transit service, alternative facilities --park-n-ride lots -- must be provided.

Recommended design considerations for residential, retail, office and industrial developments are discussed below. Municipalities, developers and others interested in designing for public transit can contact Pace's Transportation Engineer at (847)228-4287 for complimentary technical assistance and development plan reviews.

Included in the following Office and Industrial Land Use summary is a list of demand management techniques that promote the use of alternative forms of transportation over the single occupant automobile. Employers can use these techniques to help reduce traffic congestion in and around their development sites and also to decrease parking needs. To assist those employers interested in establishing demand management programs, Pace provides a no-cost advisory service. Pace's Marketing and Development Manager at (847)228-2467 can be contacted for assistance.

### A. [Residential Land Use](#)

### B. [Retail Land Use](#)

### C. [Office and Industrial Land Use](#)

- [Site Design Techniques](#)
- [Demand Management Techniques](#)

### D. [Mixed-Use Centers](#)

*Revised: November, 1999.*

## **A. RESIDENTIAL LAND USE**

Residential developments can be designed with site features that enhance transit accessibility and development serviceability. These characteristics can minimize traveling distances to transit service, provide direct walking and bicycling routes to transit stops and allow for transit service in appropriate locations within a development.

\*Residence should be situated so that *walking distances* for transit users do not exceed one-quarter mile or, in low density areas having less than 2,000 people per square mile or, in low density areas having less than 2,000 people per square mile, one-half mile to a transit stop. People generally prefer to walk a quarter mile or less to a transit stop. For the elderly and mobility limited, access distance is particularly important when selecting their mode of transportation.

\**Walkway* systems should be constructed to provide direct pedestrian links from development buildings to transit stops in an effort to minimize walking distances. Walkways can be located through open space areas and along designated easements to provide direct routes from buildings to transit stops. Walkways also should be constructed around the perimeter of all developments and on at least one side of the development's internal roadways to promote pedestrian circulation and convenience. An example of a pedestrian walkway network that provides direct access to transit service can be found in [Figure VI-1](#).

Often walkways will not be used if they are perceived as undesirable by pedestrians. Adequate lighting must be provided along walkways to provide pedestrians with a clear view of the surrounding areas.

As an additional convenience to transit users, route identification signs providing accurate route and schedule information can be located along walkways to direct pedestrians to transit stops. Examples of route information signs are presented in Section V, Figure V-4

\**Roadways* should be designed to permit transit service to appropriate locations within a development. While grid street layouts are preferred for transit service, acceptable non-grid designs can be established. A central collector street that runs through the residential area can be incorporated into a development's site design to allow resident access to transit and provide a direct transit route. This route should allow transit vehicles to enter and exit a development in a continuous service route direction, facilitating bus movement to minimize travel times ([Figure VI-2](#)). The width, pavement and grade guidelines outlined in Chapter IV, Roadway Design, should be considered when designing the collector roadways. In addition, these designs require that particular attention be given to connective internal walkway systems.

A bus turnaround system as described in Chapter IV--although not preferred--can be incorporated into a development's site plan if a through street is not appropriate. Bus turnarounds provide transit access for residents and allow buses to return to major arterial streets.

\**Bicycle routes* can and should be provided for within and around developments to encourage cycling for commuting and recreational purposes. These routes should be coordinated with existing municipal bikeway networks in an effort to establish major bicycle corridors that provide access to a variety of land uses. Bicycle routes also should be linked to transit stops to provide cyclists with access to public transportation. Convenient storage of bicycles can be offered if bicycle racks, lockers or monitored parking is located near bus stop locations and at all park-n-ride facilities.

Bicycle routes can be separated from vehicle traffic or designated on roadways through pavement markings and freestanding signs. Minimum pavement widths should be 8 feet for a two-way system located on one side of a roadway or 5 feet for a two-way system located on one side of a roadway or 5 feet for a one-way system located on each side of a roadway. The bikeways should be designed with an additional two-foot shoulder on each side.<sup>(1)</sup> Developments also can be designed with a walkway on one side of a street and a bikeway on the other side to encourage both pedestrian and bicycle mobility.

\**Park-and-ride facilities* can be provided at appropriate transit service points to concentrate transit riders, particularly those from low density developments that do not receive frequent transit service. These convenient collection and transfer points provide a means for transit users to gain access to transit service such as traditional fixed route, express bus and subscription bus operations. These lots also can be used as "park-n-pool" locations to consolidate riders participating in vanpools and carpools.

To provide a high level of access to transit, park-n-ride lots are generally located along major transit routes and immediately adjacent to one or more limited access highways or major arterials. Site selection is based on such features as travel time from point of origin to destination, competing service and facilities, feeder route length, site access points, service accommodation needs as well as site characteristics and amenities.<sup>(2)</sup>

As a convenience to transit users, businesses that provide personal services can be located adjacent to park-n-ride facilities. Services such as daycare and dry-cleaning can be offered for transit users in an effort to reduce the need for automobile trips.

Park-n-ride facilities also can be incorporated into transportation centers and transfer facilities where a number of transit routes and modes intersect. Additionally, transit user parking can be combined with parking facilities used for recreational or commercial purposes. Since periods of use oftentimes vary, both demands can be efficiently accommodated.

The design of Pace park-n-ride lots will differ according to facility size and locational features. The Pace *Passenger Facility and Park-n-Ride Guidelines* outline design criteria such as walkways, pavement design, parking space dimensions and types, signage, lighting, landscaping and passenger amenities for Regional, Subregional, Local and Vanpool park-n-ride lots. This report can be obtained upon request from the Strategic Planning Department Manager at (847) 228-2429.

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1. American Association of State Highway and Transportation Officials, *Guide for Development of New Bicycle Facilities* (Washington, D.C.: October 1981), pp. 14-18.

2. Pace, *Passenger Facility and Park-n-Ride Guidelines* (Arlington Heights, IL: May 1991) pp. 7-24.

Revised: November, 1999.



## **B. RETAIL LAND USE**

Clustered retail establishments or community shopping centers rather than strip retail development are preferred for vehicle and pedestrian shopper convenience, as well as traffic reduction. Clustered retail establishments share parking facilities thereby reducing the need for frequent curb cuts that otherwise would be needed for individual parking facilities. By minimizing curb cuts, vehicle movements are restricted to a few designated areas. This enhances traffic flow and decreases conflicts with passenger stops. (see [Figure VI-3](#)).

By clustering retail establishments and locating this development near the roadway, transit can serve a number of businesses at one stop. This can improve transit operations and traffic flow. In addition, shoppers have access to a number of establishments in one location, reducing travel distances and the need for additional vehicle trips. To reduce frequency of trips by shoppers to regional centers, clustered retail centers can be located near residential areas. These centers can cluster convenience shopping establishments and serve residents within close proximity.

Both community and regional shopping centers should be designed to allow access by transit vehicles. The provision of onsite transit service to these centers will depend on development design, transit demand and service routing potential. Internal roadway networks that serve the centers should be constructed to accommodate transit vehicles and provide access to major retailers. Direct access to building entrances enhances shopper comfort and convenience while minimizing walking distances.

Transportation centers and transfer facilities can be incorporated in regional shopping centers larger than 1 million square feet. These facilities give shoppers a variety of routes and service options. By providing a high level of transit service, transit use is encouraged and can result in a reduction of traffic in and around the center.

*Revised: November, 1999.*



## **C. OFFICE AND INDUSTRIAL LAND USE**

Site and building design features can be incorporated into office and industrial developments to provide employees with more effective, convenient access to transit service and increase a development's transit serviceability. Building placement, walkway layout and roadway design are important factors to consider when designing a development this is compatible with transit service. Often, development building setbacks are too great, discouraging transit use and prohibiting transit vehicles from providing direct service. Or, walkways to transit stops and perimeter streets are not provided, hindering pedestrian access to buildings and transit stops.

The following design techniques are offered as a means of eliminating barriers to public transportation. These techniques increase transit accessibility and offer benefits such as expanded labor pools, reduced traffic congestion in and around the development and decreased parking demand.

*Revised: November, 1999.*

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## Site Design Techniques

\*Office and industrial **buildings** should be located within 50 feet from transit service to provide employees with more effective and convenient access to public transit.

\***Lobbies** equipped with seating are recommended in buildings with floor areas greater than 25,000 square feet to provide a comfortable, climate-controlled waiting area for transit users. The lobby should face the major arterial street or transit stop and provide visibility for waiting persons. A viewing distance of 1000 feet will generally allow transit users to view an approaching bus and gain access to the bus stop area.

\***Pedestrian walkways** should be located around the perimeter of the development and should be linked to the building lobby for increased pedestrian access. A direct walkway located between the lobby and the transit stop will provide employees with more convenient and effective access to transit.

All walkways should be designed for individuals with mobility limitations. To provide accessibility, walkways should be constructed with a minimum 3 foot width and should have a running slope no greater than 1:20.<sup>(1)</sup>

\***Bus turnouts** can be provided on streets in front of buildings over 25,000 square feet, if those buildings are at mid-block locations. Turnouts provide an effective off-street bus stop area that does not restrict traffic flow. These transit facilities are desirable in locations where high ridership volumes are anticipated and stops may produce traffic backups.

\*Priority **parking spaces** for **carpool** and **vanpool** vehicles can be located adjacent to the primary building entrance from the parking lot to encourage shared-ride programs. The designation of 5 percent of a building's parking spaces is recommended for vanpool and carpool vehicles. The number of priority spaces should be expanded as participation increases.

\***Parking spaces** for individuals with **mobility limitations** should conform in dimension and number to the Illinois Accessibility Code.<sup>(2)</sup> These spaces should be located adjacent to the primary building entrance from the parking lot and should be the shortest route to the building entrance. All main entrances to the building should be accessible to persons with mobility limitations and conform to ANSI code.<sup>(3)</sup>

\***Bicycle routes** can be constructed on development grounds and designated on adjacent perimeter streets to encourage bicycle use for commuting purposes. Bicycle routes should be linked to building entrances and transit stops to provide more effective and direct access for bicyclists. These paths should be coordinated with municipal bicycle routes in an effort to establish major bicycle corridors. Bicycle path dimensions can be found in the Residential Land Use, Bicycle Routes section of this document. To encourage use of bicycle routes, **bicycle storage facilities** should be available to employees and located near a building entrance in a secure or monitored area.

\***Transportation centers and transfer facilities** can be coordinated with park-n-ride lots and offer various transportation alternatives such as express and subscription bus, fixed route, dial-a-ride, feeder bus, vanpool and private sector services. Facility development is dependent on passenger volume, the number of buses or transit modes and intersecting routes, transfer activity, schedule characteristics, space availability, traffic patterns and site access.

Transportation centers and transfer facilities also can be coordinated with office, industrial, retail or mixed-use developments that generate high-volume transit use and in areas where transit routes intersect and bus layovers are needed. Pace will work closely with developers or municipalities wishing to incorporate transit facilities in their endeavors. These ventures can support economic growth while promoting transit use and offer other numerous benefits to Pace as well as to private or other public sector entities. For example, the presence of transit service can increase the value and lease rates of adjacent and integrated properties, enabling private owners to obtain increased revenues and an improved return on investment.

Public agencies like the Illinois Department of Transportation, Illinois State Toll Highway Authority, Regional Transportation Authority, Metra and Chicago Transit Authority can become partners with Pace and private sector investors in joint development projects to make more efficient use of public properties. Additionally, joint ventures offer Pace the opportunity for direct involvement in the design and construction of projects that are compatible with transit service and facilities. These developments also increase access to the labor force and can provide a greater overall vehicle occupancy rate.

Pace's Joint Development Policy has been included in Appendix D for those who are interested in establishing real estate partnerships with the agency. This policy establishes Pace's priorities and objectives for joint development ventures as well as its approach to evaluating potential projects. For further information, contact Pace's Capital Planning and Construction Department Manager at (847)228-4262.

Site design techniques alone will not encourage transit use if individuals are accustomed to using the automobile; additional measures are needed. Businesses may find it necessary to offer incentives or programs to promote transit use and other forms of shared transportation. This is particularly important with the passage of the Clean Air Act Amendments of 1990 (CAAA). Based on the CAAA, northeastern Illinois is classified as a severe non-attainment area for ozone. In order to reach attainment standards, hydrocarbon emissions in the Chicago metropolitan area must be reduced by approximately 50 percent over the next 15 years. These reductions will be achieved, in part, through the use of transportation control strategies implemented by businesses in the region.

Demand management techniques, such as those listed below, can be used to promote alternative transportation options to the single occupant vehicle and achieve necessary reductions in employee vehicle trips. With these techniques, pollution, peak period traffic congestion, parking demand and facilities can be decreased.

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1. American National Standards Institute, Inc., *American National Standard for Buildings and Facilities* (New York: February 1986), pp. 21-30.

2. State of Illinois Capital Development Board, *Illinois Accessibility Code* (Springfield, IL: May 1988), pg. 28.

3. American National Standards Institute, Inc., *American National Standard for Buildings and Facilities* (New York: February 1986), pp. 39-43.

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**Demand Management Techniques:**

\*Employers can encourage the use of *fixed route, subscription bus and dial-a-ride transit service* by informing employees of Pace services, displaying bus schedules and route maps and promoting the purchase of transit passes to employees. Employers can offer transit passes to employees at a discounted rate to encourage use of public transportation and reduce demand for parking space. As a benefit to employers, the federal government permits an employer to pay a portion of a worker's mass transit fares with pretax dollars.

\*Employer promotion of *vanpools and carpools* can encourage employee participation in shared-ride programs. Businesses can aid employees by matching employee addresses and work schedules and distributing lists of carpool or vanpool partners to individuals who reside in close proximity to one another. Employers also can subsidize carpools and vanpools as an incentive to use this form of transportation.

Employers and employees can obtain assistance with vanpool formation through Pace's Vanpool Incentive Program (VIP). Pace will provide appropriately sized vans for the vanpool groups, train and insure drivers and establish a monthly fare schedule. Vanpool fares cover fuel, maintenance and insurance. Vanpool participants identify pickup locations such as transit stations, park-n-ride lots or residential sites and establish travel schedules. A member of the group volunteers to drive the van and pick up fellow riders.

Additional information on the Pace program can be obtained from the Vanpool Services Supervisor at (847)228-4278. Program features like the Guaranteed Ride Home Program and Pace Passport can be further explained.

\***Parking controls** that decrease parking availability or require user fees can be instituted by employers as a means of reducing traffic and encouraging public transit use or shared-ride programs. Parking fees or the elimination of employee parking subsidies can encourage employees to find alternatives to driving alone.<sup>(1)</sup> Even before the CAAA, several city and special district ordinances were established thereby requiring developers and employers to institute traffic reduction measures. For example, the Silver Spring district in Maryland imposed restrictions on job growth due to traffic congestion.

Developers/employers are required to convert 30% of the employees to alternative transportation modes.<sup>(2)</sup> Also, Pleasanton, California requires a 45% reduction in single occupant automobile use during peak travel periods over a 4 year period.

To help achieve mandated air emission reductions, employees can and are urged to convert to modes of transportation other than the single occupant automobile. As more individuals participate in ridesharing programs and use public transportation, parking space demand will decrease. Additionally, innovative development designs that incorporate on-site services, such as day-care and dining, further decrease automobile travel and parking space needs.<sup>(3)</sup>

As parking demand decreases, parking space construction can be scaled down. Pace recommends an appropriate reduction in parking space requirements based on development design and transit accessibility. Municipal parking requirement standards as well as guidelines used by financial institutions should reflect the availability of alternative forms of transportation and the resulting reduction in parking demand.

**Example: Application of Alternative Parking Scenario.** The following indicates vehicle occupancy and parking requirements for a five floor office development. These calculations are based on the projected use of alternative forms of transportation such as vanpools and public transportation. Table VI-1 illustrates the need for 251 parking spaces for a 137,127 sq. Ft. development. Under typical standards, 4 spaces per 1000 sq. ft. of office space or 549 spaces are frequently required for this size office building. The elimination of 298 additional parking spaces can increase the amount of buildable or open space area in a development and decrease maintenance costs related to parking facilities.

**TABLE VI-1  
PROTOTYPE DEVELOPMENT  
PARKING NEEDS**

	<b>PARKING SPACES</b>	<b>VEHICLE OCCUPANCY</b>	<b>PERSON COUNT</b>	<b>SQ. FT. USAGE</b>	<b>NUMBER FLOORS</b>	<b>PERCENT TOTAL</b>
<i>Cars</i>	227	1.15	261	87,008	3.22	63.45%
<i>Mobility Lim.</i>	8	1.15	9	3,066	0.11	2.24%
<i>Vans</i>	12	8.00	96	31,997	1.19	23.33%
<i>Visitor</i>	4	1.10	4	1,467	0.05	1.07%
<i>Public Trans.</i>	n/a	n/a	41	13,589	0.50	9.91%
<i>Total</i>	251	n/a	411	137,127	5.08	100.00%

\***Staggered work hours, flextime and condensed work weeks** can be offered to employees to reduce the number of individuals arriving at and departing from a workplace at the same time.

\***Transportation Management Associations (TMAs)** can be formed among businesses and property owners/developers having a common interest in the transportation problems of a particular area. TMA members work together and, at times, with local transit and government agencies to reduce rush hour traffic and resolve other traffic problems. These groups function either as private sector associations funding their own transportation-related activities or as public-private partnerships that jointly fund traffic programs.

TMAs respond to transit issues in different ways depending on particular circumstances and needs of the locations they serve. At times TMAs take on an advisory role, sharing information about transit problems and needs with public and transit agencies to resolve traffic problems in their particular areas. TMAs often assume a role of initiating and coordinating programs and transit service (eg. shuttles) in their target locations. These associations generally institute demand management strategies that include variable work-hour options, shared-ride programs such as vanpooling and carpooling, subsidized transit costs, designated bicycle lanes and parking management. They also encourage the use of public transit options like reverse commute, subscription bus, local circulator and fixed-route service to reduce congestion.

1. Pleasanton, California, *Ordinance Code of the City of Pleasanton* (Pleasanton, CA: 1984), chapter 17, pp. 1-17.  
 2. Montgomery County, MD, *Silver Spring, Maryland Special District Ordinance* (Montgomery County, MD:1987).  
 3. Institute of Transportation Engineers, *Transportation and Traffic Engineering Handbook, 2nd ed.* (New York: 1982), pp. 647-648.

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## **D. MIXED-USE CENTERS**

A mixed-use development can encourage the use of public transportation and shared vehicles as well as promote pedestrian and bicycle travel. Office and industrial buildings can be clustered with other uses such as high density residential, retail, recreational and service-related land uses. These clusters become major employment and service centers in suburban areas and focal points for employees and shoppers. They can offer a diverse mix of activities such as employment, shopping and dining that are accessible to the pedestrian/bicyclist and reduce the need for vehicular trips.

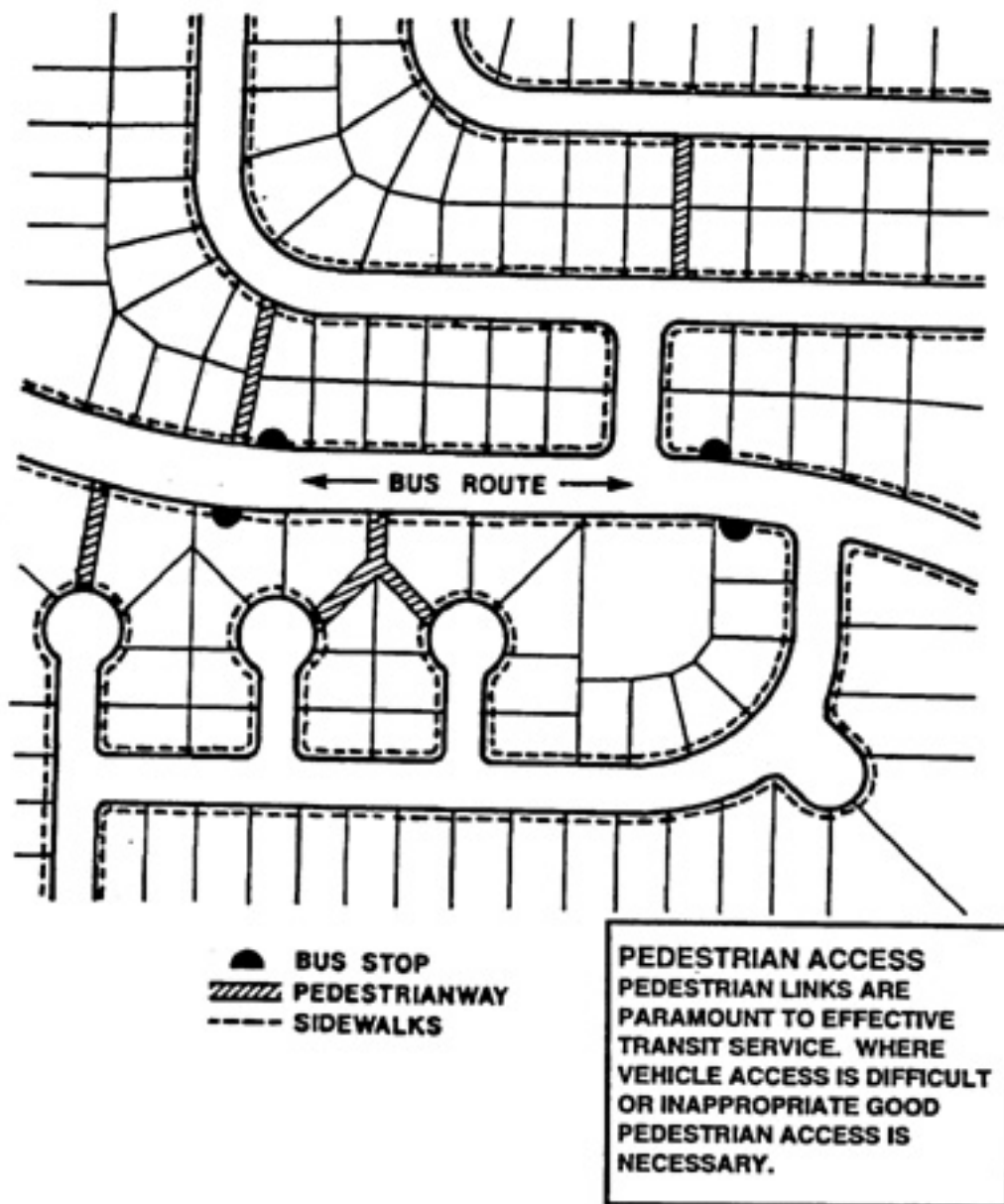
Mixed-use centers are easily serviced by public transportation. They concentrate transit users by providing a common origin/destination point which is conducive to public transportation. To provide a high level of transit service, transportation centers can be incorporated into mixed-use centers. Transportation centers offer convenient access to a variety of routes and transportation alternatives such as rail, express bus, fixed route and dial-a-ride service.

Mixed-use centers spread out vehicle and transit trips throughout the day to reduce traffic congestion at peak periods. Since the hours of use vary for different land uses, parking can be shared among the establishments. Shared parking can decrease parking requirements for individual businesses, thereby decreasing initial construction costs and maintenance expenses.

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**FIGURE VI - 1**  
**Pedestrian Access**



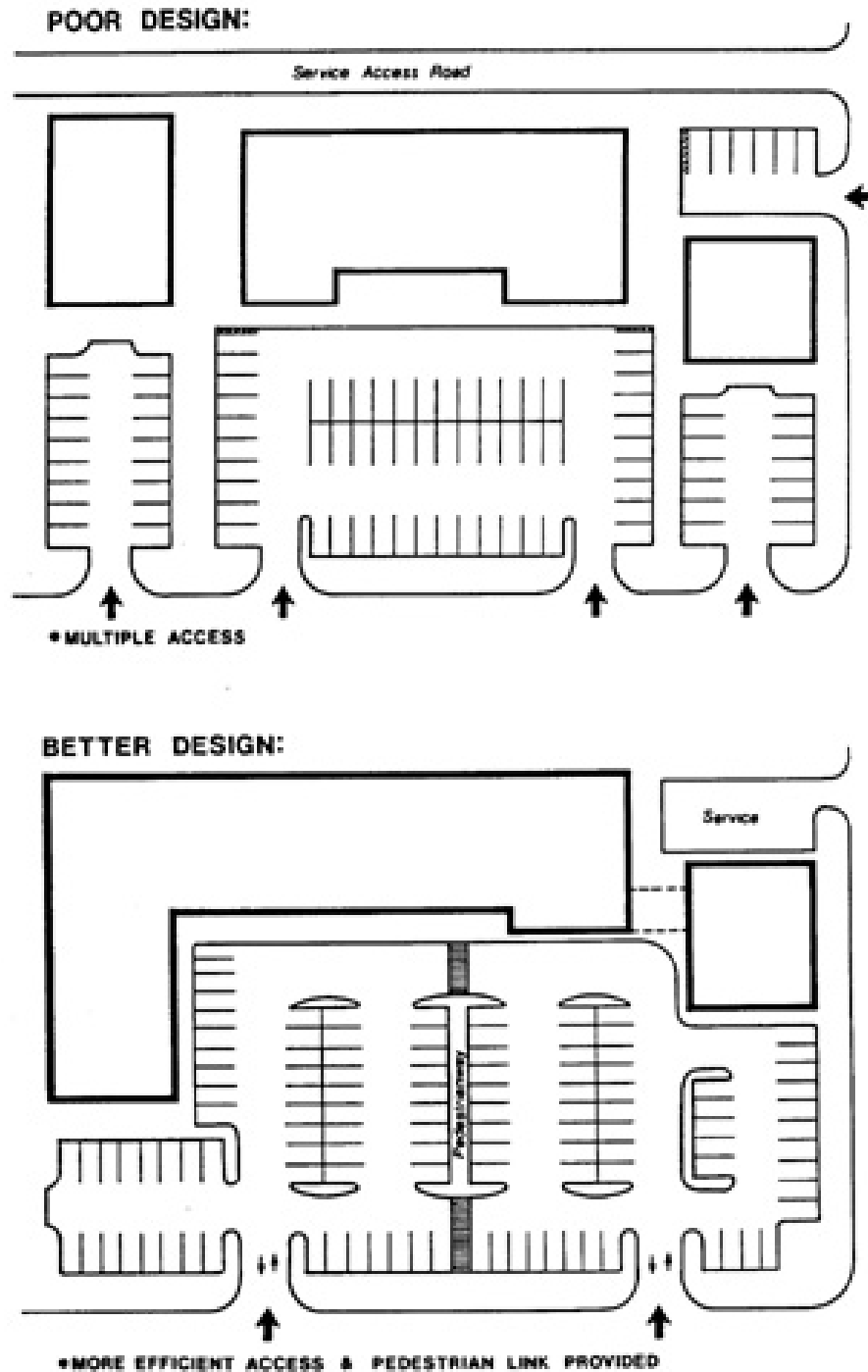
*Revised: November, 1999.*

**FIGURE VI - 2**  
**Subdivision Roadway Network**



*Revised: November, 1999.*

**FIGURE VI - 3**  
**Development Access**



*Revised: November, 1999.*



## VII. PLAN AND SERVICE REVIEW PROCEDURES

Transit use and site serviceability can be promoted by designing developments so that they can be accessed by Pace vehicles and provide convenient pedestrian links to transit stops. Pace's *Development Guidelines* identify design options that promote a more pedestrian- and transit-oriented environment and discuss management strategies that encourage employees to use public transportation or participate in shared-ride programs. Pace offers these guidelines to those who are interested in creating developments that are accessible to public transportation, reducing traffic congestion in and around their developments and businesses and improving air quality in the region.

To assist the public and private sectors in the implementation of these design and management strategies, Pace has established the Market Development Program. Pace staff work with developers, businesses and municipalities to integrate transit design features in development plans and to identify viable transit service options for suburban firms and agencies. These services are detailed below.

A. [Service Review and Development](#)

B. [Technical Review Assistance Program](#)

C. [Site Plan Review Procedures](#)

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## **A. SERVICE REVIEW AND DEVELOPMENT**

Through the Market Development Program, custom transit services such as vanpool and subscription bus operations are promoted and established. Pace representatives work with suburban businesses, developers, municipalities and related organizations to identify transit needs and service potential as well as aid in the establishment of services. These representatives conduct presentations for employees and, when appropriate, survey the employee base. Once program eligibility requirements are met and funding sources are established, service is implemented.

Employers, developers, municipal planners, engineers, community development staff related agencies can contact Pace's Marketing and Development Manager at (847)228-2467 for further information and assistance with service planning.

Information on services and programs outside the Pace service area can be obtained from Metra and the CTA.

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### **B. TECHNICAL REVIEW ASSISTANCE PROGRAM**

Pace offers complementary in-house development plan and transit service reviews to municipalities, developers and others in the development community. These reviews are conducted by Pace's Transportation Engineer and are designed to promote the incorporation of public transportation features in suburban developments. Site plans are analyzed and, when appropriate, design options are suggested to make developments more transit serviceable. By applying proper site design techniques, a transit and pedestrian friendly development can be produced. In this environment, Pace can provide more productive service and offer transit as an attractive transportation option.

The provision of transit service also is analyzed during this plan review process. Existing Pace service to the development site is reviewed and service needs resulting from the new development plans are analyzed. Site plan information allows Pace to identify service options for the development area and determine transit equipment and support facility needs.

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### **C. SITE PLAN REVIEW PROCEDURES**

To request a development plan and service review, please contact Pace's Transportation Engineer at (847)228-4287. Plans can then be submitted to Pace headquarters located at 550 W. Algonquin Road, Arlington Heights, Illinois, 60005. If appropriate, information can be faxed to (847)364-7292. Please direct all correspondence to the Transportation Engineer.

When submitting plans, please provide the following information:

- Name of the municipality or developer requesting the review
- Your contact person associated with the review
- Project name
- Type of review:
  - Advisory review (not part of a formal plan review process)
  - Development plan approval (part of a formal plan review process)
- Requested date for Pace response
- 1 copy of the development plan (2 copies are preferred)
- 1 location map showing major arterials and adjacent streets (if available). A minimum 1"-1000' scale map is preferred.

Upon receipt of the development plan(s), Pace will conduct the review in a timely fashion. Once the review is completed, a response letter will be forwarded to the requester indicating recommended changes or advisory comments. At that time, one site plan and any other accompanying information will be returned to the requester.

In the event that plans cannot be submitted for review, a transit checklist is provided in Appendix C (Section X) to assist you with in-house development plan reviews. Recommended guidelines for residential, commercial and industrial developments are also included in this section.

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**VIII. GLOSSARY**

**Americans With Disabilities Act of 1990 (ADA)** -- legislation which mandates equal access to all public transportation services. The ADA requires that fixed route transit be accessible and paratransit (curb-to-curb) service be provided in the same geographic areas on the same days and hours as the fixed route service. The curb-to-curb services are exclusively geared to persons with disabilities who are unable, because of their disability, to use traditional fixed route transit.

**Approach Angle** -- a vehicle's front clearance angle. This angle is formed by the base of the front vehicle tire, the front ground clearance height and the roadway.

**Bus Berth** -- designated bus area that accommodates one or more transit vehicles. This transit facility can be constructed at a point along a roadway or at a transit facility used for passenger loading and unloading and for bus layovers.

**Bus Turnaround** -- roadway system which allows buses to return to the street they are serving, generally in the opposite direction of travel.

**Bus Turnout** -- a recessed bus stop area that is separated from the lanes of traffic.

**Bus Turning Radii** -- the dimensions needed to accommodate bus turning movements.

**Clean Air Act Amendments of 1990 (CAAA)** -- legislation amending the Clean Air Act thereby defining more stringent national air emission standards.

**Collector Roadway** -- road that links local (minor) roadways to major arterial roadways.

**Demand Management Techniques** -- policies or programs initiated by employers, developers, TMAs or governmental entities to reduce traffic congestion. Demand management techniques include carpool matching, vanpool formation, transit pass subsidization, preferential parking arrangements, staggered work hours, facilities for bicycles and shuttle services.

**Departure Angle** -- a vehicle's rear clearance angle. This angle is formed by the base of the rear vehicle tire, the rear ground clearance height and the roadway.

**Dial-a-ride Bus Service** -- curb-to-curb bus service for the general public as well as those individuals having special needs such as elderly persons or persons with disabilities.

**Express Bus Service** -- bus service that operates non-stop from a designated point of origin to a major destination.

**Far-side Bus Stop** -- transit stop located immediately across an intersection.

**Fixed Route Bus Service** -- bus service provided along defined routes including feeder service to rail stations. Buses stop at a designated spot or on demand.

**Flextime** -- work schedules in which employees choose their arrival and departure times within employer defined limits.

**Intersection Radii** -- corner curb dimensions.

**Local Roadway** -- road that provides direct access to residential lots.

**Mid-block Bus Stop** -- transit stop located between intersections.

**Mixed-use Centers** -- a concentration of development in a specified area which offers high density employment, retail and other uses along with transportation services.

**Mobility Limited** -- individuals having a physical or mental impairment which adversely affects their ability to use various types of transportation, including public transit.

**Near-side Bus Stop** -- transit stop located immediately before an intersection.

**Neighborhood Retail Center** -- grouping of retail establishments that provide convenience shopping to residents in a small, geographic area (eg. One square mile or less). These centers can reduce total vehicle trips and minimize long distance shopping trips.

**Overhang** -- portion of the vehicle body extending beyond front or rear axle.

**Park-n-Ride** -- area designated for the parking of motor vehicles so that users can continue their trip on a particular mode of public transportation.

**Peak Travel Period** -- hours during the day when traffic volumes reach their highest levels. The peak period hours generally are between 6 am to 9 am and 3 pm to 6:30 pm. Monday through Friday.

**Staggered Work Hours** -- work schedules within which employee arrival and departure times are varied. Work hours are generally adjusted 15 minutes to an hour earlier or later than 8 to 5 to help avoid peak traffic periods.

**Subscription Bus Service** -- service provided to a group of passengers, typically twenty or more, having a common origin and destination. Passengers contract with Pace to obtain this service. Routes and schedules are determined by the travel times and patterns of the subscribers/employees.

**Tapers** -- lane provided in a bus turnout to accommodate bus speed changes when entering and exiting traffic.

**Transfer Facility** -- passenger facility with sheltered or enclosed waiting area and associated passenger amenities for the transfer of patrons among five or fewer bus routes. This facility may be paired with a park-n-ride.

**Transportation Center** -- terminal where six or more transit routes intersect and passengers can change vehicles or modes of transportation. These centers are generally paired with a park-n-ride and offer a sheltered or enclosed waiting area along with associated passenger amenities.

**Transportation Control Measure (TCM)** -- Strategies designed to improve the efficiency of transportation facilities and services by facilitating traffic flow, reducing vehicle miles traveled and increasing the use of public transportation and other ridesharing alternatives.

**Transportation Management Association (TMA)** -- private sector or joint private-public sector partnerships formed to reduce traffic congestion in a particular locale.

**Turning Radius** -- turning path of a vehicle established by the outer front overhang and the inner rear wheel.

**Vanpool** -- shared-ride program generally consisting of 7 to 15 persons. Vanpools can be subsidized, company sponsored, or individually owned.

*Revised: November, 1999.*

**IX. REFERENCES**

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- American National Standard for Buildings and Facilities*, American National Standards Institute, Inc., New York, 1986.
- Americans With Disabilities Act (ADA)*, Public Law 101-336- 101<sup>st</sup> Congress, Signed July 26, 1990.
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- Transportation and Traffic Engineering Handbook 2<sup>nd</sup> ed.*, Institute of Transportation Engineers, New York, 1982.

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## **A. RESIDENTIAL LAND USE GUIDELINES**

- Walking distances for the transit user should not exceed one quarter mile or, in low density areas, one-half mile to a transit stop.
- Direct walkway systems that link residences to transit stops should be provided within residential developments.
- Roadways should be designed to permit transit service to appropriate locations within the development. A through street or bus turnaround system can be incorporated into a development's site design to provide resident access to transit.
- High density and mixed-use developments should be encouraged near transit stations so that large populations can gain quick access to public transportation and a wide variety of land uses.
- Park-n-ride facilities should be provided at appropriate transit points to concentrate transit users from low density residential areas. These facilities should be provided in conjunction with off-street open space parking.
- Retail establishments should be clustered to reduce the number of curb cuts and bus stops and to decrease shopper walking distances. To provide convenience goods and reduce the frequency of trips by shoppers to regional shopping centers, clustered retail centers should be located near residential areas.

*Revised: November, 1999.*

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## **B. OFFICE AND INDUSTRIAL LAND USE GUIDELINES**

- Buildings over 25,000 square feet should have a lobby with seating located at the front of the building and facing the arterial street. The lobby should be accessible to persons with disabilities and designed so that the fronting street is visible to waiting transit users for a distance of 1,000 feet.
- Buildings should have a setback no greater than 150 feet from the curb to provide employees with more effective and convenient access to public transit. If the building has a setback greater than 150 feet, a bus turnaround facility may be developed to provide access to transit service.
- A bus turnout capable of handling a 40-foot bus should be located in front of any building that is more than 330 feet from an intersection, and generates large passenger volumes.
- Pedestrian walkways (sidewalks) should be constructed along the perimeter of all developments. The walkways should connect to the lobby located at the front of the building and to the bus stop area. All walkways should be accessible to individuals with mobility limitations.
- Near-side bus stops at street intersections should be designed with a concrete pad for a passenger waiting area, extending from the corner tangent point, back along the curb at least 25 feet and being complete between the curb and the sidewalk. Paving of the area between the corner tangent point and the intersection of the sidewalk and curb is optional.
- Parking spaces should be assigned for vanpool and carpool vehicles. These parking spaces should be given priority designation and located adjacent to the primary building entrance from the parking lot.

*Revised: November, 1999.*

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### **C. TRANSIT CHECKLIST**

The Transit Checklist can be used to evaluate the accessibility of a development to public transportation. Development plans can be critiqued by answering the questions on the checklist. These questions are designed to receive a "Yes" response if the development will accommodate transit vehicles and provide access to public transportation. If a "Yes" response is not received, refer to the appropriate chapter for design suggestions. If further assistance is required, Pace will review development plans and provide transit-related design suggestions and technical assistance.

- Do the roads within and around the development incorporate the following features to make the development accessible by public transportation vehicles?
- Intersection radii for driveways and intersections designed for a 50-foot outside turning radius.
  - Roadway grades that are 6% or less.
  - Bus loading pads should be designed with a minimum 8" portland cement concrete jointed reinforced pavement and a 4" subbase of stabilized granular material.
  - Lane widths of 12 feet.
  - Curb heights of 6 inches.
- Are residential developments designed with a central collector street that provides access for transit vehicles?
- Have bus stop locations near the development been identified by Pace?
- Are paved passenger waiting areas provided at all near-side corners of collector and arterial street intersections?
- Are passenger amenities (shelters, benches, adequate lighting, bicycle storage facilities, and landscaping) provided at bus stops?
- Are transit stops located within one-quarter mile (one-half mile in low density developments) or less of all buildings within the development?
- Have bus turnouts, berths, turnarounds and/or park-n-ride facilities been incorporated into appropriate roadway or development designs?
- Do pedestrian walkways provide a direct path from building entrances to transit stops?
- Are pedestrian walkways and bicycle routes located along the development's perimeter streets? Do they lead directly to building entrances?
- Are walkways, curbs, bus stops, building entrances, parking areas and transit facilities designed for the mobility limited?
- Do office and industrial developments over 25,000 square feet have lobbies designed with passenger waiting areas?
- Are retail, office and industrial buildings located within 150 feet of transit service?
- Is adequate lighting provided at bus stops, passenger waiting areas and along pedestrian walkways?
- Are 5% of the parking spaces near the primary building entrance from the parking lot designated for vanpool and carpool vehicles?
- Do parking spaces for the mobility limited conform in dimension and number to the Illinois Accessibility Code?
- Are parking spaces for the mobility limited located adjacent to the primary building entrance from the parking lot?

*Revised: November, 1999.*

**D. PACE JOINT DEVELOPMENT POLICY**

Pace encourages the coordination of real estate development with transit facilities and services for the purpose of promoting public transportation in suburban northeastern Illinois. Joint development supports Pace's mission by providing a means to facilitate the delivery of efficient and cost-effective public mass transportation, to increase farebox recovery rates and to contain the agency's capital and operating costs. Pace promotes the joint use of properties for private and public sector development in a manner that is compatible with transit service delivery and public convenience. Pace also is committed to working with developers and public agencies that are interested in entering into joint partnerships for purposes consistent with Pace policies, goals and objectives.

Therefore, partners are sought to maximize the development of transit properties and co-develop real estate for projects that support public transportation and provide financial and/or locational benefits to the development partner, the local jurisdictions, the general public and the transit agency. The Board reserves the right to accept or reject all joint development proposals without cause. However, Pace will not participate in joint development projects where substantial transit benefits cannot be realized.

For this reason, joint development proposals are evaluated based on the following project characteristics: area transit facility and service needs; transit ridership projections and revenue generation; proposed and existing land use mix and densities; community interests; municipal development plans; start-up and ongoing capital and operating expenditures; site characteristics; project scope; land use and operating expenditures; site characteristics; project scope; land use and zoning regulations; traffic and parking impact; and environmental impact. In order to ensure that joint development agreements are negotiated in a timely manner, all such agreements will specify land use and density, private and public sector roles, infrastructure installation, architectural design, construction schedules, building maintenance aspects, and financial considerations including financing options and all necessary legal agreements with local jurisdictions.

In order to facilitate joint development, local officials are encouraged to establish comprehensive and consistent land use and zoning regulations that support joint development projects. Similarly, support is expressed for streamlining local regulatory processes governing joint development and for formulating intergovernmental agreements relating to regional development in general.

Pace is interested in pursuing joint development project proposals that meet the following objectives:

- To increase transit ridership and farebox revenues.
- To decrease transit operating expenses.
- To generate revenue through the lease, sale or con-development of Pace properties.
- To conserve grant capital by reducing land acquisition and construction costs through shared expenses.
- To facilitate economic development desired by local jurisdictions.
- To minimize property removed from tax rolls.
- To promote land use patterns and architectural designs that are conducive to transit operations in conformance with Pace plans, regional transportation programs, local development plans and community interests.
- To establish compatible development projects on transit properties for the enhancement of short-and long-range transit market potential.
- To improve the quality of life in suburban communities by increasing access to public transportation, minimizing traffic congestion, improving environmental quality through the reduction of vehicle emissions, fuel consumption and roadway expansions and by offering convenience facilities for transit users.

*Revised: November, 1999.*



## Template Request Form

Fill out this form to receive a mylar bus turning template (Ref: Appendix E: [Bus Turning Template - Figure III-2](#))

***Please enter your name:***

**First Name:**

**Middle Initial:**

**Last Name:**

***Please enter your mailing address:***

**Street 1:**

**Street 2:**

**City:**

**State:**

**ZIP/Postal Code:**

**Country:**

***Optional:***

**Phone Number:**

**E-Mail Address:**

---

## Pace Development Guidelines Feedback

***Since the Development Guidelines is intended as a working document, your input is important. Please send us your suggestions or comments regarding these guidelines.***

E-Mail Address: [taqhi.mohammed@pacebus.com](mailto:taqhi.mohammed@pacebus.com)





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[III - 1 Transit Vehicle Components](#)

[III - 2 Bus Turning Template](#)

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*Revised: November, 1999.*



## ***DEDICATION***

*In recognition of their support and resolution in providing the impetus for the production of the Development Guidelines, the Pace Board and staff dedicate this document to the Pace Citizen Advisory Board.*

The *Pace Development Guidelines* do not constitute a regulation or an ordinance and are not intended to supersede local codes or ordinances; these guidelines are presented to encourage the design of transit accessible developments in an effort to enhance transit service and reduce traffic congestion in northeastern Illinois. Please refer to local regulations before the application of these guidelines. Diagrams presented in this document are illustrative only and are not representative of specific designs.

*Revised: November, 1999.*

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