



# TRANSPORTATION PLAN

## 5.1 PLAN OBJECTIVES AND STRATEGIES

### A. TRANSPORTATION OBJECTIVES





1. **Increase the use of non-auto-driver travel for commuting.** The recommendations in this chapter are intended to increase the peak-hour commuter use of transit, car-pools, bicycling, and walking by Bethesda CBD employees. These modes are not used to the extent they could be, and they offer significant potential for supporting needed jobs and housing without creating additional traffic congestion.
2. **Integrate the Silver Spring-Bethesda Trolley into the transportation and land use pattern.** This transit line improvement must be a part of the Bethesda CBD Sector Plan so that space can be reserved for stations, tracks and passenger access.
3. **Improve pedestrian and bicycle conditions.** The Plan provides guidance for improving the future pedestrian and bicycle systems.
4. **Provide a balanced transportation system for the recommended land use plan.** The Plan defines balance between transportation and land use as the condition where the average area-wide level of service (a measure of traffic congestion) is within the bounds for the recommended transportation category as defined by the Annual Growth Policy.

The recommended transportation system is designed to be in balance with land use that includes projected growth outside Bethesda and the full development of every parcel according to its recommended use and density. It is highly unlikely that this build-out will occur within the 20-year life of the Plan. The Staging text (Section 10.2) recommends that the balance be maintained in interim stages as the Plan is implemented.

5. **Provide improvements at key intersections that exceed congestion standards.** Intersections are the major choke points where future demand can exceed capacity. The Plan identifies locations where problems are forecast.

Table 5.1

**IDENTIFICATION OF SECTOR PLAN STRATEGIES FOR IMPROVED TRANSPORTATION IN THE BETHESDA CBD**

TRIP ORIENTATION		Components of Travel Through, To, From, and Within the Bethesda CBD					End of Trip
		Start of the Trip	Auto/Highway	Transit	Biking	Walking	
Through		<ul style="list-style-type: none"> <li>Locate more housing closer to accessible transit that comes through Bethesda CBD</li> </ul>	<ul style="list-style-type: none"> <li>Separate through traffic from locally-oriented traffic</li> <li>Regional ride-sharing programs</li> </ul>	<ul style="list-style-type: none"> <li>Fare policy changes</li> <li>Upstream park-and-ride lots in non-Metro corridors</li> </ul>	<ul style="list-style-type: none"> <li>Connectivity with regional bikeway system</li> <li>Capitol Crescent Trail</li> </ul>	<ul style="list-style-type: none"> <li>Capitol Crescent Trail</li> </ul>	
To		<ul style="list-style-type: none"> <li>Locate more housing closer to transit routes that come to Bethesda CBD</li> </ul>	<ul style="list-style-type: none"> <li>Intersection improvements</li> <li>TMD measures</li> </ul>	<ul style="list-style-type: none"> <li>Silver Spring-Bethesda Trolley Trail</li> <li>Fare policy changes</li> <li>TMD Measures</li> <li>Expand Metrorail system</li> </ul>	<ul style="list-style-type: none"> <li>More bike routes in main travel corridors and within Bethesda CBD</li> <li>Improve bike storage in CBD</li> </ul>	<ul style="list-style-type: none"> <li>Improve pathway system to CBD</li> <li>Provide signs to orient visitors to CBD walkways</li> </ul>	<ul style="list-style-type: none"> <li>Parking availability and rates</li> <li>Share-A-Ride programs for each employment center</li> </ul>
From		<ul style="list-style-type: none"> <li>Share-A-Ride Program for Bethesda CBD residents</li> <li>Improve sidewalks and access to transit routes and Metrorail stations</li> </ul>	<ul style="list-style-type: none"> <li>Intersection improvements</li> <li>Highway capacity improvements</li> </ul>	<ul style="list-style-type: none"> <li>Silver Spring-Bethesda Trolley Trail</li> <li>Expand Metrorail system</li> </ul>	<ul style="list-style-type: none"> <li>Bike access from employment centers</li> <li>Improve bike storage in CBD</li> </ul>	<ul style="list-style-type: none"> <li>Improve pathway system from CBD</li> </ul>	
Within		<ul style="list-style-type: none"> <li>Improve sidewalks and access to transit routes</li> </ul>	<ul style="list-style-type: none"> <li>Intersection improvements</li> <li>Reduce conflicts with through traffic</li> </ul>	<ul style="list-style-type: none"> <li>Restructure parts of bus services to provide more internal circulation</li> <li>Provide loop bus system</li> </ul>	<ul style="list-style-type: none"> <li>Expand bicycle system connecting to Metro Core District</li> <li>Improve bike storage in CBD</li> </ul>	<ul style="list-style-type: none"> <li>Improve pathway and sidewalk system within the CBD</li> <li>Pedestrian crossings and intersection improvements</li> </ul>	<ul style="list-style-type: none"> <li>Reduce conflicts with vehicles; more signalized crosswalks</li> <li>Improve street lighting and amenities</li> </ul>

## **B. TRANSPORTATION STRATEGIES**

Table 5.1 presents an overview of Sector Plan strategies for improved transportation. These strategies are among those discussed in more detail later in the chapter. The summary shows the strategies categorized by four basic trip orientations: travel through, to, from, and within the Bethesda CBD.

The summary is also organized by elements of the trip path: the start of the trip, the predominant means of travel, and the trip's end. Different strategies are presented for each of the travel elements. For example, strategies to control parking supply and cost in the CBD are only useful for the end of trips to Bethesda from outside the area, or from within the area. Such parking-related strategies will have no direct effect on people traveling through the area or residents who travel from the CBD to other areas. This overview is not meant to be a complete list of all strategies. Rather, it should be viewed as a tool to compare and interrelate the diverse transportation strategies discussed below.

## **5.2 TRANSPORTATION DEMAND MANAGEMENT**

The Sector Plan goals include creating a Central Business District that attracts people for various purposes: to live, work, shop, and play. A basic premise of transportation planning is that a given amount of development will attract a specific number of people. The number of trips made by these people remains relatively constant regardless of the manner in which the trips are made, whether on foot, by car, or by public transportation, as long as the level of development does not change. However, the manner in which trips are made to or from the CBD has a significant impact on the transportation system. Actions to encourage the use of transit, carpooling, walking, and bicycling and discourage people from driving alone are valuable for their ability to relieve traffic congestion.

At the present time, 16 percent of the workers leaving the CBD in the evening rush hour use transit. (Current use of transit to the Bethesda CBD in the evening is 32 percent.) The average auto occupancy is about 1.1 persons per car, meaning that only one commuter car in 10 carries a passenger. To the extent that carpooling can grow, it would substitute for some of the increased use of transit and reduce future congestion. The process of influencing people to increase transit or carpool use for work trips is not an easy task. Transportation management schemes must be developed which improve the attractiveness of transit as a means of transportation relative to the automobile. Incentives should be provided to employers and employees to participate in Share-A-Ride services, in-house car-pools, transit pass discount programs, and other efforts.

Several methods may be employed to induce the auto driver to switch to carpools or transit. Most fall into one of two categories: incentives, which make transit more attractive, and disincentives, which make drive-alone auto use less attractive.

To realize the Plan's goal of achieving a significant shift of travel from drive-alone auto use, a Transportation Management Organization (TMO) should be formed in the Bethesda CBD. A major TMO objective is to increase to 37 percent the percentage of morning peak period work trips made by people who do not drive to existing and new jobs in the Bethesda CBD.



At present, the number of CBD employees who do not drive to work is about 27 percent. Increasing the number to 37 percent would require increasing transit use from 16 to 26 percent or increasing auto occupancy from 1.1 to 1.27 (1 passenger in every 4 commuting cars) or a combination of the two. All told, 3,000 to 4,000 people would need to stop driving alone, based on the year 2010 employment forecast.

The TMO can use a variety of incentives to achieve this objective, including reduced transit fares, improved transit service, and preferred parking in the Bethesda CBD for motorists who travel with passengers. The success of incentives such as these has been demonstrated by the reduction of workers driving to the Silver Spring CBD. Another method of reducing traffic is to require new development to offer specific incentives and disincentives.

Certain incentives are already being used. The Montgomery County parking code allows office building owners to reduce parking requirements in return for participating in Share-A-Ride, vanpool, transit pass discount, or other similar programs. The building owners, therefore, have an incentive to promote alternative forms of transportation; they generally pass the incentive along to their tenants, who then pass them on to their employees. A TMO would mandate the participation of developers of new office space in this type of program and could set performance goals, probably higher than the average the Plan envisions, to help achieve the overall average of 37 percent non-auto drivers. It might also be necessary to require existing employers to participate.

Auto disincentives include limiting long-term parking and increasing commuter parking rates. Such disincentives will promote either a switch from auto to transit or carpools, or a decision not to make the trip. The short-term parkers in Bethesda will continue to be accommodated, as described in the discussion on parking.

### **5.3 PUBLIC TRANSPORTATION**

The Bethesda CBD is well served by transit, with a centrally located Metrorail station and an adjacent bus terminal for both Ride-On and Metrobus service. These are valuable resources, and the Plan builds upon them. The public transportation recommendations support the goals of the Sector Plan. Bus and rail transit serve the recommended land use, including the higher density employment in the Metro Core District. The Plan emphasizes a shift to transit and other non-auto modes of transportation which saves fuel resources, reduces air pollution, and reduces the need for highway expenditures.

The Plan supports:

1. Expansion of bus service in the CBD, including the possible use of a shuttle bus loop for circulation.
2. Provision of a south entrance to the Metro station.
3. Connection of a light rail to the Silver Spring CBD using the Georgetown Branch right-of-way, with a terminal located near the south entrance to Metro in the Bethesda CBD Metro Core.

## **A. EXISTING RAIL AND BUS TRANSIT SERVICE**

The Bethesda Metro station is part of the 103-mile Adopted Regional Metrorail System. The station is located beneath the Metro Center building, with a large bus terminal above. Rail service is provided at 3- to 6-minute intervals during the peak commuting periods and at 12-minute intervals during the midday and evening hours of operation.

A south entrance to the Metro station should be constructed near Elm Street in the future. A knock-out panel already exists near the station platform level. The south entrance may be connected to the Silver Spring-Bethesda Trolley station.

Public bus service is provided in Bethesda by both Montgomery County Ride-On and Metrobus. In combination, the two transit systems provide more than 40 peak-hour buses to and from the Bethesda CBD. This meets the level of bus service required by the Annual Growth Policy for group V classification. Ride-On buses to the Bethesda CBD circulate throughout the Bethesda and Chevy Chase areas, including NIH, the Naval Medical Command, Friendship Heights, and Glen Echo. Connections to Potomac, Kensington, and Wheaton Plaza are also provided, as is Metrobus service to Montgomery Mall and Silver Spring.

## **B. PROPOSED LOOP BUS CIRCULATION**

Improved accessibility to retail shops is an objective of the Plan. (See Section 3.1 C.) One strategy to achieve this objective is to consider provision of a bus circulating throughout the CBD. Such a loop bus system would primarily support retail business and cannot be considered a traffic mitigation measure. The service should connect Metro, major parking facilities, and the major retail areas. Measures to encourage use of the system should include a vehicle with a distinctive appearance, widespread promotion of the service, and free or low-cost fares subsidized by the merchants.

Careful planning is needed to ensure effective service. Many communities have implemented downtown bus circulator services and, in most instances, these services have continued for the primary purpose of maintaining an ambience or uniqueness in the area. San Antonio, Texas; Richmond, Virginia; and Annapolis, Maryland have all used such systems. The City of Baltimore operated a circulating trolley bus in the CBD and satellite parking lots. It was discontinued because of its cost, as was a midday shuttle bus in the Bethesda CBD several years ago.

The Montgomery County Department of Transportation and the Bethesda Urban Partnership worked with local merchants to develop an all-day loop service following the route shown in Figure 5.1. Funding details have not been worked out but there appears to be broad support for the service.

## **C. FUTURE SILVER SPRING-BETHESDA TROLLEY**

The Silver Spring-Bethesda Trolley/Trail consists of a light rail transit line and a recreational trail between the Central Business Districts of Bethesda and Silver Spring. It uses an abandoned railroad right-of-way, the Georgetown Branch. An essential element of the trolley/trail is direct passenger transfer to the Metro stations in the two CBDs.



This will allow the trolley to function, in part, as a shuttle between the two arms of Metro's Red Line.

The *Georgetown Branch Master Plan Amendment* recommended a Bethesda trolley terminal under the Apex Building. It also anticipated that the south entrance to the Metro station would be built. Subsequent studies indicate that this terminal location would require substantial modifications to the building to gain access to the Metro station. The nature of these modifications and the cost implications warrant that alternative Metro-trolley connections be considered.

The Sector Plan recognizes that the final trolley alignment and terminal location decision will be made in the context of federal and state requirements, which will include the evaluation of all reasonable alternatives. The Sector Plan identifies two alternatives and deletes the existing Master Plan terminal. (See Figure 5.2.) The alternatives are:

1. **West of Apex Building: staying within the Georgetown Branch right-of-way and locating the terminal west of the Apex Building at Elm Street.**
2. **North of Apex Building: staying within the Georgetown Branch right-of-way and locating the terminal access north of the Apex Building within the right-of-way of Elm Street at Wisconsin Avenue.**

The County Council considered other alternative terminal locations. They rejected several on-street alternatives because of their negative impacts.

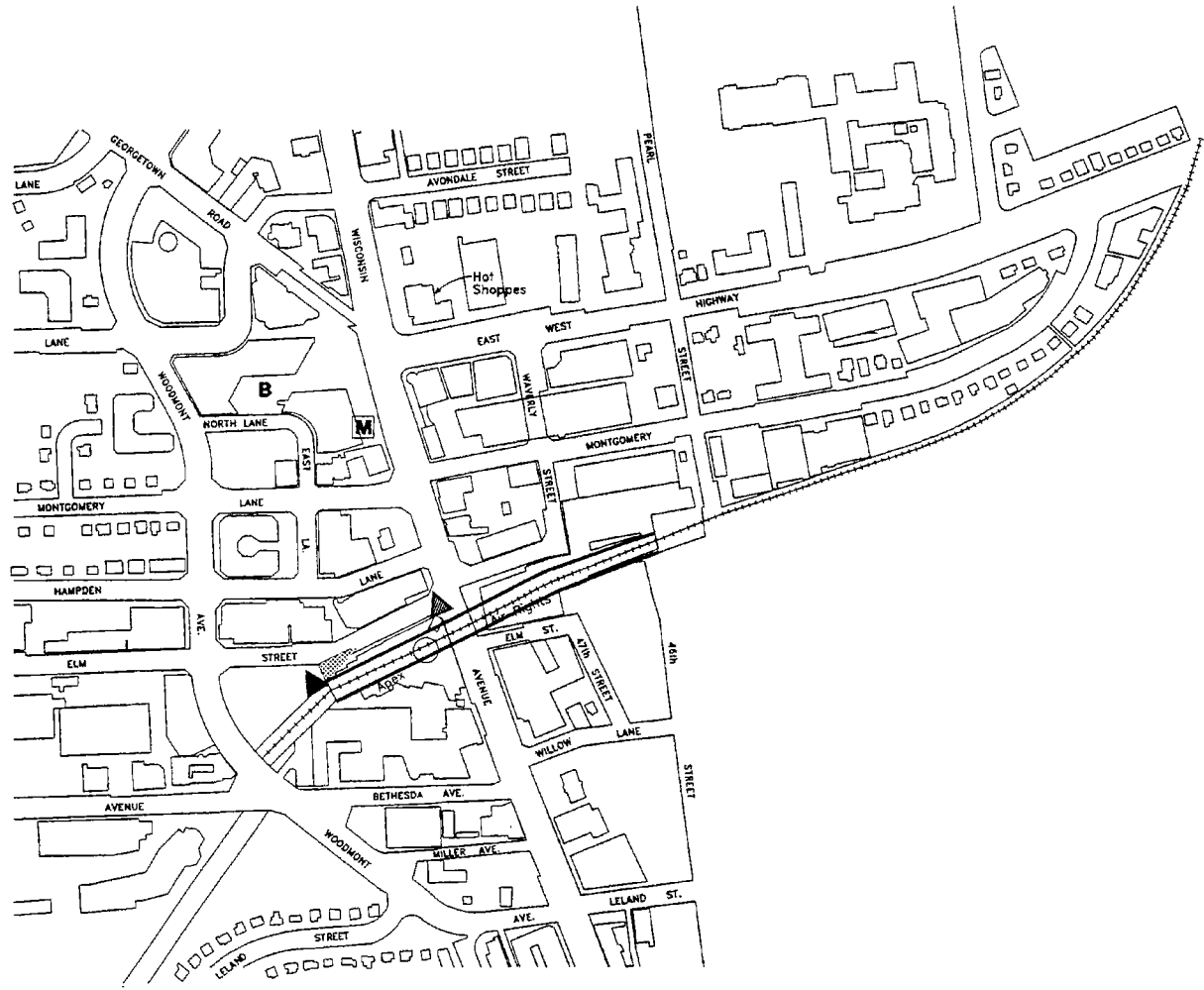
The following criteria were considered in identifying options for further study:

1. **The alternative must provide reasonably direct access for rail and bus at the Bethesda Metro station, so that public transit ridership will not be significantly reduced.**

The North and West of Apex alternatives provide such access if a south entrance to the Metro station is built. For the terminal West of Apex, riders would have access to Metro via a tunnel to be constructed under Elm Street to a new south entrance. For the terminal North of Apex, riders would have access to Metro via elevators to be constructed within the Elm Street right-of-way at Wisconsin Avenue. Some buses would be relocated to Elm Street.

2. **The hiker-biker trail recommended by the Georgetown Branch Master Plan must be accommodated.**

This criterion focuses on the use of the tunnel under the Air Rights and Apex Buildings at Wisconsin Avenue. The alternatives use tunnel space for double tracks needed to maintain the system schedule. The tunnel area for the trail would be greatly reduced or perhaps eliminated. The Bicycle Network Plan in Section 5.5 recommends an on-street bicycle route to either replace or supplement the tunnel route.



**Legend**

- ++++ Rail Line
- ▲ North of Apex Terminal
- ▲ West of Apex Terminal
- M Metrorail Station Entrance
- B Metrobus and Ride On Bus Station
- ▨ Right-of-Way Needed
- == Air Rights/Apex Buildings Tunnel





3. **The impact on automobile access, traffic circulation, and congestion must be acceptable.**

The North and West of Apex alternatives will need to have some buses relocated to stops along Elm Street. The North of Apex alternative may require Elm Street to become one lane, one way and/or bus only at the Wisconsin Avenue intersection.

## **5.4 PEDESTRIAN CIRCULATION**

### **A. EXISTING PEDESTRIAN CIRCULATION**

Sidewalks throughout the CBD serve as pedestrian routes and are enhanced by the "Discovery Trail," a mid-block path combining sidewalks and urban open spaces. The largest number of pedestrians are found within the Metro Core District and along the sidewalks of Wisconsin Avenue, Old Georgetown Road, and East-West Highway. The location of major destinations along these corridors is the primary reason for the higher pedestrian volumes. Such destinations include the Metro station, the post office, large parking facilities, office buildings, and movie theaters.

The following streets provide important pedestrian connections in the CBD:

1. Willow Lane links the Town of Chevy Chase Section 4, Elm Street Park, and Parking Lot 24 with the Metro Core District.
2. Woodmont Avenue from Old Georgetown Road to Norfolk Avenue links the Metro Core with the shops and restaurants of the Woodmont Triangle.
3. Norfolk Avenue and Cheltenham Lane link the residential communities along Battery Lane with the Metro Core District.
4. Montgomery Lane, within the TS-R District, links the Metro Core to the library, used by employees and residents alike.
5. Bethesda Avenue, within the Arlington Road District, links the Edgemoor community with the Town of Chevy Chase Section 4, via Willow Lane. Significant destinations along this street include the Giant grocery store, several parking facilities, an entrance to the Capital Crescent Trail, and the Farm Women's Cooperative Market.

Local pedestrian movements are dispersed throughout the sidewalk network. However, due to the concentration of land uses, even local routes have a considerable amount of pedestrian traffic. The 1984 Bethesda Streetscape Plan therefore recognized the need for upgrading all the pedestrian paths within the Metro Core District.

The current network of sidewalks accommodates these pedestrian routes fairly well and there is generally good pedestrian access within the Metro Core District. However, large numbers of pedestrians must cross Wisconsin Avenue at East-West Highway because of a lack of alternative routes. Along East-West Highway, east of Pearl Street, sidewalks are



too narrow to safely accommodate pedestrians from the high school and high-rise office buildings.

Some streets within the transition areas lack sidewalks. Other streets with significant pedestrian volumes, such as Norfolk and Bethesda Avenues, lack streetscape enhancements.

## **B. RECOMMENDATIONS**

One of the Sector Plan goals is to encourage walking and the use of transit to reduce reliance on the automobile. To achieve this goal, sidewalks within the Metro Core District should be at least 20 feet in width and at least 15 feet in all other areas. Additional building setbacks beyond the required right-of-way may be needed to achieve the recommended sidewalk widths. The proposed streetscape plan also supports this goal, but it must be further supported with intersection improvements that enhance safety and convenience for pedestrians.

The Plan recommends that pedestrian crosswalks be provided at this time for intersections with heavy projected traffic congestion. Future conditions at these intersections may require studies to assure an acceptable level of traffic flow.

As a general guideline, most intersections within the CBD should have curb radii of 15 feet or less, as called for in the 1984 streetscape plan. Tight corners slow down turning vehicles to 10 or 20 miles per hour, which is safer for pedestrians. It is not appropriate within a pedestrian oriented, transit-served CBD to encourage higher speeds by using larger corner radii. Likewise, free right- or left-turning lanes separated from the through movement lanes by traffic islands should be discouraged because turning traffic tends not to yield to pedestrians, even in marked crosswalks. Existing corners with radii exceeding 15 feet should be tightened. Along higher capacity streets without on-street parking, corner curb radii may be increased to 25 feet to accommodate turning vehicles.

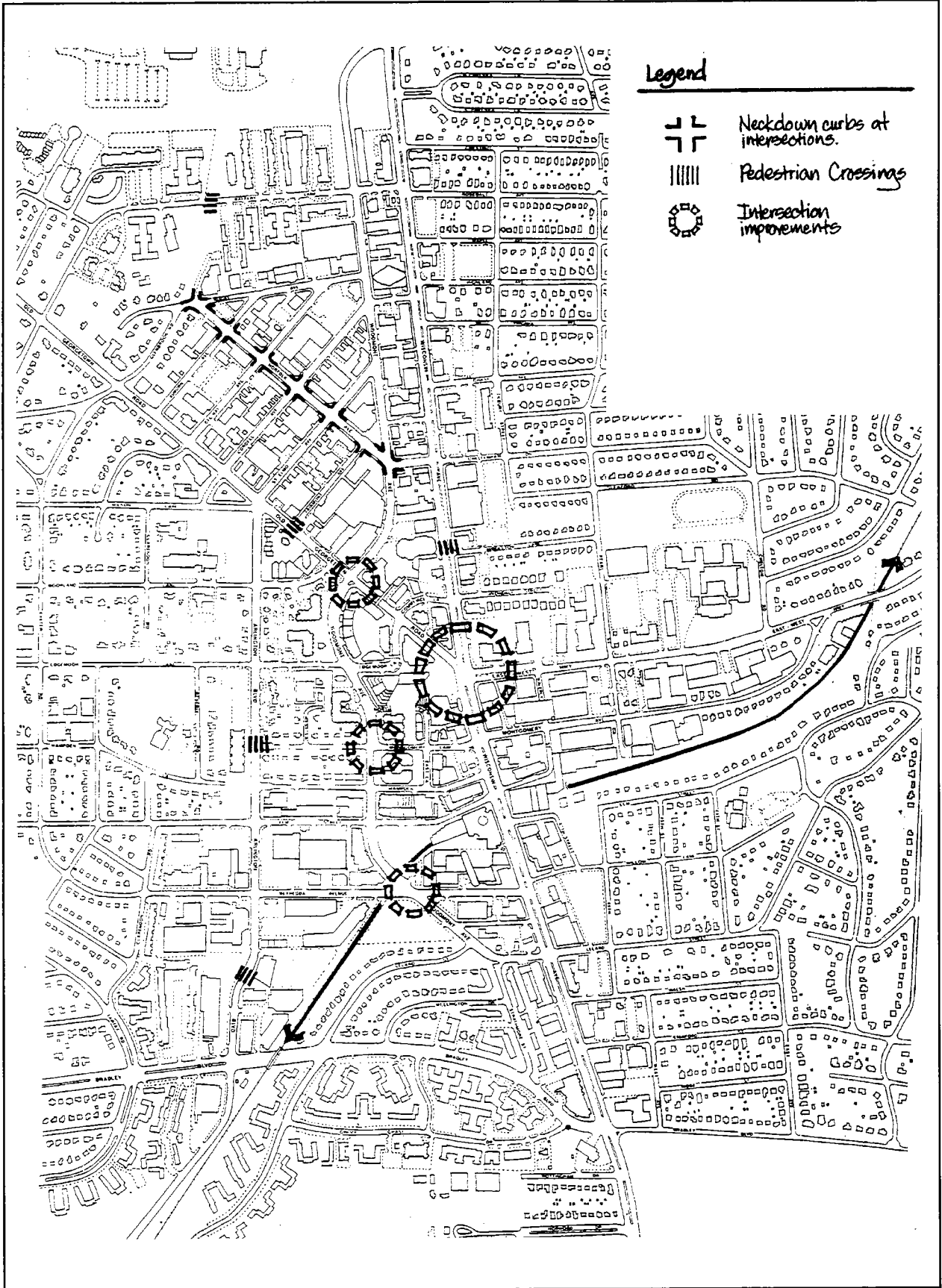
Intersections along local streets identified as Main Streets within the Street-scape Plan—Norfolk Avenue, Cheltenham Drive, and Bethesda Avenue—should be narrowed (or “necked down”) at their intersections with cross streets to accommodate their higher pedestrian volumes. These streets have permanent parking lanes which allow the street to be necked down at corners without affecting travel lanes. These recommendations are subject to capacity conditions and operational studies. Intersections with a significant number of left and right turns, such as Bethesda Avenue and Arlington Road, should not be necked down. Studies will also be required to ensure that adequate flow to the stormwater drainage system is not interrupted. (See Figure 5.3.)

### **INTERSECTION OF WISCONSIN AVENUE, EAST-WEST HIGHWAY, AND OLD GEORGETOWN ROAD**

This intersection next to the Metro station has some of the highest levels of pedestrian crossings in Bethesda. Pedestrians generally travel either along the street to destinations on Wisconsin Avenue, such as the post office and the Metro Center food court, or to Metro using the tunnel under Wisconsin Avenue, or the escalator entrance at Metro Center.

# PEDESTRIAN ACCESS IMPROVEMENTS

## FIGURE 5.3





Currently, pedestrians crossing Wisconsin Avenue are not adequately accommodated due to existing conflicts with right turns from East-West Highway and a pedestrian crossing restriction along the south side of the intersection. No crosswalk is provided along the south side because MCDOT and the State Highway Administration (SHA) want to 1) encourage pedestrians destined for Metro to use the tunnel, and 2) better accommodate left-turning vehicles from East-West Highway to Wisconsin Avenue. Metro-bound pedestrians usually do take the tunnel because it is a more convenient route than crossing at street level to the escalators at Metro Center. However, some pedestrians heading to street level destinations cross at the south side of the intersection despite restrictions, bollards and chains, and the lack of a pedestrian walk light because it is more convenient than entering the tunnel and taking the escalator back up to street level.

The Plan recommends that the restriction on pedestrian access at the south side of the intersection be continued. All street-level pedestrians should be required to cross the intersection to the north, using existing crosswalks. Pedestrians walking to Metro would continue to use the tunnel. More substantial physical barriers should be installed to discourage crossing on the south side, supplemented by better signs to guide pedestrians to the Metro tunnel under Wisconsin Avenue. Improvements to guide pedestrians to the Metro tunnel should be coordinated with the streetscape design. A study will be required by the time of the Project Plan for the Hot Shoppes property to determine the feasibility and cost of extending the existing Wisconsin Avenue tunnel under East-West Highway.

#### **OLD GEORGETOWN ROAD AND WOODMONT AVENUE**

Provide a 25-foot radius for the corners at the south side of the intersection on either side of Woodmont Avenue to limit vehicle turning speeds and reduce the pedestrian crossing distance. Provide sufficient time in the traffic light cycle for pedestrians crossing at 3 feet per second.

#### **MONTGOMERY LANE AND WOODMONT AVENUE**

Provide 15-foot radii at all corners except the northeast one to reduce the pedestrian crossing distance. Consider providing a traffic light with pedestrian crosswalks on all four corners, if shown to be feasible through a traffic operational analysis, to create safe pedestrian passage between the Metro and the library. Currently, two lanes of traffic are allowed free left turns onto Montgomery Lane, which compromises safe pedestrian crossing. MCDOT should include the convenience and safety of pedestrians and cyclists as a concern in any feasibility analysis.

#### **BETHESDA AVENUE AND WOODMONT AVENUE**

Improve pedestrian crossings at this angled intersection by reducing the pavement width of the free right turns onto Bethesda Avenue to lessen the pedestrian's exposure to turning vehicles and providing neck-downs where appropriate. MCDOT should consider the convenience and safety of pedestrians and cyclists in any revised design for this intersection. Lights should be timed so that pedestrians may cross in all directions at three feet per second.

## MID-BLOCK PEDESTRIAN CROSSINGS

Consider providing new traffic signals to allow mid-block pedestrian crossings along certain streets that have blocks over 500 feet in length and where adjacent destinations create pedestrian movement. The Plan recommends that a mid-block signal be provided at the following locations, if endorsed by MCDOT or SHA after an operational analysis:

1. Wisconsin Avenue and Middleton Lane, to allow pedestrian movement along the "Discovery Trail."
2. Old Georgetown Road and Fairmont Avenue, to facilitate pedestrian movement from the TS-R neighborhood along Fairmont Avenue to the War Memorial Park in the Woodmont Triangle. This crossing may be considered if future pedestrian volumes warrant and would be subject to capacity conditions and operational studies.
3. Arlington Road and Montgomery Lane, to improve pedestrian access to the library from the Metro Core District via the TS-R neighborhood.
4. Arlington Road, south of Bethesda Avenue, as a part of a relocated main entrance to the Bradley Shopping Center.
5. Battery Lane, at the M-NCPPC park pathway, to accommodate pedestrians and cyclists between NIH and the Bethesda CBD.

Additional locations are identified in the Bicycle Network Plan.

## 5.5 BICYCLE NETWORK PLAN

### A. OBJECTIVES

The Sector Plan recommends creating a network of bikeways to encourage bicycling as an alternative to driving an automobile and as a form of recreation.

The objectives for the network are:

1. Provide safe and efficient bicycle access for adults and children who are not highly experienced cyclists.
2. Provide a logical relationship to the County-wide Master Plan of Bikeways and bikeway projects in surrounding neighborhoods.
3. Integrate the local bikeway system with the existing street system while maintaining space for pedestrians and, where possible, on-street parking.
4. Provide Biker Friendly Areas and promote motorist awareness.

5. Provide linkages between districts of the CBD, surrounding neighborhoods, shops, employment centers, transit, and community facilities for both utilitarian and recreational cycling. Ensure safe crossings of major roads.
6. Provide a Bicycle Network Plan that can be implemented.

## **B. BIKEWAY CLASSES**

The bikeways are classified according to the categories of the Master Plan of Bikeways, illustrated in Figure 5.4. The bikeway classes are Class 1, separate paths; Class 2, striped bike lanes; and Class 3, shared travel lanes. The Class 1 paths should be 10 feet wide unless constraints require reduction to 8 feet. When a Class 1 bikeway is a combined sidewalk/bikeway, it should be a minimum of 12 feet wide as recommended by the American Association of State Highway and Transportation Officials. This sidewalk/bikeway occurs only when an important link must be made and other classes are not appropriate. In addition, special signs should warn cyclists to watch out for pedestrians. Paving materials for bikeways are to be consistent with those recommended in the Streetscape Plan and will be subject to MCDOT approval.

The bikeway routes and their classes are shown in Table 5.2, with notes concerning implementation and function. The following discussion presents highlights of the Bikeway Network Plan. (See Figure 5.5.)

## **C. THE CAPITAL CRESCENT TRAIL (CCT)**

The Capital Crescent Trail (CCT) will link the Bethesda and Silver Spring Central Business Districts, the C&O Canal Trail, Georgetown, and Capitol Hill via the proposed Metropolitan Branch Trail. The trail will be important for commuters and recreational users on bicycles as well as for those on foot, including people with disabilities. This regional hiker/biker route will run parallel to the proposed Silver Spring-Bethesda Trolley within the Georgetown Branch right-of-way, where feasible. Therefore, careful coordination is needed between the trolley and trail. (See Section 5.3C.) Wherever possible, design standards should be consistent with those used for the existing section of the CCT immediately to the south. It is a 10-foot-wide paved trail which runs on the original railroad centerline.

The CCT will have both a street-level route and a tunnel route. The tunnel route runs in the Georgetown Branch right-of-way through an existing tunnel under the Apex and Air Rights buildings. Use of this route will provide a high degree of continuity and will separate trail users from the traffic and delays of a busy intersection. Security is an important consideration in the design and operation of this route. For example, this tunnel must be well lit for safety. A street-level route is also important since it will allow easy access to many businesses and activities and will contribute to the vitality of the area. Its high visibility might make it a preferred route for some people. (See Route A2 on Figure 5.6.) The tunnel area for the CCT may be greatly reduced or perhaps eliminated if double tracks for the trolley are needed there. In the event that the CCT does not run through the tunnel, the CCT will follow only a street level route.

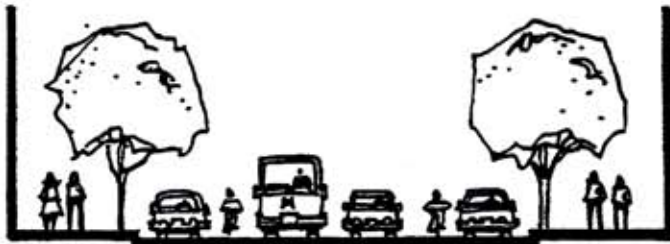
The street-level route minimizes the detour from the railroad right-of-way. It will be a Class 1 bike path on Bethesda Avenue and Willow Lane, which will then run through Elm



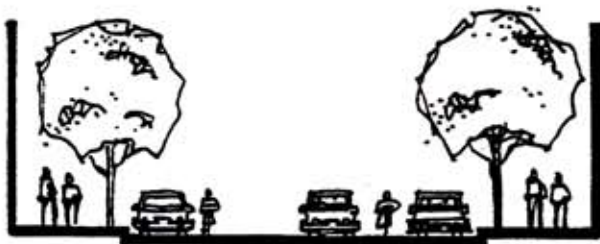
Class I  
Off street in CBD, two way  
bikeway, defined by trees,  
& separated from sidewalk.



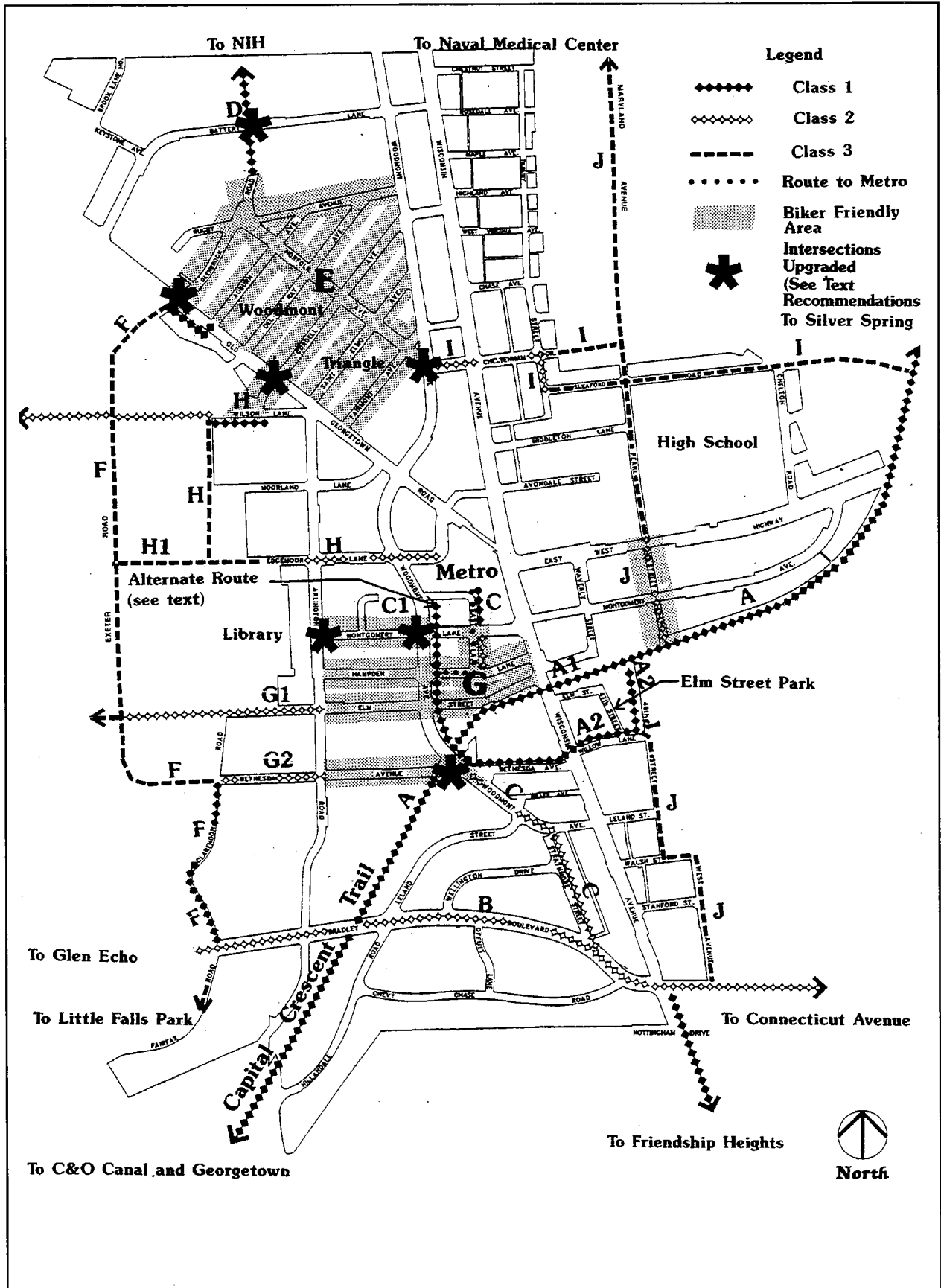
Class I  
Capital Crescent Trail  
regional bikeway (tunnel  
section not shown).



Class II  
On street in CBD, one way  
bikeway with striped lanes  
adjacent to parking.



Class III  
On street in CBD, shared  
travel lanes adjacent to  
parking.





Street Park and rejoin the railroad right-of-way. The bike path in the park should be connected to the north-south route on Pearl and 46th Streets. Due to the loss of on-street parking that would result from this route, another one could be considered if a tunnel route is also provided. This alternative could run along Lot 31, Leland Street, 46th Street in the Town of Chevy Chase, and Elm Street Park to the railroad right-of-way. However, it would be quite constrained, not allowing a continuous Class 1 bike path. In addition, it would require a greater detour and would depend on consent of the Town. For these reasons, the other street-level route is preferred, even if a tunnel route is provided.

A safe crossing for the CCT is essential at Woodmont Avenue. Redesign of this intersection could include neck-downs, special paving and markings for crosswalks, special signs for motorists and cyclists, and pedestrian/bicycle signal indications.

An important link is provided from the CCT to the Metro station. It is designated Route C. This connection includes a separate Class 1 bike path for two blocks along Woodmont Avenue. The route then runs on side streets to the Metro in a combination of classes. This link also includes a spur, which stays on Woodmont Avenue for one more block to Montgomery Lane to provide residents with a good connection to the CCT. Enhanced crosswalks should be considered on the west and south legs of the Woodmont Avenue/Montgomery Lane intersection for the spur. (See Route C on Figure 5.7.)

There is a more desirable route to the Metro which may be possible. Route C1 is more direct and level and could be a continuous, separate Class 1 bike path its entire length. However, this route would require obtaining approval for a new traffic signal at Montgomery Lane and Woodmont Avenue and making changes to the design of the Lorenz site. If this bikeway is feasible, its future incorporation should not compromise the public space and "Discovery Trail" at the Lorenz site.

#### **D. BIKER FRIENDLY AREAS**

Biker Friendly Areas (BFA) should be established to provide continuity of bikeways through the CBD and better access to stores and transit. BFA are particularly appropriate where striped bike lanes are difficult to fit continuously because of space limitations and on-street parking needs. However, BFA designation should not preclude striping of lanes where appropriate.

The Biker Friendly Areas could incorporate a variety of features to alert motorists and invite cyclists: neck-downs at intersections and special crosswalks, distinctive signs and logos, secured and frequent bike racks, entry features, and posted bike route maps. Features within the public right-of-way would require the approval of MCDOT. The most critical function would be alerting motorists to the fact that these are special streets which cyclists are invited to use and where cyclists should be protected.

The two main Biker Friendly Areas are Area E, covering the Woodmont Triangle, and Area G, covering the Metro station, Capital Crescent Trail Area, and linking streets. (See Figure 5.5.) Two blocks of Pearl Street are also recommended for designation. Streets recommended as Biker Friendly Areas are listed in Table 5.2, Bikeway Locations and Classes, and are shown on the Bicycle Network Plan.

Table 5.2

**BIKEWAYS: LOCATIONS AND CLASSES**

Route/Area	Location	Limits	Class	Notes
A1.	CAPITAL CRESCENT TRAIL - TUNNEL ROUTE Georgetown Branch Right-of-Way	West Sector Plan Boundary to East Sector Plan Boundary	1	Via tunnel under Wisconsin Avenue if the tunnel is not needed for the trolley.
A2.	CAPITAL CRESCENT TRAIL (CCT) - STREET LEVEL ROUTE Georgetown Branch Right-of-Way	West Sector Plan Boundary to Woodmont Avenue	1	
	Bethesda Avenue	Woodmont Avenue to Wisconsin Avenue	1	Removes a line of on-street parking. An alternative to this route may be considered.
	Willow Lane	Wisconsin Avenue to Elm Street Park	1	One-way street eastbound. Removes a line of on-street parking.
	Elm Street Park	Willow Lane to Capital Crescent Trail	1	
	Georgetown Branch Right-of-Way	Elm Street Park to East Sector Plan Boundary	1	
B.	BRADLEY BIKEWAY (East-West) Bradley Boulevard	West Sector Plan Boundary to Wisconsin Avenue	2	
	Bradley Lane	Wisconsin Avenue to West Avenue/East Sector Plan Boundary	1	Southside of Bradley Lane. Should provide for safe crossing.
C.	METRO - BRADLEY BIKEWAY (Metro Station to CCT and Bradley Boulevard) East Lane	Metro Entrance to Montgomery Lane	2 & BFA	
	Hampden Lane	Montgomery Lane to Hampden Lane	1	Remove a line of on-street parking.
		East Lane to Woodmont Avenue	BFA	

**BIKEWAYS: LOCATIONS AND CLASSES (Continued)**

Route/Area	Location	Limits	Class	Notes
C. (Continued)	Woodmont Avenue	Hampden Lane to Bethesda Avenue	1	With connection to CCT.
	.....	Bethesda Avenue to Strathmore Street	2	.....
	Strathmore Street	Woodmont Avenue to Bradley Boulevard	2	.....
	Spur: Woodmont Avenue	Montgomery Lane to Hampden Lane	1	Allows connection to the Montgomery Lane mixed street/BFA.
<b>C1. ALTERNATIVE TO METRO - BRADLEY BIKEWAY (Hampden Lane to Metro)</b>				
	Woodmont Avenue	North Lane to Montgomery Lane	1	Requires design changes to the Lorenz site and approval of a new traffic signal at Montgomery Lane.
<b>D. LINK: NIH TO WOODMONT TRIANGLE</b>				
	Battery Lane Urban Park	Rugby Avenue to NIH Campus	1	Provide crossing of Battery Lane with user-activated signal, crosswalk warning signs. New signal subject to MCDOT approval.
<b>E. WOODMONT TRIANGLE BIKER FRIENDLY AREA</b>				
	Glenbrook Road	Old Georgetown Road to Rugby Avenue	BFA	New signal subject to MCDOT and SHA approval.
.....	Auburn Avenue	Old Georgetown Road to Rugby Avenue	BFA	.....
.....	Del Ray Avenue	Old Georgetown Road to Rugby Avenue	BFA	.....
.....	Cordell Avenue	Old Georgetown Road to Woodmont Avenue	BFA	.....
.....	St. Elmo Avenue	Old Georgetown Road to Woodmont Avenue	BFA	.....
.....	Fairmont Avenue	Old Georgetown Road to Norfolk Avenue	3*	Provide new crossing to park.

BIKEWAYS: LOCATIONS AND CLASSES (Continued)

Route/Area	Location	Limits	Class	Notes
E. (Continued)				
	Rugby Avenue	Glenbrook Road to Woodmont Avenue	BFA	
	Norfolk Avenue	Rugby Avenue to Woodmont Avenue	BFA	
F. NORTH-SOUTH ROUTE, WEST SIDE (Woodmont Triangle to Little Falls Park)				
	Old Georgetown Road	Exeter Road to Auburn Avenue	1	Widen to 12 feet. share with pedestrians. Use only if new signal at Glenbrook Road is not feasible.
	Exeter Road	Old Georgetown Road to Clarendon Road	3	BCC Planning Area.
	Clarendon Road	Exeter Road/Bethesda Avenue to Fairfax Road	1	
	Fairfax Road	Clarendon Road to Bradley Boulevard	1	
G. METRO AND CAPITAL CRESCENT BIKER FRIENDLY AREA AND LINKS				
G1.	Elm Street	Arlington Road to Wisconsin Avenue	BFA	
G2.	Bethesda Avenue	Woodmont Avenue to Arlington Road	BFA	
		Clarendon Road to Arlington Road	3	
		Exeter Road to Clarendon Road	2	
	Montgomery Lane	Arlington Road to Woodmont Avenue	BFA	New signal at Arlington Road for crossing to library subject to MCDOT approval.
	Hampden Lane	Arlington Road to Wisconsin Avenue	BFA	Also Route to Metro. New signal at Arlington Road for crossing to library subject to MCDOT approval.

\* Mixed-street recommended.

**BIKEWAYS: LOCATIONS AND CLASSES (Continued)**

Route/Area	Location	Limits	Class	Notes
G2. (Continued)				
	East Lane	Hampden Lane to Montgomery Lane	2 & BFA	Route to Metro.
H. LINKS; WOODMONT TRIANGLE AND METRO				
	Edgemoor Lane	Exeter Road to Arlington Road	3	B-CC Planning Area.
		Arlington Road to Metro	2	Remove one lane to accommodate bike lanes. Subject to MCDOT approval.
		Wilson Lane to Edgemoor Lane	3	
	Clarendon Road	Exeter Road to Clarendon Road	2	BCC Planning Area.
	Wilson Lane	Clarendon Road to Cordell Avenue	1	South side of road. Widen to 12 feet. Share with pedestrians.
		Wilson Lane to Old Georgetown Road	1	Northwest side in front of church. New signal at Old Georgetown Road. Subject to MCDOT and SHA approval.
I. LINK; WOODMONT TRIANGLE TO HIGH SCHOOL AND CCT				
	Cheltenham Drive	Woodmont Avenue to Wisconsin Avenue	2 & BFA	
		Wisconsin to Tilbury Street	2	
		Tilbury Street to Pearl Street	2	One-way westbound.
	Tilbury Street	Cheltenham Drive to Sleaford Road	2	Two-way for bikes. One-way north for cars.
	Sleaford Road	Tilbury Street to CCT	3	

BIKEWAYS: LOCATIONS AND CLASSES (Continued)

Route/Area	Location	Limits	Class	Notes
J.	NORTH-SOUTH ROUTE, EAST SIDE (Naval Medical Command to Friendship Heights)			
	Pearl Street/Maryland Avenue	Jones Bridge Road/North Sector Plan Boundary to East-West Highway	3	
	Pearl Street	East-West Highway to CCT	2 & BFA	Possible trolley route.
	46th Street	Willow Lane to Walsh Street	3	Subject to approval by the Town of Chevy Chase
	Walsh Street	46th Street to West Drive	3	
	West Avenue	Walsh Street to Bradley Lane	3	Subject to approval by the Town of Chevy Chase

## **E. BICYCLE PARKING AND SIGNS**

Secure and accessible bicycle parking should be provided throughout Biker Friendly Areas and at transit stations to include the Bethesda Metro station; the access points of the CCT, Elm Street near the "Discovery Trail," the intersection of Bethesda and Woodmont Avenues and 46th Street near the trail; community facilities, and employment centers. Bicycle parking should also be provided in new development through the development review process.

The Capital Crescent Trail is expected to attract a large number of cyclists and hikers to Bethesda who are not familiar with the area and will need directional signs. A better sign system is needed to indicate the direction to major destinations such as the Bethesda Metro station, NIH, and the Naval Medical Command. In addition, bike signs should be prominent in locations where bikes are allowed to turn, but cars are not, such as from eastbound Cheltenham Drive to southbound Tilbury Street.

## **F. NEW TRAFFIC SIGNALS AND OTHER INTERSECTION IMPROVEMENTS**

New traffic signals and other intersection improvements should be considered to improve bicycle access, safety, and continuity. (See Figure 5.5.) An operational analysis by MCDOT would be necessary for each traffic signal to determine feasibility. SHA approval would be needed for those along Old Georgetown Road. In some cases, a signal could replace an existing signal at a nearby location. Locations to be considered for traffic signals are:

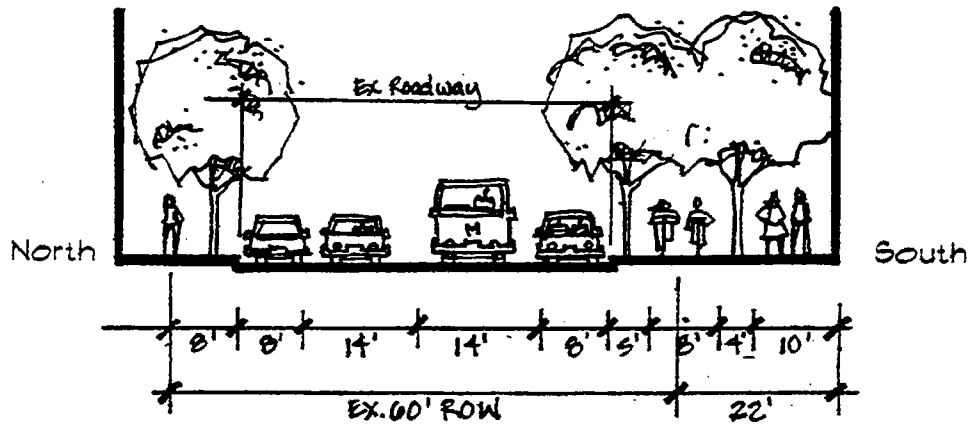
1. Old Georgetown Road and Cordell Avenue (high priority)
- 2.\* Battery Lane mid-block (user-activated signal plus crosswalk and warning signs)
- 3.\* Woodmont Avenue and Montgomery Lane (serves the more desirable route between CCT and Metro, Route C1. MCDOT has looked at this intersection in the past and determined that a signal was not needed at that time.)
- 4.\* Arlington Road and Montgomery Lane
5. Old Georgetown Road and Glenbrook Road

\*Signals at these intersections have also been identified in the Plan as desirable for pedestrian access.

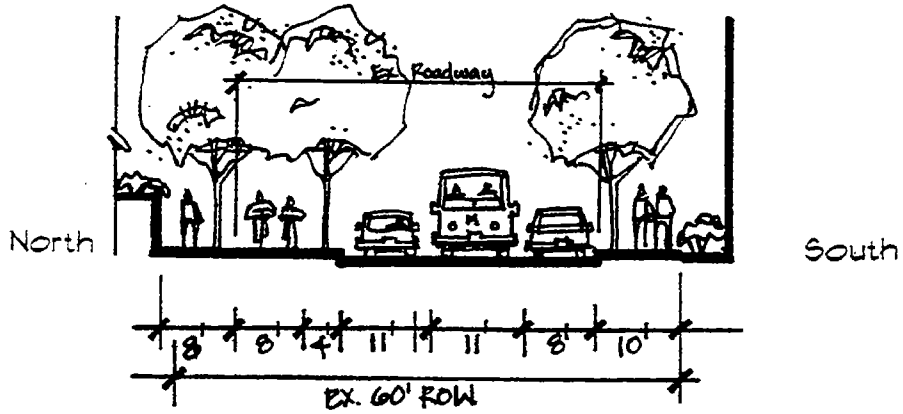
Although the intersection of Woodmont Avenue and Norfolk Avenue/Cheltenham Drive has recently received a new traffic signal, other improvements should be considered at this location, such as enhanced crosswalks, neck-downs, and a better sign system.

## **G. MASTER PLAN OF BIKEWAYS**

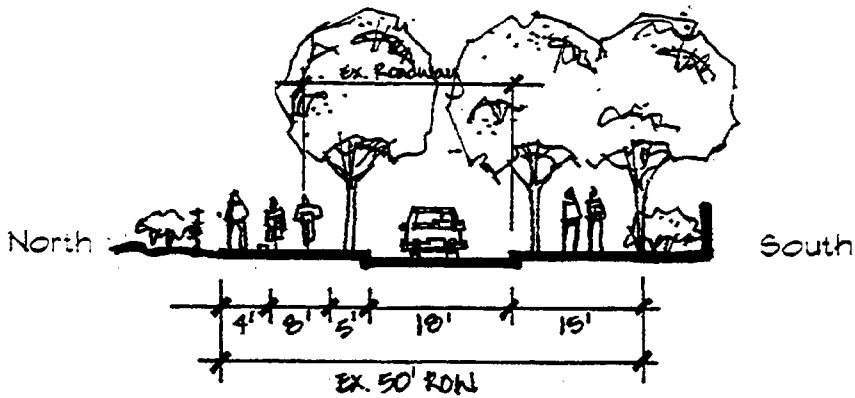
Most of the bikeways recommended in this Sector Plan are additions to the 1978 Master Plan of Bikeways. However, three bikeways shown on the Master Plan of Bikeways have been deleted. Two of them are Montgomery Lane/Montgomery Avenue and East-West Highway within the Sector Plan area, because they duplicate the Capital Crescent Trail functions. The third is the Woodmont Avenue bikeway north of North Lane, due to constraints. All other bikeways recommended by the Master Plan of Bikeways remain.



Bethesda Avenue in front of Lot 31, west of Woodmont Avenue



Bethesda Avenue just east of Woodmont Avenue

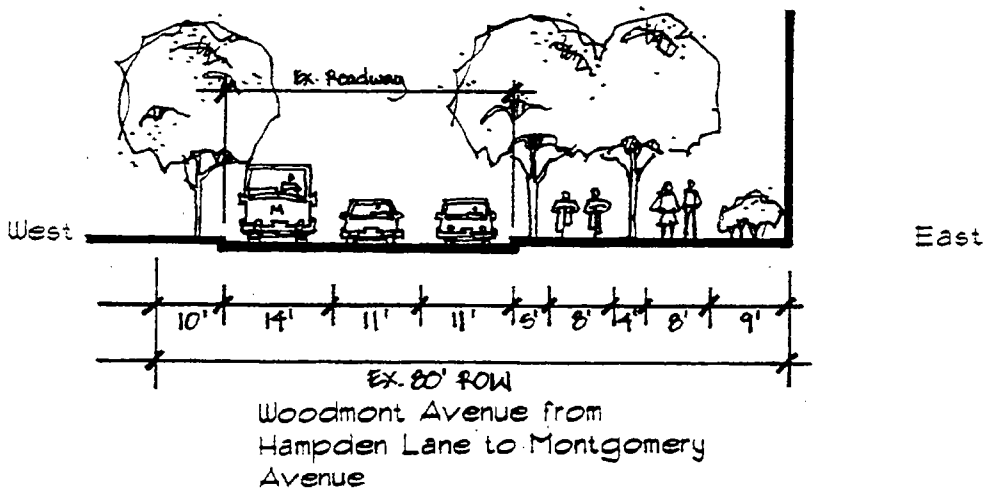
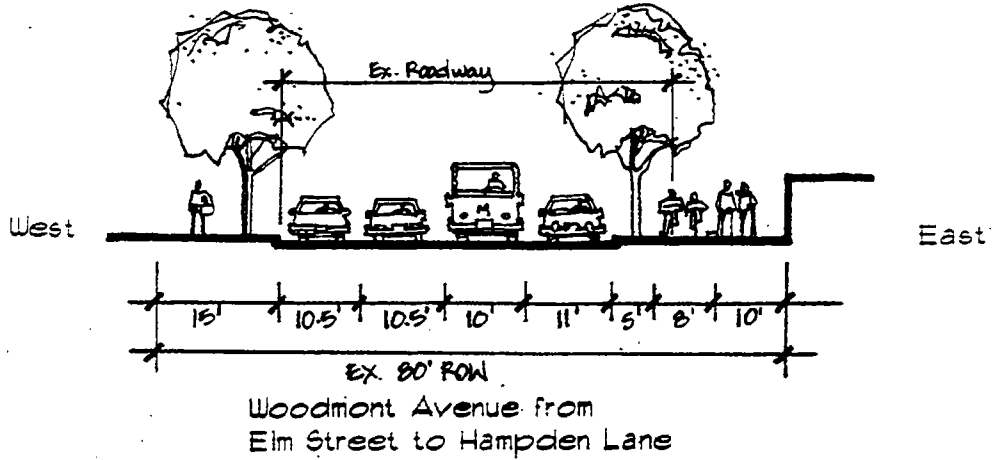
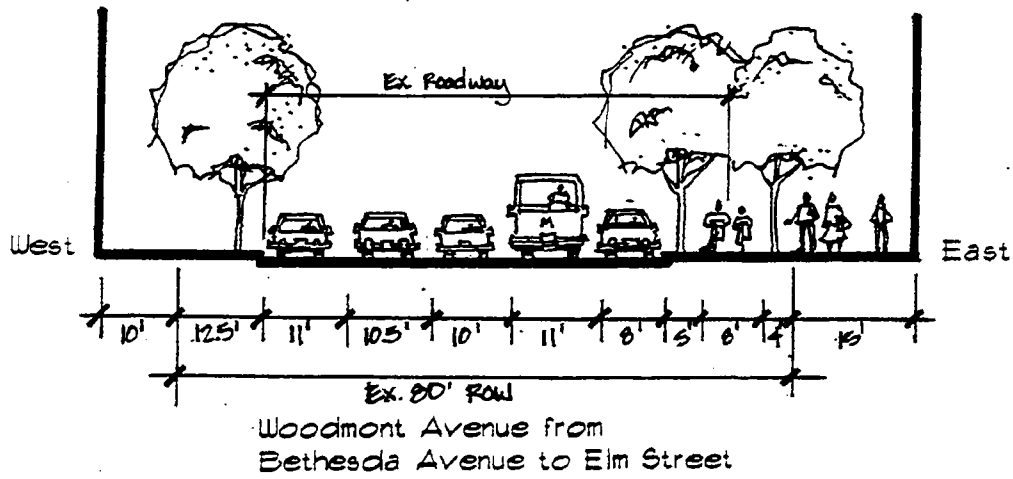


Willow Avenue just east of Wisconsin Avenue



**METRO BRADLEY BIKEWAY-C**  
**(CAPITAL CRESCENT TRAIL TO METRO)**

**FIGURE 5.7**





## 5.6 PARKING

### A. OBJECTIVES

The parking objectives for the Sector Plan area are:

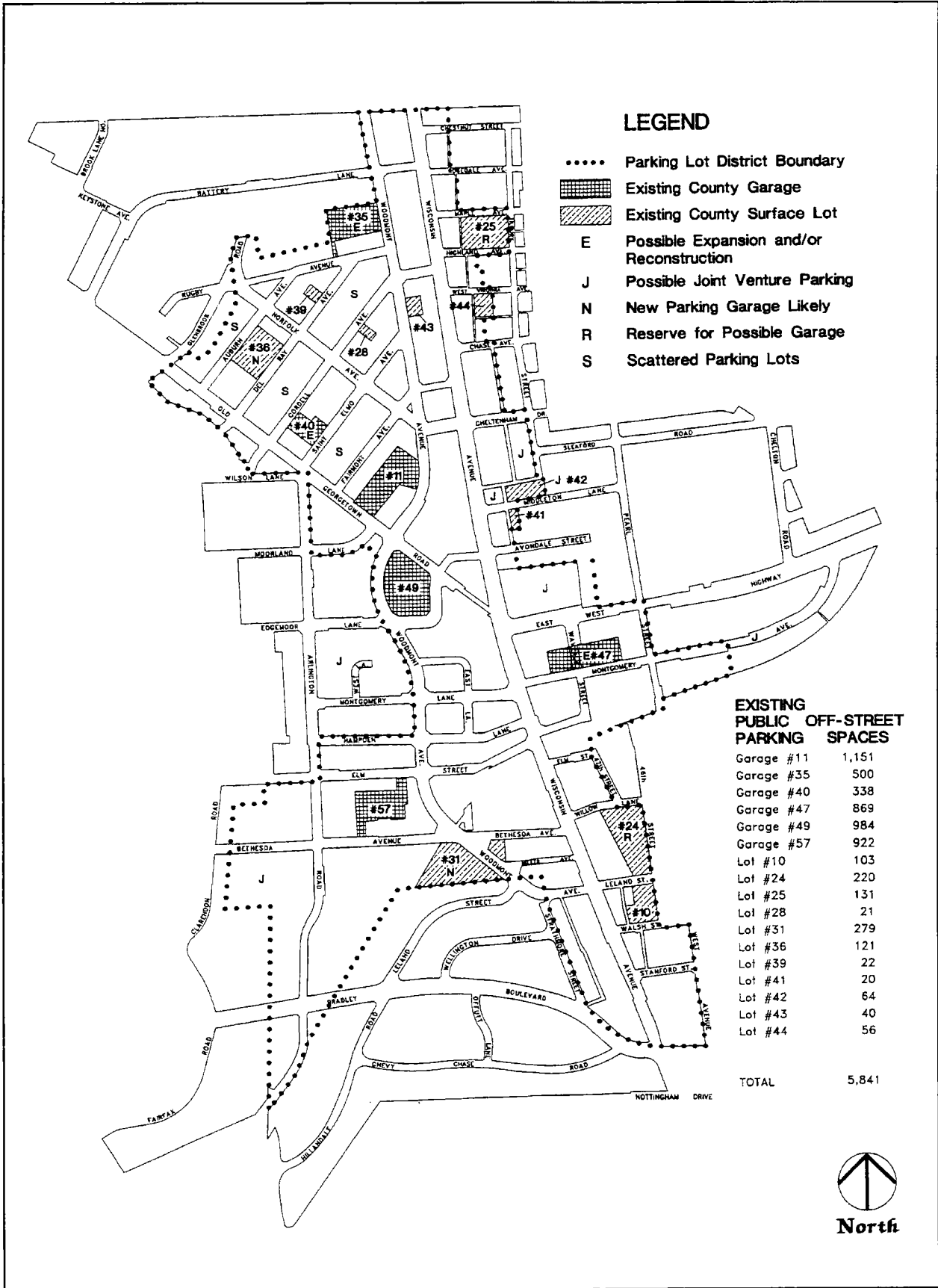
1. Limit the supply of employee parking, including some parking for Metro riders, as part of a balanced public transportation system.
2. Provide an adequate supply of short-term parking for use by retail, restaurant, and small business customers.
3. Add to the supply of public parking in coordination with phased new development.
4. Add public parking in cooperation with the private sector.
5. Provide joint use of selected parking sites with other public uses, such as housing and parks.
6. Develop a public parking implementation strategy consistent with the fiscal integrity of the Parking Lot District Enterprise Fund.
7. Ensure that all parking facilities next to single-family neighborhoods are designed to be compatible with adjacent residences.

The total number of parking spaces, as of spring 1992, is estimated to be over 20,000. Approximately 70 percent of these parking spaces are privately owned. Of the over 6,500 public parking spaces, almost 90 percent are in off-street parking lots and garages. (See Figure 5.8.)

### B. RECOMMENDED PARKING POLICIES

The Sector Plan recommends a policy of constraining the supply of employee parking in Bethesda. The employee parking supply will be planned to serve the proportion of employees expected to arrive by automobile, including car or van pool. The projected parking demand will vary, depending on how many people are expected to use alternative modes of transportation. The number of long-term spaces should be set to meet the expected vehicle demand during the peak parking accumulation period, based on the non-auto-driver mode share of 37 percent during that period. Limiting employee parking will support the Transportation Management Organization.

The Plan recommends providing an adequate parking supply for retail and service business customers. Short-term parking should continue to be located on surface lots, near the ground level entry of public parking garages, or on the street wherever possible. Additional scattered lots should be located in districts with more retail and service businesses, especially the Woodmont Triangle District. The Plan endorses public-private cooperation to increase the sharing of parking facilities between day and evening users. Innovative approaches could include expanded valet parking and review of pricing policies to give private owners incentives to offer day and evening use.





The Plan recommends that on-street parking be allowed within the CBD during non-peak hours for major routes, on a case-by-case basis. For local streets, on-street parking should have unrestricted hours. On-street parking provides convenient access to stores and services, and physically separates the pedestrian from moving vehicles. Detailed traffic studies will be necessary to determine which major routes can incorporate non-peak hour parking without compromising acceptable traffic flow and safety. Areas to be studied for non-peak on-street parking include:

1. Both sides of Wisconsin Avenue from Bethesda Avenue north to Montgomery Avenue, and from Avondale Street north along Wisconsin Avenue.
2. The south side of Montgomery Lane from Woodmont Avenue to Wisconsin Avenue.
3. The south side of Montgomery Avenue from Waverly Street to the curve as it approaches East-West Highway.
4. The south side of Old Georgetown Road from Wisconsin Avenue to Woodmont Avenue and for the remainder of the road along both sides to the edge of the CBD.
5. Both sides of Woodmont Avenue from Old Georgetown Road south to Bethesda Avenue, except where the street narrows to become two-way at Elm Street.

The Sector Plan assumes provision of spaces for commuters who use Metro. The Division of Parking's current approach is to allow both employees and commuters to obtain long-term parking permits and not to reserve Metro parking in a specific garage. Five hundred reserved commuter spaces are assumed in overall parking demand calculations.

Friendship Heights and Medical Center stations have no commuter parking. Bethesda is the only Parking Lot District (PLD) served by Metro that does not have a parking facility financed by WMATA. The Plan assumes provision of 500 spaces in the Metro Core District as a safety valve for those who are expected to ride Metro. In the future, these spaces may be reassigned to meet an increased demand for employee parking spaces, unless an overriding need to serve transit riders exists.

The Plan recommends that additions to parking supply be staged over time to meet the requirements of new commercial and residential development. In general, new parking facilities will not be constructed until development is approved. Although most new commercial development is expected to occur in the Metro Core District, the Division of Parking should continue to monitor cumulative growth in other districts. In the Arlington Road and Woodmont Triangle Districts, parking demand may increase due to the accumulation of smaller scale developments and housing construction.

In providing future parking supply, the Plan endorses joint ventures between the Division of Parking and private developers. Garage 58 in Silver Spring is an example of how joint ventures might work. There, the developer agreed to acquire Division of Parking land to construct an office building and a parking garage. The garage will be leased to the County for a public parking facility. Such joint development may occur on publicly owned sites or in locations where public property is not readily available, on private sites.

The PLD is an independent taxing district with obligations to bondholders who finance PLD facilities. The Plan endorses a limited expansion of the Bethesda PLD to include both residential and non-residential use in the Transit Station Residential District under the following conditions: The property must be contiguous to the existing PLD, and the property owners must petition the County to join the PLD. Upon joining the PLD, parking demand from new development could be met by PLD purchase of a site or a joint venture within the TS-R District, or by serving some of the need outside the TS-R District.

### **C. RECOMMENDED PARKING FACILITIES**

A study of future parking demand associated with the recommended Plan estimates a need for an additional 8,750 spaces. About 3,500 of these would be new public parking spaces. Section 10.4, Capital Improvements Program, lists an estimated allocation of spaces for new parking structures. (The 4,800 total public spaces listed in the CIP discussion include new and existing spaces.)

To meet the projected demand for additional parking spaces, the Division of Parking will need to acquire new land, build garages on existing surface lots, and establish joint ventures for new public parking facilities. Figure 5.8, Public Parking Requirements, shows current and possible future parking facilities. Other potential sites may need to be considered.

Land acquisition will be required in the Woodmont Triangle District to continue providing scattered lots primarily to serve retail and service businesses. Parking garages are likely to be built on existing Lots 31 and 36 and an expanded Lot 42. Garage 35 may need to be demolished and rebuilt. Lots 24 and 25 may also be needed for parking structures, in the long term.

A joint venture development is one option for providing parking if the TS-R District joins the Parking District, as noted above. The Hot Shoppes, Euro Motorcars, and Beta Corporation sites are potential locations for other joint ventures within the current PLD. The Plan recommends combining Lot 42 with the Beta Corporation surface parking lot east of the Bethesda Theatre Cafe, either by such a joint venture or by direct acquisition. Development of low-density garden apartments or townhouses with below-grade structured parking on this combined site would meet parking demand from new development on the east side of Wisconsin Avenue while providing a sensitive transition between the CBD and the single-family neighborhood. Alternatively, Lot 42 could expand west to Wisconsin Avenue by joint development or land acquisition.

Parking facilities located near single-family residential areas should be designed to ensure compatibility with these areas, and there should be neighborhood participation in the facility planning process. For surface lots, attractive landscaping and screening is required. For garages, below-grade levels are preferred, if financially feasible, and above grade portions should be limited to one story. Facade treatment, lighting, and landscaping should be sensitive to views from nearby residential areas.

The Plan recommends combining land uses on parking sites where feasible. Garage 49 was constructed to allow housing and open space above the garage. These housing units



will increase the amount of mixed-income housing within the CBD. Such provision of mixed-income housing or green open space on the same site as a parking facility is strongly encouraged on certain sites elsewhere in the CBD. The Plan recommends a combination of mixed-income housing and public parking on Garage 35 and Lot 36 in the Woodmont Triangle, and on Lot 31 on Bethesda Avenue. Space for ground floor retail is desirable for decks that front onto streets. Any below-grade parking and mixed-use development of PLD property must fully recognize the responsibility of the PLD to meet public parking needs and the District's financial obligations. Final decisions to build housing and public parking on one site will be made by the County government.

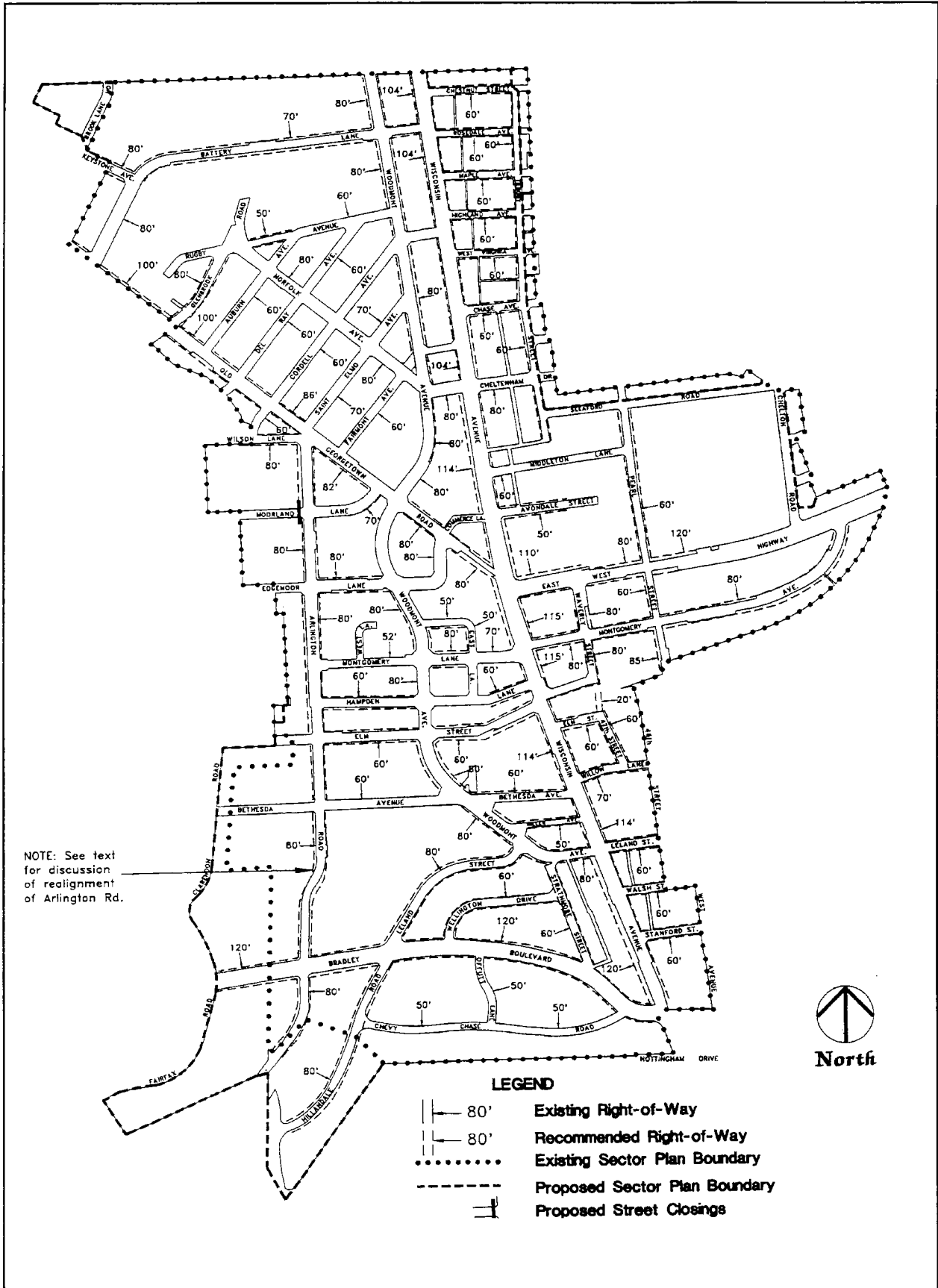
## 5.7 HIGHWAY SYSTEM PLAN

The transportation plan provides for the safe and efficient movement of people and goods to, from, and within the Bethesda CBD. The primary goal of the highway portion of the plan is to provide adequate vehicular mobility within the CBD and sufficient access to and from the CBD along the corridors serving it.

The Bethesda CBD is both blessed and cursed by its location relative to major roadways. It lies at the confluence of three larger capacity state roads: Wisconsin Avenue (MD 355), Old Georgetown Road, and East-West Highway (MD 410). These roads provide good auto access to the local street network in the CBD, but also bring thousands of vehicles daily through the CBD. The combination of through trips and local trips currently operates well, but Bethesda's roads will become considerably more congested during the life of the Sector Plan, especially at intersections. The Plan seeks a balance between future intersection congestion, pedestrian and bicycle needs, and bus transit service.

A comprehensive set of signs prohibiting turns into neighborhoods during the peak periods has served to protect areas lying close to the CBD from most cut-through traffic. Similar efforts to protect neighborhoods are important for the future, but must be considered in the context of each community's needs to ensure that essential neighborhood circulation patterns are maintained.

The Sector Plan recommends intersection improvements but no additional and few widened roads. The plan in Figure 5.9 defines the ultimate width of street and highway rights-of-way to serve the Sector Plan area. The dashed lines indicate where added right-of-way is needed in the future, whether for adequate lane width, sidewalks, street amenities or building setbacks. The Plan widens the rights-of-way along Wisconsin Avenue to 114 feet from East-West Highway to Cheltenham Drive and to 104 feet from Cheltenham Drive to the northern boundary of the Sector Plan. The Plan also widens the right-of-way along East-West Highway between Wisconsin Avenue and Waverly Street to 110 feet and between Waverly and Pearl Streets to 80 feet. Changes to rights-of-way from the 1976 Sector Plan are explained in Appendix F.





The Sector Plan recommends classification of streets within the Bethesda CBD Sector Plan, as shown in Table 5.3. The Plan area contains major highways and arterials. Most of the remaining streets are business district streets, except for several residential streets.

## **A. CAPACITY**

The roadway system for the Bethesda CBD serves traffic at three levels. They are: 1) roads feeding and passing through the Bethesda-Chevy Chase area, 2) access portals to the Bethesda CBD, and 3) internal traffic circulation within the Bethesda CBD.

All three levels are critical to the success of the transportation system in serving the travel needs generated by development within the Bethesda CBD, Montgomery County, and throughout the Washington metropolitan region. A simplified approach that only considers one or two of the above levels could fail to identify necessary highway system improvements or constraint points.

According to the FY 94 Annual Growth Policy (AGP) guidelines, development in a Metro station policy area is limited by the average level of traffic congestion on the streets in the policy area surrounding the Metro station policy area. An acceptable level of congestion in the surrounding area is assigned by the County Council, based on a policy that permits greater traffic congestion in areas where more transit service provides an alternative mode of travel to the automobile. (This procedure is explained in more detail in Appendix E.) Some roads are or will become congested. However, on the average, the Bethesda CBD and Bethesda-Chevy Chase areas meet this roadway congestion standard now and will do so in the future.

The AGP guidelines require an intersection-level analysis to assure that new development is not allowed to cause congestion at critical intersections. The critical lane volume (CLV) technique, which recognizes conflicting turn movements as well as traffic volumes, is used to measure intersection congestion. The adequacy of signalized intersections can be assessed and compared to a standard on the basis of its CLV. Access to the Bethesda CBD is currently being limited by the capacity of the key intersections in and around it, not by the roads leading to it. Although few intersections inside the CBD currently cause problems, more will in the future. There is a good network of internal roads that allows a variety of paths to and from destinations.

The 1982 Amendment to the Bethesda CBD Sector Plan analyzed the traffic that would be produced by additional development in the CBD using new trip generation rates and mode share assumptions. The amount of new development allowed by the plan was limited by the evening peak-hour traffic capacity of streets crossing a cordon around the CBD.

The analysis carried out for this Sector Plan updates the trip-generation rates assumed in 1982 as well as using new transit mode share information that recognizes the installation of the Metro Red Line through the Bethesda CBD. Moreover, it expands the 1982 focus on cordon street capacity to include intersection capacity in both the CBD and at outlying intersections.



Table 5.3

**Highway Classification in Bethesda CBD**

<u>Roadway</u>		
<u>Designation</u>	<u>Roadway</u>	<u>Limits</u>
<u>Major Highways</u>		
M-3	Bradley Boulevard	W. CBD Boundary to Wisconsin Avenue
M-4	Old Georgetown Road	N. CBD Boundary to Wisconsin Avenue
M-6	Wisconsin Avenue	N. CBD Boundary to Bradley Boulevard
M-20	East-West Highway	E. CBD Boundary to Wisconsin Avenue
<u>Arterials</u>		
A-20	Leland Street	Bradley Boulevard to Woodmont Avenue
A-68	Woodmont Avenue	N. CBD Boundary to Leland Street
A-82	Arlington Road	Old Georgetown Road to Bradley Boulevard
A-83	Wilson Lane	W. CBD Boundary to Old Georgetown Road
<u>Residential Streets</u>		
	Avondale Street	From CBD-2 zoning east to dead end
	Battery Lane	Woodmont Avenue to Old Georgetown Road
	Brook Lane	North of Keystone Avenue
	Chevy Chase Drive	Hillandale Road to Bradley Boulevard
	Hillandale Road	Bradley Boulevard south to CBD Boundary
	Keystone Avenue	Battery Lane west to Sector Plan Boundary
	Offutt Lane	Bradley Boulevard to Chevy Chase Drive
	Strathmore Street	Leland Street to Bradley Boulevard
	Wellington Drive	Bradley Boulevard to Strathmore Street

Other streets that front on or lead into single-family detached residential areas, extending from the CBD or from commercial zoned areas, are Residential Streets.

Business District Streets

All of the remaining streets in the Bethesda CBD are Business District Streets.



Determining planning standards and objectives for roadway facilities in Montgomery County is a continually evolving process. As used in this Sector Plan, the planning objective is to achieve LOS E/F or better at all locations which, for intersections, would require CLVs of less than 1,600. The Sector Plan's planning standard is for each intersection to have a CLV of less than 1,800.

The allowance of CLVs greater than 1,600 in a planning standard results from a County-wide review of practical and theoretical intersection capacity. The theoretical definition of LOS F is a condition where traffic exceeds available roadway capacity. In a true over-capacity situation, time spent waiting at traffic signals (queue lengths) should increase rapidly. In reality, there are several locations within Montgomery County, including intersections in the Bethesda area, where measured CLVs are currently around 2,000. Most of these intersections would be called congested, but on an average day, the traffic demand does not truly exceed capacity, and queue lengths fluctuate during the peak period.

When an intersection operates at true capacity, the volumes passing through the intersection cannot be increased, regardless of the volumes approaching the intersection. The theoretical capacity of an intersection, therefore, should be closer to a CLV of 2,000 than to a CLV of 1,600. A CLV of 1,800 is almost certain to be perceived by the public as a congested location, yet it is actually a conservative estimate of true intersection capacity.

The highway system plan seeks to attain the CLV planning objective of 1,600 at each intersection. At certain locations, however, the geometric improvements that would be necessary to attain a CLV of 1,600 have negative impacts on adjacent development. At these locations, the planning standard of 1,800 has been applied. In the CBD, almost all the intersections will meet the planning standard (a CLV of 1,800) with the incorporation of geometric improvements recommended in the following sections, and most will achieve the planning objective (a CLV of 1,600). The exceptions over the long term may be the intersections of Wisconsin Avenue with Montgomery Lane/Avenue and with East-West Highway/Old Georgetown Road. These locations have physical restrictions to increased capacity.

Outside of the CBD, more intersections are or soon will have CLVs exceeding the planning standard. Improvements, most of which have already been recommended in the 1990 Bethesda-Chevy Chase Master Plan, will reduce the CLV of these intersections to acceptable levels and will be discussed in later sections.

## **B. ANNUAL GROWTH POLICY GROUP DESIGNATION**

The FY 93 AGP includes a Group designation for each policy area. The Bethesda CBD is currently a Group V area. The Silver Spring CBD is the only policy area in Group VI, a significant difference because of the different Local Area Review procedures used in a Group VI area. The FY 94 AGP established a Metrorail Station Group that set local intersection standards, with the area-wide standard depending on the surrounding area.

Since the concept of cordon capacity has been used in sector plans at least as far back as 1976, applicants for new development have not been required to do a traditional local intersection impact analysis as part of obtaining subdivision approval in sector plan areas.

Instead, a larger area analysis was used to approve the subdivisions as long as the total development did not produce traffic that was above the cordon capacity. The Sector Plan recommends continuing this procedure, but without the reliance on cordon capacity. Instead, the staging text will define the specific roadway network improvements needed to support proposed development levels that can be approved within the AGP ceiling limits.

## **C. ROADWAY SYSTEM IMPROVEMENTS**

Based on the results of the analysis in Appendix D, a number of actions are recommended for the Bethesda CBD and surrounding intersections. The year 2010 analysis did not include every intersection in the study area, and changes to other locations may be needed as well. The analysis used the mid- and longer-term improvements identified in the 1990 Bethesda-Chevy Chase Master Plan as a starting point. The feasibility of the potential improvements was determined by the need for the capacity increase and a field inspection that verified the physical possibility of the change. The Sector Plan staging text in Chapter 10 is more comprehensive and shows the sequence in which the improvements are proposed; some would be made only after additional review of alternative actions. In all cases, significantly increased use of transit, ridesharing, or other positive shifts in travel patterns could reduce or eliminate the need for the changes.

The Plan suggests changes in lane configurations, such as reversible lanes at some intersections, but not detailed design. The necessary future configuration would depend on actual traffic volumes that develop and other factors that emerge as part of the design study. (See improvements within the Sector Plan in Figure 5.10.)

### **1. CBD STREETS**

#### **Arlington Road**

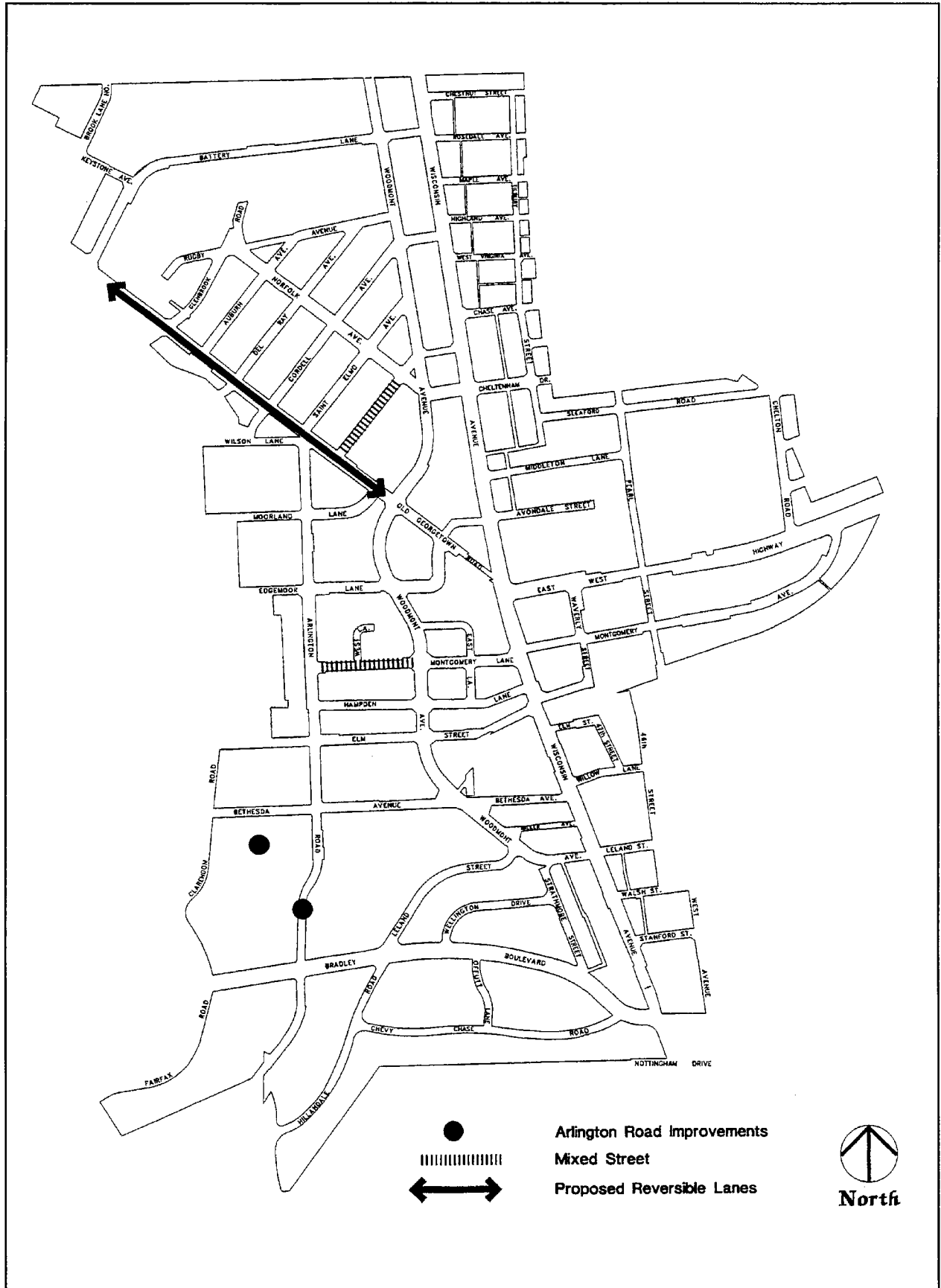
The section of Arlington Road between Bethesda Avenue and Bradley Boulevard experiences several traffic problems during peak periods and weekends. It combines poor sight distance caused by a sharp curve with a number of driveways accessing the road from adjacent retail centers and pedestrian movements across the road.

The Plan suggests several actions to alleviate these conditions. The actions are shown graphically in Figure 5.11. They include:

- Realign Arlington Road to reduce the curve and provide better sight distance. This would require additional right-of-way, which could be obtained by dedication if the Euro Motorcars site redevelops.
- Provide a new access drive from Bethesda Avenue south into the Bradley Shopping Center parking lot, if the Euro Motorcars site redevelops.
- Evaluate the access and circulation plan for the shopping center, and, if possible, consolidate more of the movements at the northern entrance/exit point from Arlington Road. This could eventually warrant a traffic signal, perhaps in conjunction with a pedestrian crossing. The curb break at the gas station onto Arlington Road near Bradley Boulevard should be eliminated, when possible, to improve operational safety at that location.

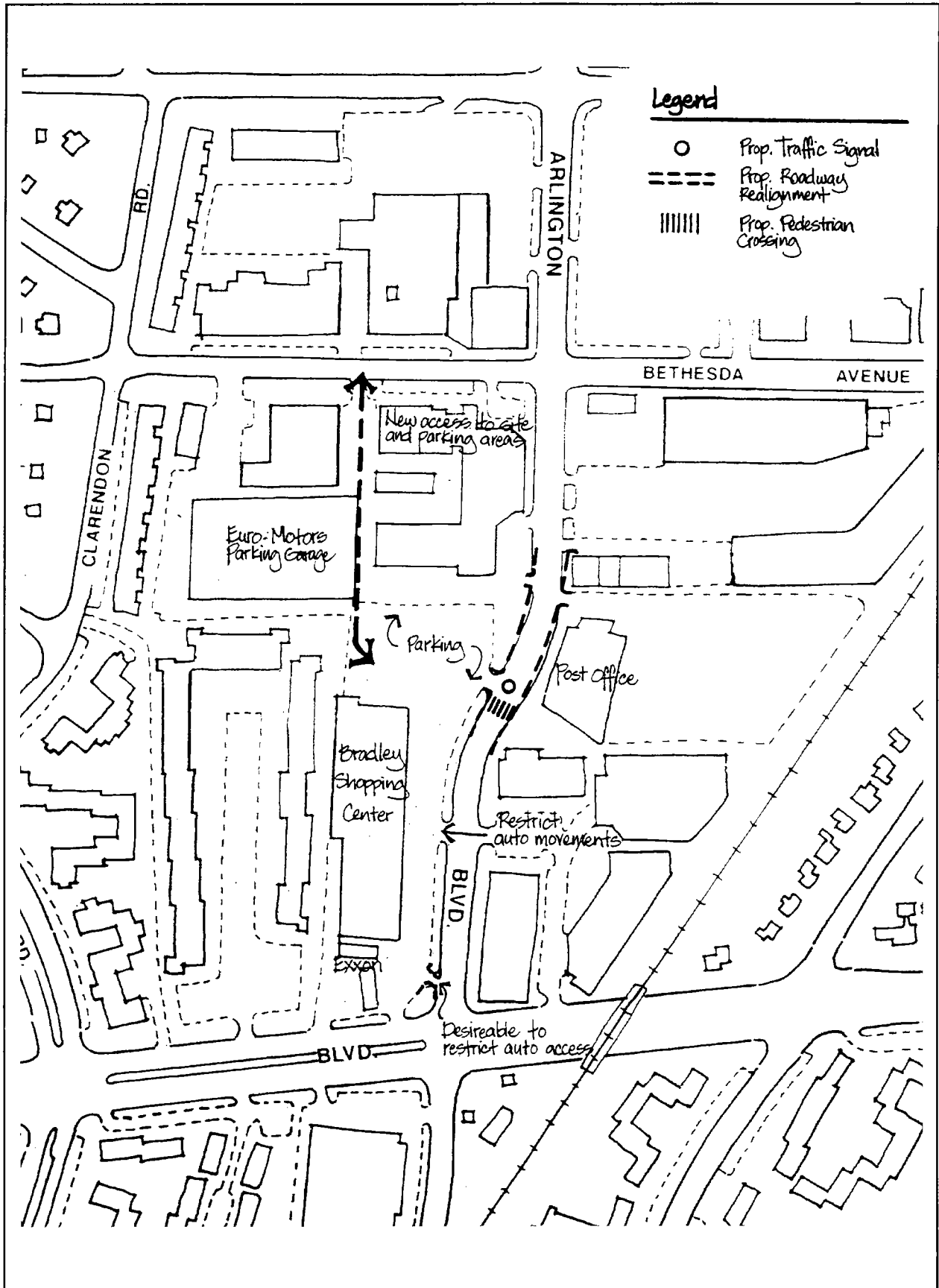
# POTENTIAL STREET IMPROVEMENTS & PATTERN CHANGE

## FIGURE 5.10



# PROPOSED CHANGES FOR ARLINGTON ROAD DISTRICT

## FIGURE 5.11





### **Traffic Movement on Mixed Streets**

Fairmont Avenue between Norfolk Avenue and Old Georgetown Road, and Montgomery Lane between Arlington Road and Woodmont Avenue are recommended as Mixed Streets to accommodate the anticipated higher level of pedestrian activity. (See Figure 5.12.) On Montgomery Lane, the current one-way restriction for one-half of the block should be maintained. This restriction prevents eastbound traffic through movement from Arlington Road to Montgomery Avenue.

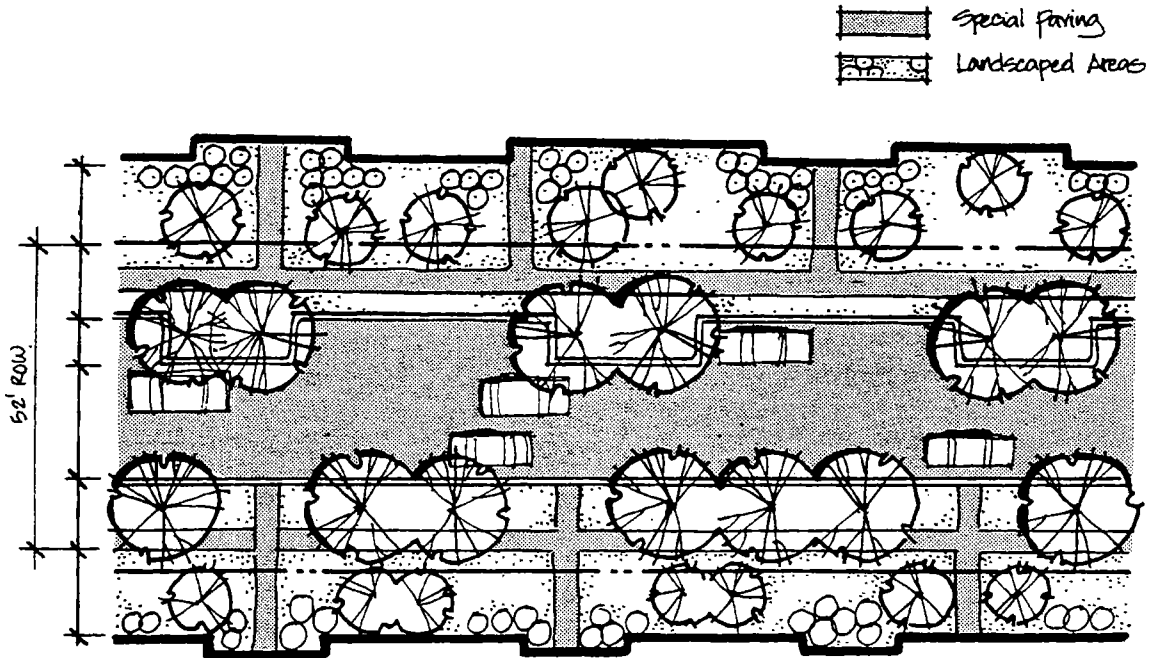
On Fairmont Avenue, establishment of a one-way movement may be considered. A one-way pattern could accommodate traffic circulation within the Woodmont Triangle and enable sidewalks to be expanded while still providing for on-street parking. (Street life and cafe activity associated with the Mixed Street are illustrated in Figure 4.23.) The one-way direction would be determined at the time of the roadway development plan. If the one-way movement were southbound, it would help prevent congestion on Old Georgetown Road by eliminating left and right turns northward onto Fairmont Avenue.

In the design of one-way streets, travel ways should accommodate emergency vehicles and allow traffic to pass a stopped vehicle. Adequate access to business sites must also be provided.

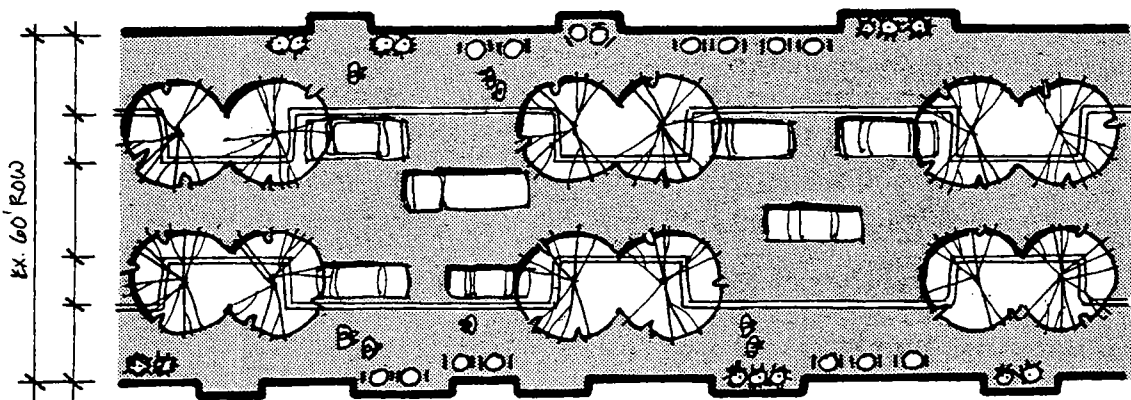
### **Old Georgetown Road Reversible Lane**

The 1990 Bethesda-Chevy Chase Master Plan identified the need for implementing a peak-period reversible lane on Old Georgetown Road from Woodmont Avenue north to Huntington Parkway. The reversible lane is a technique that is applicable when peak traffic flows are unbalanced, as is the case here. The Sector Plan maintains this recommendation for long-term implementation later in the life of the Plan. The change would reduce future congestion along Old Georgetown Road at the intersection of Old Georgetown Road with Arlington Road/Wilson Lane. Carrying traffic northward in the evening peak period, it would require restricting left turns by southbound traffic into the Woodmont Triangle. Analysis shows that most of these left turns occur at Battery Lane, so the problem of turn restrictions during peak periods may not be severe.

The Sector Plan also recognizes that between Huntington Parkway and Cedar Lane, Old Georgetown Road will experience considerable growth in traffic in the future, influenced both by NIH and the Bethesda CBD. Although not specifically analyzed in the Sector Plan, a recent NIH-sponsored study of growth on their campus forecasts future traffic problems. The evening traffic northbound along Old Georgetown Road increases with distance from the CBD, so terminating the reversible lane at Huntington Parkway will not relieve all the future concerns along Old Georgetown Road. Actions to address possible congested locations in this section of the road will be evaluated as part of future comprehensive traffic analysis and will consider retention of the median along Old Georgetown Road.



Proposed Montgomery Lane: 52' ROW, 2 lanes with parking on one side only.



Proposed Fairmont Avenue: Ex. 60' ROW, 1 lane with parking on both sides.



## 2. CBD INTERSECTIONS

### **Wisconsin Avenue and East-West Highway/ Old Georgetown Road**

A significant number of both local and through trips pass through this central intersection. The East-West Highway/Montgomery Lane one-way pair has enabled the intersection to function well, and given current growth trends it will continue to do so for a number of years. However, as Sector Plan development occurs, the congestion will increase markedly, and at buildout the CLV will probably exceed the planning standard of 1,800. Any approach for increasing the capacity of the intersection must be in accordance with a plan approved by the Planning Board, SHA, and MCDOT.

Figure 5.13 shows cross sections for East-West Highway, looking east from Wisconsin Avenue. A total of 110 feet of right-of-way will be needed for pavement, median, sidewalks, and street trees.

Provision of adequate pedestrian crosswalks on East-West Highway and Wisconsin Avenue is an important design consideration for this busy intersection. Some of the issues have already been discussed in the section on pedestrian circulation, including a study to determine the feasibility of extending the existing Wisconsin Avenue pedestrian tunnel under East-West Highway.

### **Wisconsin Avenue and Montgomery Avenue/Lane**

Like the intersection of Wisconsin Avenue and East-West Highway just to the north, this intersection will probably not experience serious congestion for the next few years, but over the long term will exceed the planning standard. Actions to reduce future congestion at this intersection are limited, so its performance will need to be monitored.

### **Old Georgetown Road and Arlington Road/Wilson Lane**

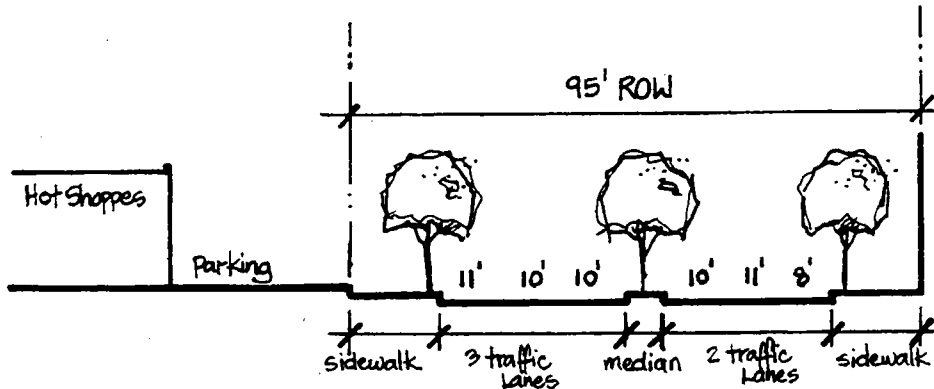
Although this intersection does not pose serious congestion problems in the near term, it has safety problems associated with it. The 1976 Bethesda CBD Sector Plan identified it as a problem because of high traffic volumes and poor intersection geometrics. The Sector Plan recommends a study of reconfiguring this five-way intersection and the streets around it. There are safety problems at nearby intersections of Cordell Avenue with Old Georgetown Road and with Wilson Lane.

## 3. SURROUNDING AREA LOCATIONS

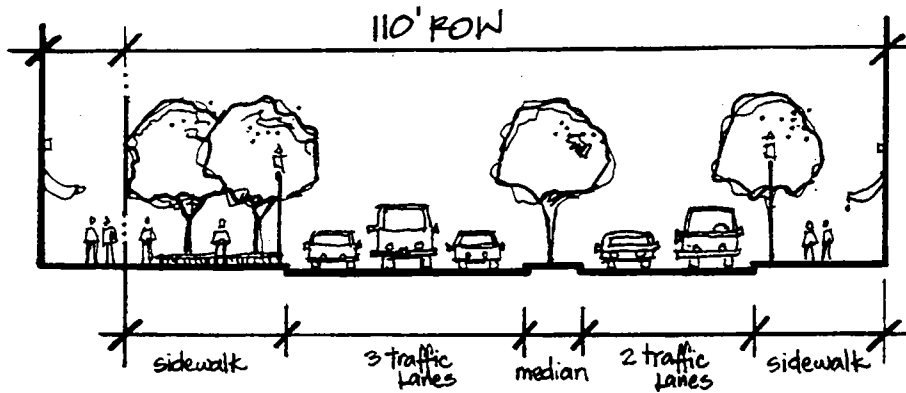
### **Connecticut Avenue and East-West Highway**

Traffic congestion is already serious at this intersection. The 1990 *Bethesda-Chevy Chase Master Plan* noted that at-grade improvements were desirable. The Sector Plan recommends an investigation of the most effective reconfiguration. One possibility is to add turning lanes between eastbound East-West Highway and





**EXISTING CROSS SECTION**      5 LANES & BIKEWAY  
 95' ROW      ± 125' Building to Building



**PROPOSED CROSS SECTION**      5 Lanes & Median  
 110' ROW      ± 122' Building to Building



north bound Connecticut Avenue (and the opposite movement, for improved A.M. service) on land currently owned by the Columbia Country Club. This change could bring the critical lane volume (CLV) for the intersection down to the planning standard in the short term, but adequate level of service will ultimately depend on attraction of riders to the Silver Spring-Bethesda Trolley or a major redesign of the intersection.

### **Rockville Pike and Cedar Lane**

The 1990 *Bethesda-Chevy Chase Master Plan* recommended at-grade improvements to this intersection, while retaining the possibility of a grade-separated interchange further in the future. Added turn lanes between northbound Wisconsin Avenue and eastbound Cedar Lane (and for the opposite movement in the A.M.) could be very beneficial. The level of service at the intersection will be influenced in large part by the future trips from NIH and which exit they use to leave the campus. The ability to accommodate future volumes at an at-grade intersection will be a function of the success of the demand management program at NIH as well as in the CBD.

### **Wisconsin Avenue (Rockville Pike) and Jones Bridge Road.**

This intersection was recently improved by adding a turn lane from northbound Wisconsin Avenue to eastbound Jones Bridge Road. However, congestion will increase, as will the congestion at intersections of Wisconsin Avenue with Center Drive and Wilson Drive. All are access points for NIH and need to be considered as a system with the intersection at Cedar Lane. Although NIH will not be the only contributor to the growth in traffic, its traffic planning might include the metering of vehicles exiting from various points around the campus to avoid overloading intersections along Wisconsin Avenue from Jones Bridge Road to Cedar Lane.

### **Connecticut Avenue and Bradley Lane**

As part of the Sector Plan analysis, this intersection was identified as very congested now and in the future. Added turn lanes from eastbound Bradley Lane to Connecticut Avenue should be studied. They are the most feasible improvement currently identified. In reality, turning bays would have to be constructed along Bradley Lane to the west of the intersection for the turn lanes to be effective. The 1990 *Bethesda-Chevy Chase Master Plan* identified the widening of Bradley Lane to four lanes as a possible long-term improvement. If this were done, the mature trees that line the lane should be preserved. The new facility might be a boulevard, with the eastbound lanes located to the south of the trees on right-of-way currently owned by the Chevy Chase Country Club.

### **Old Georgetown Road and Cedar Lane**

This intersection was identified in the year 2010 analysis as a problem intersection. However, in the mid-term, its congestion will not be as serious as for the

intersections along Wisconsin Avenue (Rockville Pike) to the east of NIH. Implementation of the reversible lane on Old Georgetown Road would benefit this intersection in the long-term.

### **Wisconsin Avenue and Woodmont Avenue**

This intersection should not pose congestion problems for the next ten years. However, as the CBD and NIH develop, it may be desirable to increase the left-turn capacity from eastbound Woodmont Avenue to northbound Wisconsin Avenue, and the right-turn capacity in the opposite direction. Finally, the widening of Wisconsin Avenue from Woodmont Avenue to I-495, mentioned in the 1990 *Bethesda-Chevy Chase Master Plan*, is retained as a future action to relieve congestion.

### **Bradley Boulevard and Huntington Parkway**

This intersection is forecast to reach level of service F by the year 2010. The Sector Plan does not recommend improvements unless congestion and safety become problems. Any redesign process should clearly describe the reasons for the improvements and include input from local citizens.

## **D. NEIGHBORHOOD PROTECTION**

Heavy traffic is inappropriate in residential communities. While accessibility is an advantage to commercial activity, large volumes of vehicular traffic can be disruptive to the peace and serenity of residential areas. Since the Bethesda CBD is a downtown in the midst of residential suburbs, it is important to mitigate the detrimental impact of traffic on adjacent neighborhoods.

The Plan endorses measures that would discourage cut-through traffic in residential areas. Such measures may include one-way access patterns or selected street access closings, but should not inhibit access by emergency vehicles. The County government has a program to implement such measures. Restrictions have already been applied during peak periods for access to the area west of Arlington Road in the CBD, to Leland Street east of Wisconsin Avenue in the Town of Chevy Chase, and to Leland Street west of Woodmont Avenue.

It is also possible to establish parking permit programs to protect residential areas from non-resident commuter parking. Such measures must be initiated and agreed upon by the affected communities. The Town of Chevy Chase has a very successful program that can serve as a model for other communities.

Neighborhood protection was considered in developing the future roadway improvements for the transportation plan in that traffic generated by future development was not assumed to use any local streets outside the CBD as through routes. Conversely, additional neighborhood protection measures were not assumed to cause any diversion from existing traffic patterns.

