

4.0

Transportation Plan

**The Plan assumes that increasing transit use
and limiting the construction of
new highways are ways to
maintain the quality
of life.**



The Transportation Plan assumes that increasing use of transit services and somewhat limiting the construction of new highways are necessary to maintain the quality of life in the Planning Area. In recent years, daily highway volumes have increased from 2 to 5 percent a year in Bethesda-Chevy Chase. While increases in daily volumes may well continue, growth in peak hour volumes are expected to remain more moderate. Growth in daily volumes is due to both regional growth in through traffic and local traffic growth associated with the moderate level of development endorsed by this Plan. In a developed area such as Bethesda-Chevy Chase, traffic growth cannot be easily served by highway expansion without causing serious impacts on adjacent residential properties.

Additional transportation service in B-CC should be based primarily on an expanded and vigorous program of transit and other mobility services. Use of such services is necessary because of the difficulty of expanding the capacity of many B-CC highways and due to the need to accommodate increased through traffic and the recommended level of development in B-CC. Improved transit and mobility services should include:

1. Increased level of feeder bus services, particularly in the eastern half of B-CC.
2. Provision of park-and-ride lots for about 750 vehicles. These facilities could intercept auto traffic destined to employment centers in Bethesda-Chevy Chase.
3. Provision of comprehensive rideshare programs, serving both employment and residential centers.
4. Requirement of new development to participate in traffic reduction programs.
5. Expansion of the system of pedestrian paths and bikeways to link residential areas with public facilities, commercial areas, and transit services.

The Master Plan endorses a number of changes to the classification of highways in B-CC.

The changes more closely match the classification to the function and use of each street and highway. New arterial highways include portions of Bradley Boulevard, Goldsboro Road, and MacArthur Boulevard. Other new classifications include some primary streets, principal secondary streets, and secondary streets.

The recommendation of this Plan is that a moderate level of highway improvements be implemented during the life of the Plan. Such a program may allow for continued highway congestion in some locations, but such congestion may also lead to higher use of transit and other mobility services. The combined transit/highway program has benefits such as: better use of transit facilities, service of a moderate level of development, and prevention of loss of property due to major highway construction. A moderate highway system includes:

1. completion of currently programmed projects (see Section 4.22, "Planned Highway Projects");
2. endorsement of safety and sight distance improvements;
3. provision of intersection capacity improvements at locations which currently operate at mid-point of Level of Service E, or are likely to over the next ten years. (See Figure 11.) Improvements may include added turn lanes, lane widenings, and signal changes;
4. possible endorsement of improvements to intersections to facilitate smoother traffic flow; even if they do not always achieve a fully acceptable local Level of Service, such improvements will improve both peak and off peak operating conditions;
5. possibly requiring new development to participate in construction of improvements identified in the Plan; and
6. endorsement of reductions in through traffic on secondary residential streets and, where possible, on primary streets and major highways.

Table 10 presents an overview which identifies Master Plan strategies for improved transportation in B-CC. These strategies are among those summarized above and discussed in more detail below in the narrative of the Plan. This overview

LEVELS OF SERVICE

Figure
11

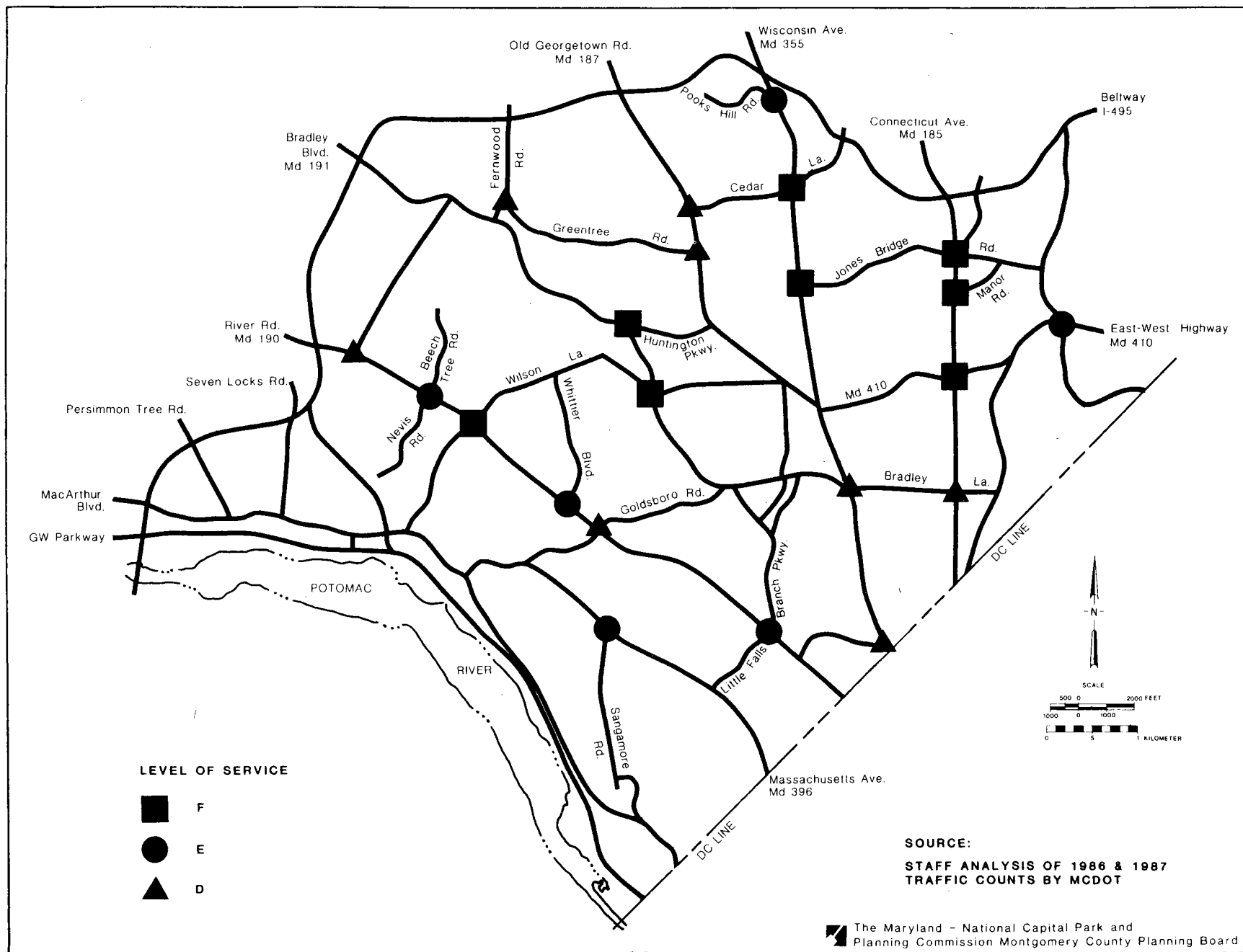
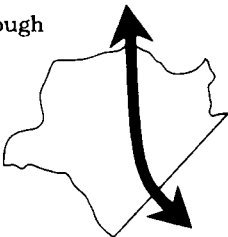
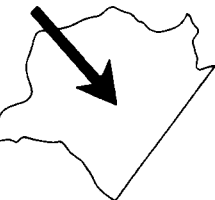
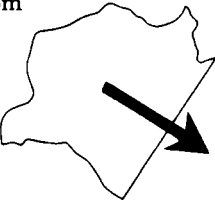
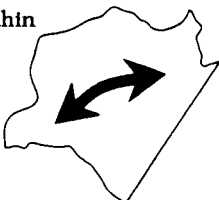


Table 10

IDENTIFICATION OF MASTER PLAN STRATEGIES FOR IMPROVED TRANSPORTATION IN BETHESDA-CHEVY CHASE

| Trip Orientation | Components of Travel Through, To, From, and Within Bethesda-Chevy Chase | | | | | |
|--|--|---|---|---|---|---|
| | Start of the Trip | Predominant Means of Travel for the Trip | | | | End of the Trip |
| | | Auto/Highway | Transit | Biking | Walking | |
| Through  | <ul style="list-style-type: none"> o Locate more housing closer to accessible transit that comes through B-CC | <ul style="list-style-type: none"> o Change traffic signals to favor east-west traffic o Separate through traffic from locally oriented traffic o Regional ride-sharing programs | <ul style="list-style-type: none"> o More upstream Metro station parking and feeder bus o Fare Policy changes o Upstream park-and-ride lots in non-Metro corridors o Georgetown Branch Transitway | — | — | |
| To  | <ul style="list-style-type: none"> o Locate more housing closer to transit routes that come to B-CC | <ul style="list-style-type: none"> o Moderate highway capacity improvements o Intersection improvements | <ul style="list-style-type: none"> o Georgetown Branch Transitway o Park-and-ride lots with express bus service to B-CC o New routes from west and east o Fare Policy changes | <ul style="list-style-type: none"> o More bike routes in main travel corridors and within B-CC; priority implementation | — | <ul style="list-style-type: none"> o Parking availability and rates o Share-a-Ride programs for each employment center o Bike storage for B-CC workers at Metro stations |
| From  | <ul style="list-style-type: none"> o Share-a-Ride Program for B-CC residents o Improved sidewalks and access to transit routes | <ul style="list-style-type: none"> o Intersection improvements o Moderate highway capacity improvements | <ul style="list-style-type: none"> o Increase frequency of feeder bus routes to Metro o Georgetown Branch Transitway o Increased transit route coverage and direction o Park-and-ride lots | <ul style="list-style-type: none"> o Bike paths to B-CC employment centers o Improved bike storage at Metro stations | — | |
| Within  | <ul style="list-style-type: none"> o Locate housing in B-CC closer to employment centers to facilitate walking and biking o Improve sidewalks and access to transit routes | <ul style="list-style-type: none"> o Intersection improvements o More local streets for circulation o Reduce conflicts with through traffic | <ul style="list-style-type: none"> o Improved route density and frequency of Ride-On routes | <ul style="list-style-type: none"> o Improve bike paths to employment centers and community facilities o Improve bike storage at employment centers | <ul style="list-style-type: none"> o Improve pathway and sidewalk system between residential areas and employment centers and community facilities | <ul style="list-style-type: none"> o Reduce conflicts with vehicles; more signalized crosswalks o Improved street lighting and amenities |

shows that there are four basic trip orientations of people that differentiate the strategies: those of people traveling through, to, from, or just within the Bethesda-Chevy Chase area. Particular strategies should be oriented to meet the transportation needs and travel behavior of those different types of travelers. The overview is also organized by the trip path of the traveler based upon the start of their trip, the predominant means of travel, and the end of their trip.

Different strategies can be identified that affect people's travel behavior in distinctly different ways. For example, strategies for controlling parking availability and rates in the Bethesda CBD are primarily related to the end of trips by people who are coming to B-CC from outside the area and, perhaps, from within the area. Such strategies will have no effect on people traveling through the area or residents who travel from B-CC to other areas. This overview is not meant to be a complete identification of all strategies. Rather, it should be viewed as a tool which can be used to compare and interrelate the very diverse transportation strategies discussed below in this Transportation Plan.

4.1 Mobility Plan

4.11 Public Transportation

The Master Plan endorses a range of potential strategies or actions for improving public transportation and encouraging its use.

Transit improvement strategies have been typically directed at serving new demands for transit service as they occur, in an incremental manner. These include increasing bus frequencies, adding new routes, and speeding up services through express operations and priority treatments. To stimulate new, additional demand for transit service over and above levels anticipated from normal development (thereby increasing the percent of transit riders) requires strategies beyond typical service improvements. These include auto disincentive pro-

grams, transit fare reduction programs, and provision of dedicated exclusive transitways which assure speedy and reliable service.

The Master Plan endorses a range of potential strategies or actions for improving public transportation and encouraging its use.

The Bethesda-Chevy Chase area already has a rather full complement of public transit services. The Master Plan recognizes that these services will be expanded incrementally as traffic congestion, employment density, and external growth generate additional demand for transit alternatives.

A higher level of feeder bus service to Metro stations will be warranted as area residents increase commuting to nearby employment centers. Three Metrorail stations serve commuters going through the area in a northerly or southerly direction and those going to major employment areas (Friendship Heights, Bethesda, and NIH). Metro-serving parking is severely constrained and no significant additional parking is projected. Increasing ridership to and from these stations will primarily depend on improving feeder bus services. Additional development near the stations will generate more pedestrian traffic. More distant residential areas need feeder bus service or bikeways to provide access to stations where parking is tight or non-existent. The existing policy of 30-minute feeder bus frequencies is not sufficient in this situation where parking is unavailable. Since the Metro stations are located within high employment concentration areas, the feeder service connects residential areas to both Metro and the employment centers around Metro stations.

Increased attention should be paid to expediting transit traffic on the roadway system to achieve enhanced ridership levels.

With increasing traffic congestion, demand for alternative transit service will also rise. However, bus traffic will suffer the same traffic delays as autos, detracting from its competitive-

ness with auto travel. This is particularly important for routes serving commuters from outside the B-CC area who are traveling into or through the area. These routes are on the major highways which are subject to the greatest congestion impacts. Feeder services are more frequent on local/neighborhood streets. Priority treatments for transit are designed to allow transit through or around traffic congestion and to allow for more reliable and frequent transit service. These treatments may be localized improvements at intersections or dedicated lanes along congested roadways. Opportunities for improvement are limited since little space exists to expand roadways. River Road is probably the only major roadway where space currently exists to consider additional lanes exclusively for transit.

Increased attention should be paid to expediting transit traffic on the roadway system to achieve enhanced ridership levels.

The eastern portion of the Planning Area is a logical area for consideration of additional routing for both feeder and through route services. This area will receive additional moderate levels of development. The eastern area is also subject to heavy commuting from the Silver Spring area and from areas to the north such as Kensington, Wheaton, and Aspen Hill. The B-CC area has a fairly extensive network of bus routes. Future expansion of transit service may become more feasible as additional moderate levels of development occur.

4.12 Park-and-Ride Lots and Ridesharing

It is recommended that park-and-ride spaces for about 750 vehicles be provided near the boundary of the Bethesda-Chevy Chase Planning Area. The provision of parking lots and transit stops can both reduce auto use and concentrate pas-

sengers at a single convenient location. These locations can serve both carpooling and transit use. The limitation of this approach is the ability to locate acceptable parking lots to meet a variety of criteria. The lots would have to be peripheral to the Planning Area to intercept incoming traffic. Commuters are most likely to use lots where they are at greater distances from their work location. Thus, it may be concluded that lots beyond the Planning Area boundaries are more likely to be used. The use of express bus service to the District of Columbia and to the large Bethesda-Chevy Chase employment centers should be explored.

It is important to provide park-and-ride facilities to serve the Bethesda Business District, the NIH/Naval Center complex, and other employment centers in B-CC. The following locations are recommended:

1. Parcel C 29, at I-495 and Kensington Parkway (NW), in the Kensington-Wheaton Planning Area. This is a preferred location for a public lot in this area to serve local area residents. (Use about three acres for 250 spaces.)
2. Parcel M 21, on River Road west of fire station, in the Potomac Planning Area. This is a preferred location for a public facility in this area, but should be used only as quarry operations are complete and space becomes available. The area is large enough to eventually include other community serving public facilities. (Has 13.3 acres and could provide up to 500 spaces.)

Intensive efforts are needed to increase the amount of carpooling, vanpooling, and transit use to and from the B-CC area. A package of strong incentives for sharing rides, along with corresponding disincentives for driving alone, is necessary if peak traffic conditions in Bethesda-Chevy Chase are to be acceptable in the future.

It is recommended that a full-service, personalized ridesharing program be established for the entire Bethesda-Chevy Chase Planning Area. The program should be patterned after the successful Share-A-Ride program previously operated in Silver Spring. The program would serve not

only employees of the area but residents as well. The full-service program could be an expansion of the existing Bethesda program operated by the Montgomery County Department of Transportation (MCDOT). It could also be a supplementary program funded and operated by the private sector as part of development approval agreements.

It is recommended that all existing and new nonresidential building owners and employers in the Bethesda-Chevy Chase Planning Area be urged to participate in the Share-A-Ride matching service, County transit pass subsidy, and County vanpool fare subsidy programs on an ongoing basis. For those building owners and employers that provide free or below-market rate parking for employees, there should also be a requirement that they provide reserved carpool spaces convenient to the building entrances and a subsidy, equivalent to the amortized cost of building and maintaining a parking space, to each employee who chooses an alternative mode of transportation. The subsidies could be in the form of heavily discounted rail and bus transit passes for transit passengers, bike lockers and showers for bicyclists, heavily discounted vanpool fares for vanpoolers, and special monetary benefits for carpoolers. The subsidies could be issued through the building manager's office. Furthermore, developers of new office buildings in the area could be required to provide only as many parking spaces as are specified by the minimum requirements of the Zoning Ordinance, particularly in the more congested portions of the area. New local legislation would be necessary to implement such requirements.

The Master Plan recommends a policy of seeking agreements from Federal employment centers in the area to provide ridesharing/transit incentives for its employees. (See Section 3.6, Federal Employment Centers.)

4.13 Bicycle and Pedestrian Paths

This Plan endorses the expansion of pedestrian paths and bikeways to form a network linking residential neighborhoods with public facilities.

Such an expansion is an important step to reduce auto use and to provide transportation alternatives. Connections are needed with commercial and employment centers, bus and Metro stops, and community facilities such as schools, libraries, religious institutions, and recreation areas. Such linkages

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are particularly important for older residents. Wherever feasible, bus stops and other pickup locations should include covered areas. Sidewalks linking neighborhoods with facilities within a minimum one-half-mile radius should be provided in the following priority:

1. Schools and Metro stops
2. Commercial and employment centers
3. Other community facilities and services

Sidewalks should also be provided along roadways in the following priority:

1. Major highways
2. Arterials
3. Primary streets

The network of bridle and recreational foot paths should also be continued in stream valley parks and along other available linear corridors.

Public funds for sidewalk construction have been severely limited. Current budget levels allow about one-tenth of the requested sidewalk projects to be built each year, primarily those near schools and Metro stops. The Office of Planning and Project Development of the Montgomery County DOT keeps a list of projects proposed by agencies and communities. According to MCDOT, the B-CC area has a large need for sidewalks compared to other areas of the County. This Plan endorses the pro-

vision of increased financial resources to allow for expansion of pedestrian paths and bikeways.

The Plan recommends that a vigorous program be pursued to implement the Master Plan of Bikeways within the Planning Area. The proposed Countywide network of bikeways is designed to meet recreational and transportation needs. Portions of the network within the park system have been constructed and bicycle access to NIH improved, but much of the network remains to be developed. A consultant to the County DOT recently reviewed and has made recommendations to MCDOT to facilitate further implementation of the *Master Plan of Bikeways*.

The existing street system should serve as the skeleton of a bicycle network for non-recreational bike travel. Improved roadway accessibility can be achieved through simple maintenance steps and selected improvements for critical routes between Metro stations and employment centers. Where necessary, certain sidewalks can be designated as bicycle paths, if appropriate width can be provided. Use of other linear corridors and dedicated but unbuilt street rights-of-way should also be considered for bikeways.

The recreational hiker-biker trails in the linear park system should be completed. The highest priority should be trails linking neighborhoods and parks, and completion of links between existing trails. In heavily used areas, broader paths, wider curb lanes, or paved shoulders on the roadway should be used to separate high speed cyclists from pedestrians.

The Plan recommends that pedestrian safety improvements be supported and expanded along major highways and arterials. Increased traffic volumes in peak periods and increased speeds in off-peak periods cause problems for pedestrians, especially children and the elderly. Safe access to bus stops, slower traffic speeds, and a pleasant pedestrian experience are as important as smooth traffic flow. Techniques for implementation should include provision of crosswalks and pedestrian activated signals at critical crossing points. Speed

limit enforcement is also essential. Such crossings are intended to interrupt long lines of traffic, so as to provide safe pedestrian crossing during peak periods. Selected locations for safe crossing measures are identified in the Land Use section. Other locations may also be appropriate. Implementation of safe crossings involve operational issues which must be resolved with County and State transportation agencies.

4.14 Georgetown Branch

Silver Spring to Bethesda CBDs

The Georgetown Branch right-of-way is designated for light rail and trail use between Silver Spring and Bethesda by the Georgetown Branch Master Plan Amendment, 1990. The designation of transit use on the Georgetown Branch has not changed the land use and zoning recommendations of this Plan. Following the CSX Transportation, Inc., (CSX) decision to file for an abandonment of the Georgetown Branch railroad spur with the Interstate Commerce Commission, the Planning staff prepared a Master Plan Amendment to protect the right-of-way for the public interest. The *Georgetown Branch Master Plan Amendment* (November 1986) designates the right-of-way "a public right-of-way intended to be used for public purposes such as conservation, recreation, transportation, and utilities." It states that a "transit facility could be an important element of the County's long-term transportation system."

After CSX officially abandoned the right-of-way through the Interstate Commerce Commission, the Montgomery County Government purchased the Georgetown Branch pursuant to Section 8(d) of the National Trails System Act for \$10.5 million in December 1988. The November 1986 Amendment also noted that "any use of the right-of-way for a transitway between Silver Spring and Bethesda will require a future master plan amendment." The 1986 *Master Plan Amendment* refers to transit use without specifying what type of technology it would be.

The *Georgetown Branch Master Plan Amendment* (1990) des-

ignates the Silver Spring & Bethesda Trolley and the Capital Crescent Trail as suitable uses for the 4.4-mile portion of the Georgetown Branch right-of-way between Bethesda and Silver Spring. It provides guidelines and recommendations regarding the location of trolley/trail facilities to minimize potential environmental and community impacts of such a facility upon abutting neighborhoods. The Plan addresses the impacts on traffic and development and project costs. The Plan supports the findings associated with the trolley/trail alternative of the *Georgetown Branch Corridor Study*, prepared by the firms of DeLeuw Cather/Parsons Brinckerhoff for the Montgomery County Department of Transportation, with specific modifications concerning its implementation. The *Georgetown Branch Master Plan Amendment* (1990) concludes that the use of the right-of-way for a trolley/trail meets both community and Countywide transportation and recreational goals.

The public use of this right-of-way is being pursued because it is a unique opportunity to use an exclusive right-of-way to link the two major down-County business districts and the two arms of the Metro Red Line. A bikeway and trail, in combination with transit use, will be provided. The trail will provide an important opportunity to link local and regional trails which traverse the Rock Creek and Potomac basins. A bikeway could serve longer distance recreational use and local access to employment centers and community services.

Use of the route for transit would provide an alternative to driving on East-West Highway and Jones Bridge Road. It would assist those people who rely primarily on local public transit. The key to attractive, successful transit service is providing reliable, speedy service. The Georgetown Branch provides an existing travel corridor that could readily be adapted for transit use.

Bethesda CBD to the District of Columbia

The remainder of the Georgetown Branch, from Bethesda Avenue to the District of Columbia boundary, should be used primarily as a recreational trail for hiking and bicycling to be

known as the Capital Crescent Trail. Another option for this segment of the former rail right-of-way is for an excursion train use. There is the potential that other public uses could be shared with a trail. Any new use of this portion of the Georgetown Branch should be the subject of a subsequent Master Plan amendment.

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Montgomery County Government purchased the Georgetown Branch right-of-way pursuant to Section 8(d) of the National Trail System Act. This purchase assumed the southern segment of the right-of-way would be transferred to Maryland-National Capital Park and Planning Commission. The Parks Department would then prepare the detailed trail planning and design. Public input and review by all other agencies affected should be included in this planning and design process. Final approval for design and implementation strategies for how recreational trail use will be accomplished on the Georgetown Branch would lie with the Park and Planning Commission.

The planning for the use of this section of the Georgetown Branch should consider the many issues raised in previously adopted Master Plans, in the *Georgetown Branch Corridor Study Final Report*, and in the public hearing on the Final Draft Master Plan for Bethesda-Chevy Chase. The master plans for the area (*B-CC*, 1970; *Bethesda CBD*, 1976; and *Westbard*, 1982) discuss a variety of possible transit, bikeway, and roadway uses of the Georgetown Branch right-of-way. These proposals are integral to the recommendations of both the *Bethesda CBD* and the *Westbard Sector Plans*. Some changes to those recommendations may require subsequent amendments to those Sector Plans. The *Georgetown Branch*

Corridor Study Final Report considered alternatives for path, bikeway, and excursion train use. The designation of recreational uses of the Georgetown Branch right-of-way by the Parks Department should include specific guidelines and recommendations to assure minimization of the potential impact on abutting neighborhoods.

Various issues to consider for the remaining section of the Georgetown Branch are as follows.

Bethesda CBD to Westbard

1. This segment should be used for a continuous hiking/biking trail route into the Bethesda CBD.
2. Potential use of segments of the right-of-way in Westbard to improve access for industrial properties south of River Road, as stated in the *Westbard Sector Plan*, 1982. This use is important for providing efficient access to industrial properties. Alternatives to consider include: (a) the combined use for vehicles and hikers/bikers, or (b) directing hikers/bikers to the Little Falls Parkway path system around Westbard. It is important to state in this Master Plan that if the trail deviates from the Georgetown Branch right-of-way, the right-of-way will remain in public use, but it may not be considered parkland under the jurisdiction of the Park and Planning Commission.
3. Whether the trail crossing of the Georgetown Branch right-of-way at River Road should be at-grade or on a bridge.
4. Bicycle and pedestrian connector links to surrounding neighborhoods should be provided where appropriate and feasible.

This Master Plan replaces the recommendation of the 1970 *B-CC Master Plan* to create an extension of Little Falls Parkway via the Georgetown Branch to Woodmont Avenue. Such an extension of this Parkway would not be compatible with trail use of the right-of-way.

Westbard to the D.C. Line

The segment from Westbard, south of the industrial area, to the District of Columbia boundary traverses a residential area and roughly parallels the existing Little Falls Park and pathway system.

1. This segment provides the best opportunity for a continuous hiking and bicycling trail from the District of Columbia to at least Massachusetts Avenue. Such continuous trails are desirable for extended bicycling trips.
2. An alternate view is that such a continuous trail could be created in combination with the existing parallel trail in Little Falls Stream Valley Park. In either case, portions of this segment could be used to improve community bicycle or pathway access to employment, park, or community centers.
3. The Master Plan recommends that the right-of-way be considered as an alternative to use of the Little Falls Park as an alignment for the proposed interconnection of water system Project 90 in Bethesda and the Dalecarlia Filtration Plant in the District of Columbia. The project should be designed to allow for trail or other uses identified in this Master Plan. The alternative should be studied by the Washington Suburban Sanitary Commission in the context of its environmental impacts, effects on other right-of-way uses, and cost effectiveness of such a project.
4. Pedestrian and bicycle connector links to surrounding neighborhoods should be provided when appropriate and feasible.
5. A hiker/biker trail south of MacArthur Boulevard outside of the Georgetown Branch right-of-way will have to be located on Federally owned property under the jurisdiction of the National Park Service. An agreement must be reached with the Park Service regarding use of its lands and respective responsibilities for the trail's construction and management.

Excursion Train

This Plan recommends continued consideration of a historic

excursion train between the Bethesda CBD (or Westbard) and Georgetown in the District of Columbia, subject to the determination that an excursion train could be compatible with the hiker-biker trail, without excessive additional cost to the County. An excursion train deserves further consideration as a recreational use of the right-of-way. Some users of an excursion train would not be likely to use an extended bicycle route. These include non-bicyclists, the physically handicapped, and some elderly.

The Parks Department should further study this issue to determine whether excursion railroad use in the right-of-way is compatible with the hiking-biking trail and can be accommodated at reasonable cost to the County. This study (and any subsequent study regarding design issues) should address the issue of accessibility to businesses which are located south of River Road and are currently only accessible via the CSX right-of-way. If the excursion rail cannot be accommodated without negatively affecting the hiking-biking trail or would add unreasonable cost for the County, then the right-of-way should be limited to a hiking-biking trail (or other compatible activities).

4.2 Highway System Plan

A highway system plan is proposed to serve those transportation needs that cannot readily be served by transit or other mobility services. Such needs include through traffic and off peak local travel.

The Master Plan endorses completion of programmed highway improvements. State of Maryland projects are identified in a Highway Needs Inventory, the Consolidated Transportation Program, and on a list of Special State Projects. Montgomery County projects are identified in the annual Capital Improvements Program. Projects range from reconstruction of segments of I-495, to intersection improvements, to sidewalk construction.

The Master Plan modifies the highway classifications of the 1970 Master Plan. This is necessary to provide classifica-

tions that match the functions of each highway and to preserve the rights-of-way for long-term needs beyond the life of this Master Plan. These modifications include:

1. Amendments to some street classifications.
2. Retention of some classifications, to allow reservation of rights-of-way, while limiting the roadway design to a lesser pavement width.
3. Removal or modification of some specific proposals related to pavement width, intersection design, or interchanges.

4.21 Highway Improvement Policy

This Plan endorses providing moderate highway improvements based on the following Plan policies:

1. Endorse future projects needed to ensure the safety of highway users and pedestrians.

Highways with narrow lane widths or with only two lanes, as well as those with hills, curves, and blind spots, may need improvements to preclude potential accidents. Resolution of such problems may require selective roadway widening and straightening. Some intersections may have volume or geometric problems that result in high accident rates which could be resolved by reconstruction. Examples include East-West Highway and the intersection of MacArthur Boulevard at Sangamore Road.

2. Endorse redesign of intersections operating at congested levels of service (i.e., mid-point of Level of Service E), including future congested locations.

There are major intersections throughout the Planning Area that currently operate at levels of congestion which equal or exceed the current acceptable limit of the mid-point of Level of Service E. (See Figure 11.) Future growth in local and through traffic will likely increase the number of such intersections. Improvements to reduce the number of congested intersections may include the addition and lengthening of turning lanes for additional vehicle storage. In most cases such changes will improve peak traffic flow. In some cases, congestion levels are so

high that improvements will not fully achieve an acceptable Level of Service but should be made to provide some additional capacity. In other cases, roadway links are at or nearing high congestion levels.

The Master Plan identifies one location where a grade separated interchange could be built, if approved in a subsequent Master Plan. While an interchange may eliminate an unacceptable local Level of Service condition, it may lead to excess downstream traffic on already congested roadways. It is recognized that severe community impacts could result from intersection construction.

3. New development should be required to participate in transportation projects needed to reduce congestion levels on local area highways and intersections.

At the time of preliminary subdivision plan, new development must be reviewed under the Adequate Public Facilities Ordinance, including a local area review. Where intersections are projected to operate above the midpoint of Level of Service E, new development cannot be approved unless intersection improvements or traffic alleviation measures are provided to offset the effect of the additional traffic volume.

In some cases the Master Plan recommends against major intersection improvements which would cause unacceptable disruption to property in the area. In such cases, the land use and development level policies of this Master Plan should still be followed. As stated above, such new development will still be required to alleviate the effect of increased local traffic volumes caused by that development.

4. Endorse reduction of through traffic on secondary residential streets and, where possible, on primary streets, particularly during peak traffic periods.

It is the policy of the Montgomery County Department of Transportation to reduce or eliminate cut-through traffic on secondary residential streets unless such condition would increase congestion at already congested locations. Such a pol-

icy is intended to protect residential communities from increasing through traffic and traffic associated with major employment centers.

Secondary streets should function so as to serve residential areas and are not intended for use by through traffic. Protection from non-local, cut-through traffic may be achieved by communities initiating requests to the Montgomery County Department of Transportation. Local municipalities also have some jurisdiction over street operations. Protection may be in the form of speed limit enforcement, traffic circles, one-way streets, and stop signs, as well as turning and access restrictions. During non-peak periods, turning and access restrictions are less desirable as they reduce options for nearby residents to use all of the public streets. Unbuilt rights-of-way may also discourage cut-through traffic. Decisions to abandon or dispose of such rights-of-way must be weighed against needs for local access and safety.

Primary streets should function so as to collect and distribute traffic between secondary streets and the arterial and major highway system. As a result, they carry local and some non-local traffic through residential communities. Often there is no good alternative route for such traffic. To better protect residential communities, this Master Plan endorses measures aimed at controlling speeds and increasing pedestrian safety on those primary streets which are determined to carry excessive traffic during peak periods. Such measures may include a review of speed restrictions, addition of sidewalks, and various types of traffic signs, among others.

5. Lessen the rate of increase in through trips on major highways by providing alternate means of travel

Major highways should function so as to carry large volumes of traffic to destinations and from origins within B-CC. They should also provide a through route to other employment centers. Growth in traffic on major highways passing through B-CC, traffic from residential growth to the north and west, and traffic going to and from employment growth in the District of Columbia is expected to continue. The transportation

analysis shows that this will have more impact along the Connecticut Avenue Corridor than the other radial corridors in B-CC. Actions that should be taken include: (1) more Metro station parking and improved feeder bus service to stations on the Red Line, (2) transit fare policy changes that would encourage more transit use for these travelers, (3) park-and-ride lots with appropriate bus services in the non-Metrorail highway corridors, and (4) continued efforts to improve traffic signalization.

4.22 Planned Highway Projects

Figure 12 shows the projects discussed in the following section.

The Highway Needs Inventory (see Table 11) is a statewide planning document which lists highway improvements needed to serve existing and projected population and economic activity in the state. The Inventory includes projects that address safety, structural problems, and service conditions that warrant major construction or reconstruction.

The Consolidated Transportation Program (CTP) of the Maryland Department of Transportation takes projects from the Needs Inventory and places them in a construction program through a selective capital improvements planning process. The Capital Improvements Program (CIP) is the Montgomery County program for public improvement projects. The following table lists both state CTP and County CIP projects in the Bethesda-Chevy Chase area. Projects within the Sector Plan areas are not included. (See Table 12.)

4.23 Future Highway Needs

The overriding transportation strategy for the Bethesda-Chevy Chase area is to encourage the use of mass transit, carpooling, walking, and bicycling to reduce the demand for roadway facilities and to provide only moderate improvements to the roadway system. To that end, traffic movement

within the Planning Area is deemed to be more important than movement into and from the Planning Area, except for those vehicles that reinforce the above policy. This philosophy means

The highway plan recommends that roads in the Planning Area not be widened during the time frame of the Master Plan.

that greater attention should be paid to roadway improvements that are located within the Planning Area rather than those on the periphery. For many people traveling through the Planning Area, there is a mass transit option.

The highway plan recommends that roads in the Planning Area not be widened during the time frame of the Master Plan. This Plan assumes a heavy reliance on transit and trip reduction programs, particularly in those corridors where the major roads have already been widened to the maximum extent possible or desirable.

Level of Service

Intersections discussed in the following sections are analyzed with respect to an initial estimate of their future Level of Service and Critical Lane Volume during peak morning and evening hours. Although Levels of Service range from A to F, the levels associated with higher levels of congestion include:

“D” Conditions approaching unstable flow, delays are moderate to heavy, significant signal time deficiencies are experienced for short durations during the peak traffic period.

“E” Conditions of unstable flow, delays are significant, signal phase timing is generally insufficient, congestion exists for extended duration throughout the peak period.

“F” Conditions are jammed, full utilization of the intersection approach is prevented due to back-ups from locations downstream.

CURRENT AND FUTURE TRANSPORTATION PROJECTS

Figure
12

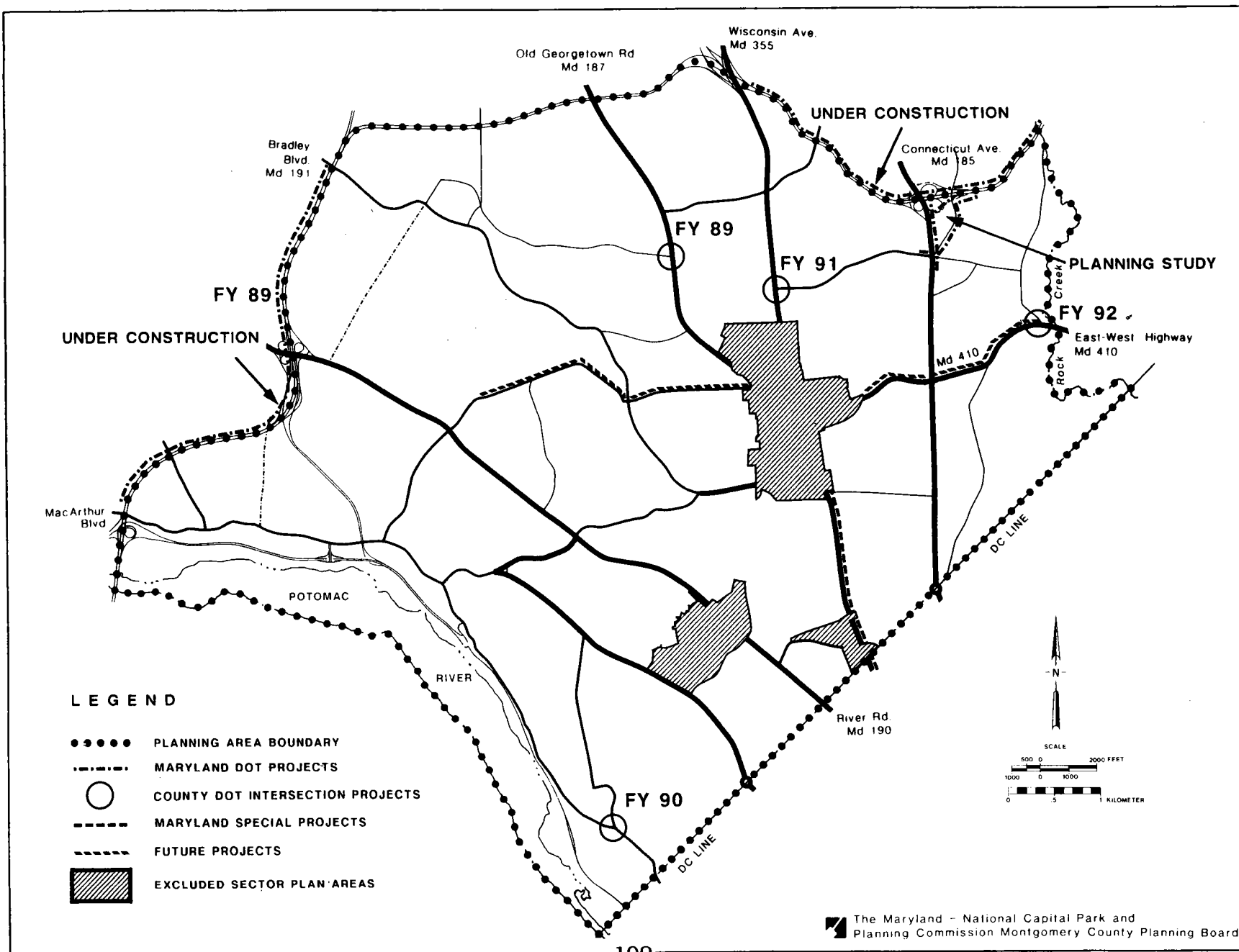


Table 11
STATE OF MARYLAND HIGHWAY NEEDS INVENTORY*

| Route/ Route Name | Length (Miles) | Improvement Type Cost (\$000) |
|---|-------------------|--|
| I-495; Potomac River to north of River Rd | 2.4 | Freeway Reconstruction; \$27,900 |
| Wilson La, north of River Rd to Old Georgetown Rd | 2.3 | 2-Lane Reconstruction; \$4,300 |
| East-West Hwy B&O Railroad (MD 410) to Beach Dr | 1.4 | Multi-Lane Highway Reconstruction; \$4,200 |

*The Inventory lists long-term projects and is revised periodically, most recently in 1986.

Table 12**MARYLAND AND MONTGOMERY COUNTY CAPITAL PROJECTS**

| Project Name | Project Description | Start Construction | Implementing Agency |
|---|---|--------------------|---------------------|
| Capital Beltway (I-495) | Upgrade to an 8-lane freeway from American Legion Bridge to north of River Rd | FY 89 | MDDOT |
| Intersection Project | MacArthur Blvd/Sangamore Rd Intersection Reconstruction | FY 90 | MCDOT |
| Intersection Project | East-West Hwy/Jones Mill Rd Intersection Reconstruction | FY 92 | MCDOT |
| Highway Spot Improvement (Conceptual Stage) | MacArthur Blvd (at George Washington Pkwy Ramp) | FY 93 | MCDOT |
| | Rockville Pike/Jones Bridge Rd Intersection Project | FY 91 | MCDOT |
| Sidewalk | 95 feet long on Greentree Rd at Old Georgetown Rd for Transit Access. Also includes a new turn lane. | FY 89 | MCDOT |
| Connecticut Ave at I-495 & at Jones Bridge Rd | Project Planning Study in process. Relocate ramp from Kensington Pkwy | Not Programmed | MDDOT |
| Wisconsin Ave | Geometric improvements from East-West Hwy (MD 410) to Bradley Blvd (MD 191); this is a Special State Project. | FY 89 | MDDOT |

There is a range of Critical Lane Volumes associated with each Level of Service (LOS). Specific Critical Lane Volumes are determined by analyzing certain traffic movements occurring in the morning and evening peak hours. The calculated Critical Lane Volumes are then used to determine the Level of Service for each peak hour. The ranges of Critical Lane Volumes for each Level of Service mentioned above are:

| <u>LOS</u> | <u>Vehicles Per Hour</u> |
|------------|--------------------------|
| "D" | 1,323 to 1,427 |
| "D/E" | 1,428 to 1,472 |
| "E" | 1,473 to 1,577 |
| "E/F" | 1,578 to 1,622 |
| "F" | 1,623 or more |

The midpoint of Level of Service "E," which corresponds to a Critical Lane Volume of 1,525, is the maximum point at which intersections are considered to be operating under acceptable traffic conditions in the Bethesda-Chevy Chase Planning Area. Intersections with Critical Lane Volumes above 1,525 are considered to be in need of additional capacity. The Level of Service Map (see Figure 11) shows some intersections that are operating at Level of Service D or lower.

The review of intersections in the Planning Area found many in need of additional capacity. While some recommendations for improvements are proposed, they need to be reviewed by the Montgomery County or the Maryland Department of Transportation for possible implementation.

The highway recommendations for this Plan are stated in summary form on Table 13. The table first addresses major highways within Bethesda-Chevy Chase. Other highways are then discussed. The projects are listed in the table and in the text in order from east to west. In Table 13, the "Recommendation" column states recommendations which are to apply during the life of the Master Plan. The last column identifies "Possible Long-term Changes." The projects described in that column are only possible beyond the life of this Master Plan and would require a subsequent Plan revision. The text following Table 13 provides additional explanation of future needs for each highway.

Major Highway Needs

East-West Highway (MD 410)

The Maryland Department of Transportation (MdDOT) has completed a consultant study to determine ways to improve safety and capacity on MD 410 between Wisconsin Avenue and Sixteenth Street. The MD 410 Corridor Study does not consider alternative modes of transportation or grade separated interchanges. Proposed projects include geometric improvements at intersections and hazardous locations and other spot improvements to improve safety. A major recommendation of the study is to improve East-West Highway as a four-lane divided roadway with four-foot-wide raised median for the majority of the length of the project. An option is to resurface the road and place raised pavement markers on the center line as a way to improve wet surface conditions.

**A major recommendation of the study is
to improve East-West Highway as a
four-lane divided roadway with
four-foot-wide raised
median...**

This Plan recognizes that the 62-foot-wide roadway recommended for East-West Highway in the 1970 Master Plan is not practical and endorses the four-lane configuration with safety improvements. The safety improvements could include a fifth lane to be used to accommodate turning movements.

The near-term projects being considered for implementation are intersection improvements on East-West Highway at Jones Mill Road and at Connecticut Avenue. Additional lanes will be added at these intersections to reduce congestion and improve safety.

A third improvement project has been approved for implementation at the intersection of Wisconsin Avenue and Jones Bridge Road. This project includes a turning lane on Wisconsin Avenue for traffic turning right, onto Jones Bridge Road.

Table 13

SUMMARY OF THE BETHESDA-CHEVY CHASE MASTER PLAN HIGHWAY NEEDS

| Name (Route #) | Limits | Recommendation | Current LOS | Conditions, Guidelines, Other Recommendations | Possible Long-term Changes |
|---------------------------------|-----------------------------------|---|-------------|--|--|
| Major Highway Needs | | | | | |
| East-West Hwy (MD 410) | Rock Creek Park to Montgomery Ave | Four lanes with safety improvements and turning lane; capacity improvements at intersections | | Support State Highway Administration study of safety and capacity | |
| - at Jones Mill Rd and Beach Dr | Intersection | Increase capacity and safety | E | | |
| - at Connecticut Ave (MD 185) | Intersection | Implement at-grade improvements for capacity and safety | F | | |
| Connecticut Ave (MD 185) | I-495 to the Western Ave Cir | Retain six lanes | | From Georgetown Branch south, widening of the road is undesirable due to excessive impacts on property and community character | Add an additional lane from Georgetown Branch to Western Ave only if: <ul style="list-style-type: none"> o can be used as an HOV lane in peak periods o endorsed by the County Council, as needed to reduce severe congestion and community impact |
| - at I-495 | Interchange | Recommend new access ramp location, removal of access from Kensington Pkwy and other measures to lessen community impacts | | | |
| - at Jones Bridge Rd | Intersection | Implement at-grade improvements for safety and capacity | F | Also include sidewalks, provide for safe pedestrian crossing, and address Spring Valley Road access | |
| - at Manor Rd | Intersection | Increase capacity and safety | F | Improvement should provide for safe pedestrian crossing | |
| - at East-West Hwy (MD 410) | (see East-West Hwy) | | | | |

Table 13 (Cont'd.)

SUMMARY OF THE BETHESDA-CHEVY CHASE MASTER PLAN HIGHWAY NEEDS

| Name (Route #) | Limits | Recommendation | Current LOS | Conditions, Guidelines, Other Recommendations | Possible Long-term Changes |
|--------------------------------------|-----------------------------|---|----------------|--|--|
| Major Highway Needs (Cont'd.) | | | | | |
| <i>Connecticut Ave (Cont'd.)</i> | | | | | |
| - at Western Ave Cir | Circle and Intersections | Recommend traffic safety study by DCDOT | | Circle and trees provide a high quality entrance to Montgomery County and should be main- tained; proposed improvements should be submitted to M-NCPPC and local municipal- ities for review and comment | |
| Wisconsin Ave (MD 355) | I-495 to Woodmont Ave | Retain six lanes for additional capacity and safety needs at intersections and other poten- tially hazardous locations | | From Pooks Hill Rd to Cedar La, widening of the road is undesirable due to excessive impacts on property | Consider long-term widening to eight lanes from Cedar La to Woodmont Ave if: <ul style="list-style-type: none"> o needed to accommodate Federal and Bethesda growth o will include HOV lane service in peak periods; and is o endorsed by the County Council, as needed to reduce severe congestion |
| - at Pooks Hill Rd | Intersection | Recommend improvement study by MDDOT/MCDOT | E | Consider improvement to inter- section capacity, including additional turn lanes, such as: <ul style="list-style-type: none"> o from Pooks Hill Rd, three-lane left turn; o add a northbound through lane on MD 355 Must study in relation to I-495 interchange | |
| - at Cedar La | Intersection | Recommend at-grade improve- ment study by MDDOT/MCDOT | F | Consider interim improve- ments to reduce critical lane volume such as: <ul style="list-style-type: none"> o eastbound Cedar Lane, add a right-turn lane | Retain interchange re- commendation. Future studies should determine if an interchange and an eight-lane highway to |

Table 13 (Cont'd.)

SUMMARY OF THE BETHESDA-CHEVY CHASE MASTER PLAN HIGHWAY NEEDS

| Name (Route #) | Limits | Recommendation | Current LOS | Conditions, Guidelines, Other Recommendations | Possible Long-term Changes |
|--------------------------------------|--|--|-------------|--|--|
| Major Highway Needs (Cont'd.) | | | | | |
| <i>Wisconsin Ave (Cont'd.)</i> | | | | | |
| | | | | <ul style="list-style-type: none"> o westbound Cedar La, add a through lane o northbound MD 355, add a right-turn lane Delay implementation until determine how relate to traffic growth from NIH and the Bethesda CBD | Woodmont Ave can be built without adding excessive traffic to other area roads serving the NIH Naval and Bethesda CBD employment centers |
| - at Jones Bridge Rd | Intersection | Endorse existing CIP project | F | Existing CIP project includes a right-turn lane on north-bound Wisconsin Avenue | |
| | Bradley La to Somerset Terr | Four lanes | | Safety improvements were completed in the 1980's | Future changes should maintain planted median |
| Old Georgetown Rd | I-495 to Woodmont Ave a) I-495 to Huntington Pkwy | Retain existing roadway width | | Widening of the road is undesirable due to excessive impact on property | An additional lane may be considered only if <ul style="list-style-type: none"> o can be used as an HOV lane in peak periods o endorsed by the County Council as needed to reduce severe congestion and community impact |
| - at Greentree Rd | Intersection | Endorse existing CIP project | D | Short right-turn to be provided as part of MCDOT sidewalk project | |
| | b) Huntington Pkwy to Woodmont Ave | Improvements may be needed for future Bethesda Business District development | | Improvements may include: an additional lane, an HOV lane, or reversible lanes; such improvements must be evaluated in light of a revision to the Bethesda Sector Plan | |

Table 13 (Cont'd.)

SUMMARY OF THE BETHESDA-CHEVY CHASE MASTER PLAN HIGHWAY NEEDS

| Name (Route #) | Limits | Recommendation | Current LOS | Conditions, Guidelines, Other Recommendations | Possible Long-term Changes |
|--------------------------------------|--|--|----------------|--|---|
| Major Highway Needs (Cont'd.) | | | | | |
| River Rd (MD 190) | I-495 to Western Ave | Retain existing roadway width for intersection capacity/ safety improvements, construct Park & Ride lot beyond I-495 | | Provide Park & Ride lot with transit service | Capacity of some sections may be exceeded during the life time of the Master Plan |
| - at Wilson La | Intersection | Recommend intersection improvements | F | | Consider impact of improvements on nearby communities |
| - at Whittier Blvd | Intersection | Recommend intersection improvements | F | | Consider impact of improvements on nearby communities |
| - at Little Falls Pkwy | Intersection | Recommend intersection improvements | E | | Consider impact of improvements on nearby communities |
| Goldsboro Rd (MD 614) | Massachusetts Ave to River Rd | Retain two-lane roadway | | | Consider long-term need for four lanes, subject to environmental constraints |
| Massachusetts Ave (MD 396) | Western Ave to Sangamore Rd | Retain existing roadway width | | None at this time | |
| | Goldsboro Rd to Sangamore Rd | Retain existing roadway width | | | May need widening to four lanes |
| Other Long-term Highway Needs | | | | | |
| Jones Bridge Rd | a) Jones Mill Rd to Connecticut Ave (Primary Street) | Improvement to primary standards as necessary | | Wider roadway would have impact on abutting residences | |
| | b) Connecticut Ave to Wisconsin Ave (Arterial Road) | Retain existing roadway width, except where intersection improvements are needed | | | |

Table 13 (Cont'd.)

SUMMARY OF THE BETHESDA-CHEVY CHASE MASTER PLAN HIGHWAY NEEDS

| Name (Route #) | Limits | Recommendation | Current LOS | Conditions, Guidelines, Other Recommendations | Possible Long-term Changes |
|--|---|---|----------------|---|---|
| Other Long-term Highway Needs (Cont'd.) | | | | | |
| Little Falls Pkwy (Park Rd) | Fairfax Ave to Massachusetts Ave | Retain existing roadway width | | Future changes, if any, must maintain parkway character | May need future widening |
| Wilson La (MD 188) (Arterial St) | a) MacArthur Blvd to River Rd | Two-lane arterial | | a) & b): Endorse improvements related to pedestrian safety, a bike path, and speed controls | |
| | b) River Rd to Bradley Blvd | Recommend improvements following a proposed pedestrian safety and circulation study by MCDOT | | | |
| | c) Bradley Blvd to Clarendon Rd | Retain arterial classification but limit the roadway to two lanes | | Any reconstruction should include special attention to: pedestrian safety, a conti- nuous path and pedestrian crossings; more than two lanes are undesirable due to exces- sive impacts on property | |
| Greentree Rd (Primary Street) | Burdette Rd to Fernwood Rd | Retain primary classification and improve substandard sections as necessary | | | |
| Burdette Rd (Principal Secondary) | River Rd to Bradley Blvd | Widen to two-lane secondary as needed; improve to primary standard as needed | | | |
| Bradley Blvd (MD 191) (Arterial) | I-495 (underpass) to Fairfax Rd a) I-495 to Goldsboro Rd | Reclassification to arterial road and retain two lanes | | High volumes unlikely, since no interchange at I-495 | Limit future improve- ments to four lanes except at intersections |

Table 13 (Cont'd.)

SUMMARY OF THE BETHESDA-CHEVY CHASE MASTER PLAN HIGHWAY NEEDS

| Name (Route #) | Limits | Recommendation | Current LOS | Conditions, Guidelines, Other Recommendations | Possible Long-term Changes |
|--|---|--|----------------|---|---|
| Other Long-term Highway Needs (Cont'd.) | | | | | |
| <i>Bradley Blvd (Cont'd.)</i> | | | | | |
| | | Include a pathway in the right-of-way | | | |
| - Huntington Pkwy; Wilson La | Intersections | Increase intersection capacity | | | |
| | b) Goldsboro Rd to Fairfax Rd | Retain existing road width | | | |
| Bradley La (Primary) | c) Wisconsin Ave to Connecticut Ave (primary) | Retain two-lane roadway | | | Consider up to four lanes, if needed to serve the Bethesda Business District; this would require reclassification to an arterial road and a taking of private property |
| Persimmon Tree Rd (Arterial) | | Retail arterial classifica- tion limit roadway widening to two lanes | | | |
| Goldsboro Rd (MD 614) (Arterial) | a) MacArthur Blvd to Massachusetts Ave (Arterial) | Reclassify as an arterial Retain two lanes | | Retain right-of-way | |
| - at MacArthur Blvd | Intersection | Consider operational changes to improve safety and capacity | | Recommend review by MCDOT | |
| | b) River Rd to Bradley Blvd (Arterial) | Two-lane arterial | | Endorse pedestrian circulation safety improvements | Consider long-term need for four lanes, subject to en- vironmental constraints |

Table 13 (Cont'd.)

SUMMARY OF THE BETHESDA-CHEVY CHASE MASTER PLAN HIGHWAY NEEDS

| Name (Route #) | Limits | Recommendation | Current LOS | Conditions, Guidelines, Other Recommendations | Possible Long-term Changes |
|--|---------------------------------|---|----------------|--|---|
| Other Long-term Highway Needs (Cont'd.) | | | | | |
| MacArthur Blvd (Arterial) | a) I-495 to Sangamore Rd | Recommend arterial road classification and retain the two-lane roadway; plan recommends designation as a Maryland Scenic Highway; also recommend study of safety needs at designated scenic pull-offs | | High volumes result in local operational problems, which should be reviewed with MCDOT; U.S. Corps owns road over the Cabin John aqueduct, Site #35/37 on the <i>Master Plan for Historic Preservation</i> and on the National Register of Historic Places; the right-of-way to relocate is inadequate; major widening could create a major corridor; closure could add excess volumes to River Rd | |
| | b) Sangamore Rd to D.C. line | Retain classification as an arterial road, retain the two-lane roadway | | | |
| | - at Sangamore Rd | Intersection | | | |
| | | Endorse intersection capacity and safety improvements project to be implemented through subdivision review process. | | Include turn lanes and signal controls; (County/developer improvement project) | |
| Clara Barton Pkwy | I-495 to D.C. line | Endorse capacity improvements as needed | | Access at Cabin John adds traffic to the one lane over Union Arch | Capacity improvements may be needed to reduce overflow traffic onto MacArthur Blvd and River Rd; peak period restrictions would increase traffic on heavily-used River Rd |

Pedestrian ramps will also be included in the project.

At Connecticut Avenue and East-West Highway, the emphasis should be on at-grade improvements, public and private trip reduction measures, and policies to increase transit ridership.

Connecticut Avenue (MD 185)

The traffic forecast indicates that southbound traffic on Connecticut Avenue is expected to increase at an annual rate of about 1 percent for the morning peak hours. Some intersections, however, are already in need of improvement.

This Master Plan supports the removal of access to I-495 from Kensington Parkway, a residential street, because Connecticut Avenue is a more appropriate road to carry Beltway-oriented traffic. Furthermore, **it is recommended that alternatives include consideration of:**

1. state offer to purchase (for resale) four homes along the east side of Connecticut Avenue whose only access is from Connecticut Avenue;
2. the retention of Kensington Parkway as a two-way street for its entire length;
3. removal and relocation of ramps to reduce speed of on-ramp vehicles and to improve visibility for motorists and pedestrians at Woodlawn Road;
4. installation of a sidewalk along the east side of Connecticut Avenue, north of Jones Bridge Road;
5. replacement of the existing monolithic median and barricades along Connecticut Avenue with a grass median to match the existing 14-foot-wide grass median and planted with grass; and
6. improvement of the Connecticut Avenue/Jones Bridge Road/Kensington Parkway intersection with special attention to the Jones Bridge Road/Spring Valley Road intersection.

The developer of the large parcel in the southwest quadrant

of the intersection (Parcel C 14) will provide an additional lane and median on Jones Bridge Road, a traffic signal at a new intersection west of Spring Valley Road, and improvements to Manor Road at the south end of the property.

The grade-separated interchange at Jones Bridge Road, proposed in the 1970 Master Plan, is deleted from this Master Plan. There would be insufficient weaving and merging distance between Jones Bridge road and the Beltway (I-495) interchange. The proposed interchange would also have an adverse impact on abutting residential communities. Preliminary development plans for parcels near the intersection will be reviewed for the possibility of implementing at-grade improvements or trip reduction measures.

Wisconsin Avenue (MD 355)

Wisconsin Avenue is in the major development corridor in the Planning Area and provides capacity for traffic passing through the corridor and traffic generated in the Bethesda CBD, Friendship Heights, and other facilities like NIH and the Naval Medical Center. Unlike NIH and NMC, development in Bethesda and Friendship Heights is controlled by Sector Plans and public policies which limit the amount of development to the capacity of the transportation system.

Intersections along Wisconsin Avenue outside the Sector Plan areas known to be operating at unacceptable peak hour levels of service include Pooks Hill Road, Cedar Lane, and Jones Bridge Road. The traffic flow is very heavy between Jones Bridge Road and I-495, but has not exceeded the capacity of the road.

The intersection at Pooks Hill Road is currently operating at an unacceptable Level of Service only in the evening peak hour. The Level of Service could be improved by adding a northbound through lane on MD 355 and allowing left turns out of Pooks Hill Road in three lanes. However, it may not be possible to add a lane on MD 355 because of the proximity of the I-495 interchange. If conditions worsen at this location, it may be necessary to initiate a major improvement project.

During the life span of the Master Plan, emphasis should be on at-grade improvements at the intersection of Wisconsin Avenue and Cedar Lane and the implementation of transit and trip reduction policies to reduce highway traffic. **This Plan recommends that a possible grade-separated interchange at Wisconsin Avenue and Cedar Lane be retained as a possible long-range project.** If development or redevelopment occurs on abutting parcels, the plans should be reviewed for the purpose of reserving right-of-way for the future construction of the interchange.

The Critical Lane Volume at the Cedar Lane intersection can be reduced in the peak hours by the addition of a right-turn lane on the eastbound approach of West Cedar Lane to MD 355, the addition of a through lane on the westbound approach of Cedar Lane to MD 355, and the addition of a right-turn lane on the northbound approach of MD 355 to Cedar Lane.

A possible long-term change, beyond the life of this Master Plan, would be the addition of a lane in each direction on MD 355 from north of Cedar Lane to Jones Bridge Road. The additional lanes plus the improvements mentioned above would almost achieve acceptable levels of service. The additional lanes would reduce congestion in this area by better separation of the through traffic on MD 355 and the traffic generated by NIH and the Naval Center.

Transportation improvements in the Wisconsin Avenue corridor should also include alternative modes of travel. Not only should local development be tied to the provision and enhancement of non-auto modes of travel and the reduction of single-occupant vehicles on the road, but consideration should be given to reducing the traffic volumes generated by development in the whole corridor. Plans for expansion of employment in the Federal agencies should be closely coordinated with capacity of the transportation system.

Old Georgetown Road (MD 187)

The daily traffic volume on MD 187 has not reached the ca-

capacity of the road. Further traffic growth could result in greater congestion and motorists' use of Huntington Parkway and Bradley Boulevard as a "short cut" route around the Bethesda CBD. A transportation management district, if implemented in the Bethesda Business District, could be used to reduce the demand for additional roadway capacity on MD 187.

Bradley Boulevard (MD 191)

It is recommended that Bradley Boulevard be reclassified to an arterial road between the Capital Beltway and Goldsboro Road and retained as a two-lane road during the lifetime of the Plan. A pedestrian/bicycle path should be constructed within the existing right-of-way width of 100 feet, and the intersections at Huntington Parkway and Wilson Lane should be improved.

It is recommended that Bradley Boulevard be reclassified to an arterial road between the Capital Beltway and Goldsboro Road and retained as a two-lane road during the lifetime of the Plan.

While congestion is expected to increase, the amount of increase can be reduced if improvements are made at Huntington Parkway and Wilson Lane. These are the two most congested intersections on Bradley Boulevard outside the Bethesda CBD. Delays at these intersections could be reduced by widening the approaches to two lanes so that a lane on each approach could be used for left-turn movements.

River Road (MD 190)

The daily traffic on River Road is close to exceeding the road's capacity. The initial morning peak hour traffic forecast indicates that an annual growth rate of about 0.5 to 1 percent

can be expected in the eastbound traffic if moderate levels of development are assumed. The resultant traffic growth will adversely affect operating conditions of intersections and dictate the need for improvements. Already, there are several intersections operating at unacceptable levels of service during the peak hours and several sections of roadway operating at Level of Service E.

The intersection at Wilson Lane is operating at Level of Service F in the morning peak hour with a Critical Lane Volume of 1,820. This is considerably above the maximum of 1,525 at which local development can be approved without mitigation measures. A review of potential improvements found that only the addition of another approach lane in each direction on River Road would reduce the Critical Lane Volume to less than 1,525. Minor improvements would not result in any significant change in levels of service.

The intersection at Whittier Boulevard is operating at Level of Service F during the morning peak hour with a Critical Lane Volume of 1,558. The Critical Lane Volume could be reduced to an acceptable 1,450 by allowing traffic entering the intersection from Whittier Boulevard to turn left in both approach lanes. The traffic signal system would have to be modified to allow the movement.

The intersection at Little Falls Parkway is operating at Level of Service E in the morning peak hour with a Critical Lane Volume of 1,526. The construction of a separate right-turn lane on the northbound approach of the Parkway to River Road would reduce the Critical Lane Volume to 1,516, which is below the maximum desirable volume of 1,525. The project, however, would not significantly reduce overall congestion at the intersection.

In conclusion, some intersections along River Road are experiencing congestion on the inbound lanes during the morning peak hour. It appears that minor improvements would only provide slight relief. Increased traffic demand under any growth assumption could increase congestion at other intersections and result in a possible need to add through lanes on River Road. In conjunction with the recommended moderate

development levels, this Plan proposes construction of a commuter parking lot along River Road, in the Potomac Planning Area. Widening of River Road to six lanes may be necessary beyond the life span of this Master Plan.

Goldsboro Road (MD 614)

This Plan reclassifies Goldsboro Road from a major highway to an arterial road between MacArthur Boulevard and Massachusetts Avenue. Four lanes may be needed beyond the life span of the Master Plan. The existing pavement width is expected to be sufficient for the life span of the Master Plan and also reflects recommendations for MacArthur Boulevard.

Massachusetts Avenue (MD 396)

The capacity of Massachusetts Avenue is not expected to be exceeded between Goldsboro Road and Sangamore Road during the lifetime of the Plan. However, with the concept of de-emphasizing the potential of MacArthur Boulevard and the southern part of Goldsboro Road as major routes for through traffic, an increase in through traffic may occur on Massachusetts Avenue in the future as spillover traffic from River Road.

This Plan retains the two-lane section of Massachusetts Avenue during its lifetime, but recognizes that four lanes may be needed beyond the life span of the Master Plan.

Other Long-Term Highway Needs

Little Falls Parkway

The daily traffic volume on Little Falls Parkway does not currently exceed the road's capacity. However, if daily traffic continues to grow at the rate of 3.5 to 6 percent, the capacity could be reached by 1995.

The intersection of Little Falls Parkway and Massachusetts Avenue is operating at an acceptable Level of Service during the peak hours, but the intersection at River Road and Little Falls Parkway is operating at Level of Service E in both the

morning and evening peak hours. This means that additional traffic generated by local development could result in the need to widen Little Falls Parkway and increase intersection capacity. Such a change should only be considered in a subsequent Master Plan revision.

Wilson Lane (MD 188)

The Master Plan recommends the reconstruction of Wilson Lane as a two-lane roadway from River Road to Old Georgetown Road. Particular attention is needed to safety and public transit improvements. The improvement of Wilson Lane should include consideration of the following: (1) a continuous bicycle path from MacArthur Boulevard to downtown Bethesda; (2) the construction of waiting areas and facilities for transit passengers; (3) marked or signalized pedestrian crossing lanes at strategic locations, such as Bradley Boulevard and Old Chester Road, where there are bus stops; and (4) the erection of guard rails and anti-skid surfaces at locations, like Malden Lane and Aberdeen Road, where there are sharp curves.

Burdette Road

This Plan recommends the reclassification of Burdette Road as a principal secondary street with the expectation that no widening will be necessary unless the purpose is to facilitate safe, local access and circulation. Burdette Road is a narrow, two-lane road with steep, vertical curves between River Road and Bradley Boulevard. In 1986, the average daily traffic volume was 3,450 vehicles between River Road and Burning Tree Road and 1,900 vehicles between the latter and Bradley Boulevard. The capacity of this road, even though it is low because of its width and topographic constraints, is not expected to be exceeded during the life span of the Master Plan.

Seven Locks Road

Seven Locks Road, north of I-495, is classified as a principal secondary street in the Potomac Subregion Master Plan. **This**

Plan recommends that the section of Seven Locks Road south of I-495 also be classified as a principal secondary street for consistency.

MacArthur Boulevard

This Plan reclassifies MacArthur Boulevard as an arterial road between the Capital Beltway and Sangamore Road to match its function. In addition, the road is being proposed as a scenic highway. To maintain the scenic function during the lifetime of the Master Plan, the one-lane bridge at Cabin John should be retained. The bridge has historical significance and it serves as a traffic-metering device for controlling the volume of traffic flowing through the area. To further discourage the growth of traffic in the area, the road should retain the travel lanes it now has. Two lanes should be sufficient for providing a moderate level of land service and a medium level of traffic service, and this Plan recommends against widening MacArthur Boulevard. While some day, major improvements may be needed to protect the aqueduct, the reference to the relocation of MacArthur Boulevard to a roadbed parallel to the aqueduct from Sangamore Road to the Capital Beltway is deleted from this Plan.

This Master Plan recognizes that traffic uses the Clara Barton Parkway and MacArthur Boulevard to access Wilson Lane and Goldsboro Road. This results in large volumes of peak period traffic going through the Cabin John and Glen Echo communities. This may result in local operational problems which should be reviewed by the Montgomery County Department of Transportation.

4.24 Street and Highway Plan

Classification Categories

The Street and Highway Plan shows the classification of streets and highways in a Planning Area. (See Figure 13.) In Montgomery County, each roadway generally is classified in one of five major categories: (1) Freeways, (2) Major Highways,

(3) Arterials and Business District Streets, (4) Primary Residential Streets, and (5) Secondary and Tertiary Residential Streets.

Freeways provide total traffic service and no land service. Access, number of lanes, and right-of-way width frequently vary in accordance with local conditions and long-term needs. The Capital Beltway (I-495) is classified as a freeway.

Major highways provide high level of traffic service and a low level of land service. The major highways in the Planning Area should function so as to carry large volumes of traffic to destinations and from origins within B-CC, but also provide a through route to other employment centers.

Arterials and business district streets provide a lower level of traffic service and a higher level of land service than major highways. They carry traffic between major highways and provide a high degree of access to local development.

Primary residential streets provide a lower level of traffic service and higher level of land service than arterials and business district streets. Primary streets are the local traffic collectors for vehicles traveling between higher level roads (arterials and major highways) and residential areas. As a result, they frequently carry non-local traffic through residential communities. Often there is not a good alternative primary street to serve as the preferred through route. Some of the primary streets are already part of the existing highway classification system whereas others are proposed to be added to that system. In most cases, these newly designated primary streets have already been constructed to a width of 36 feet. Where the streets are not 36 feet wide, traffic control techniques will be considered as a alternatives to widening.

This Plan adds the classification of the **principal secondary street**, a classification that was used in the *Potomac Subregion Master Plan*. It is used for existing streets with substandard grades whose vertical realignment to primary standards would severely impact access to abutting properties if the acquisition of additional right-of-way was necessary.

Secondary and tertiary residential streets provide limited traffic service and high level of land service. They are not intended for use by traffic that is passing through the residential community.

Street and Highway Classifications

The proposed Street and Highway Plan for the Bethesda-Chevy Chase Planning Area is based on the 1970 Master Plan with specific changes as given below. (See Figure 13.) The highway classifications are listed on Table 14. The table shows the classification, the right-of-way width, and the number of lanes or pavement width. These changes more closely match the classification to the function and use of each street or highway. Individual sector plans must be referred to for recommendations regarding roads and streets in the Bethesda CBD, Friendship Heights CBD, and Westbard.

The streets newly designated as primaries on the proposed highway classification plan include:

| | |
|---------------|------------------------------------|
| Manor Rd | Connecticut Ave to Jones Bridge Rd |
| Whittier Blvd | River Rd to Wilson La |

The proposed highway plan also recommends the following changes to the classification of some other roads and streets.

| | |
|----------------|---|
| Bradley Blvd | major highway to arterial road between I-495 and Goldsboro Rd |
| Goldsboro Rd | major highway to arterial road between MacArthur Blvd and Massachusetts Ave |
| MacArthur Blvd | undesignated road to arterial road between I-495 and Sangamore Rd |
| Fernwood Rd | arterial road to primary residential street between I-495 and Bradley Blvd |
| Burdette Rd | primary residential street to principal secondary street between River Rd and Bradley Blvd |

STREET AND HIGHWAY PLAN

Figure
13

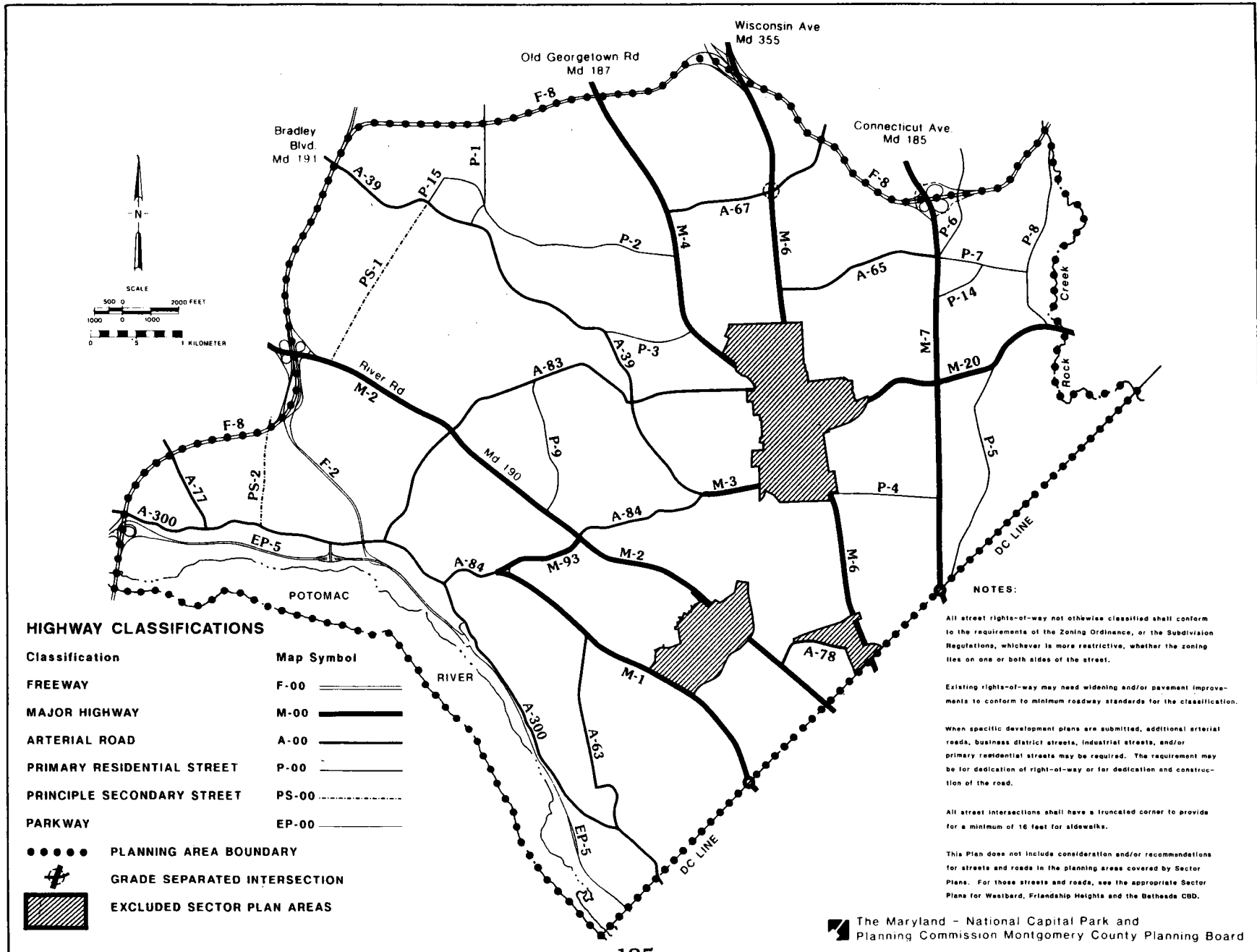


Table 14
STREET AND HIGHWAY CLASSIFICATION

| Master Plan Designation | Name | Limits | Minimum Right-Of-Way Width | Ultimate Pavement Width Or Number Of Lanes (for consideration beyond Master Plan) |
|-------------------------|---------------------------------|---|----------------------------|---|
| Parkway | | | | |
| EP-5 | George Washington Memorial Pkwy | I-495 to D.C. Line | varies | - |
| Freeway | | | | |
| F-2 | Cabin John Pkwy (I-495X) | I-495 to George Washington Memorial Pkwy | varies | 4 lanes divided |
| F-8 | Capital Beltway (I-495) | Potomac River to Rock Creek Park | varies | 6 to 8 lanes |
| Major Highways | | | | |
| M-1 | Massachusetts Ave (MD 396) | Goldsboro Rd to Western Ave | 120' | 4 lanes |
| M-2 | River Rd (MD 190) | Capital Beltway to Ridgefield Rd | 150' | 4 to 6 lanes |
| | | Little Falls Pkwy to Western Ave | 100' | |
| M-3 | Bradley Blvd (MD 191) | Goldsboro Rd to Wisconsin Ave | 120' | 6 lanes |
| M-4 | Old Georgetown Rd (MD 187) | Capital Beltway to Bethesda CBD Boundary Line | 120' | 6 lanes |
| M-6 | Wisconsin Ave (MD 355) | Capital Beltway to Chestnut St | 120' | 6 to 8 lanes |
| | | Bradley Lane to Western Ave | 120' | 6 lanes divided |
| M-7 | Connecticut Ave (MD 185) | Capital Beltway to Western Ave | 120' | 6 lanes |

Table 14 (Cont'd.)
STREET AND HIGHWAY CLASSIFICATION

| Master Plan Designation | Name | Limits | Minimum Right-Of-Way Width | Ultimate Pavement Width Or Number Of Lanes (for consideration beyond Master Plan) |
|-------------------------|----------------------------|---|----------------------------|---|
| M-20 | East-West Hwy (MD 410) | Bethesda CBD Boundary Line to Planning Area Boundary Line | 120' | 4 lanes |
| M-93 | Goldsboro Rd (MD 614) | Massachusetts Ave to River Rd | 120' | 4 lanes |
| Arterials | | | | |
| A-39 | Bradley Blvd | Planning Area Boundary Line to Goldsboro Rd | 100' | 2 to 4 lanes |
| A-63 | Sangamore Rd | Massachusetts Ave to MacArthur Blvd | 80' | 48' |
| A-65 | Jones Bridge Rd | Connecticut Ave to Wisconsin Ave | 80' | 48' |
| A-67 | Cedar La/ W. Cedar La | Planning Area Boundary Line to Old Georgetown Rd | 80' | 48' |
| A-77 | Persimmon Tree Rd (MD 191) | Planning Area Boundary Line to MacArthur Blvd | 80' | 48' |
| A-78 | Willard Ave | River Rd to Friendship Blvd | 80' | 48' |
| A-83 | Wilson La (MD 188) | MacArthur Blvd to Bethesda CBD Boundary Line | Varies | 2 lanes* |
| A-84 | Goldsboro Rd | River Rd to Bradley Blvd | 80' | 48' |
| | | MacArthur Blvd to Massachusetts Ave | 80' | 2 lanes* |

Table 14 (Cont'd.)
STREET AND HIGHWAY CLASSIFICATION

| Master Plan Designation | Name | Limits | Minimum Right-Of-Way Width | Ultimate Pavement Width Or Number Of Lanes (for consideration beyond Master Plan) |
|-------------------------|-----------------|---|----------------------------|---|
| A-300 | MacArthur Blvd | Planning Area Boundary Line to D.C. Boundary Line | Varies | 2 lanes* |
| Primaries | | | | |
| P-1 | Fernwood Rd | Planning Area Boundary Line to Bradley Bld | 70' | 36' |
| P-2 | Greentree Rd | Burdette Rd to Old Georgetown Rd | 70' | 36' |
| P-3 | Huntington Pkwy | Bradley Blvd to Old Georgetown Rd | 100' | 2 lanes divided |
| P-4 | Bradley La | Wisconsin Ave to Connecticut Ave | 70' | 36' |
| P-5 | Brookeville Rd | Western Ave to East-West Hwy | 70' | 36' |
| P-6 | Kensington Pkwy | Jones Bridge Rd to Planning Area Boundary Line | 70' | 36' |
| P-7 | Jones Bridge Rd | Connecticut Ave to Jones Mill Rd | 70' | 36' |
| P-8 | Jones Mill Rd | East-West Hwy to Planning Area Boundary Line | 70' | 36' |
| P-9 | Whittier Blvd | River Rd to Wilson La | 70' | 36'** |
| P-14 | Manor Rd | Connecticut Ave to Jones Bridge Rd | 70' | 36'** |
| P-15 | Burdette Rd | Bradley Blvd to Greentree Rd | 70' | 36' |

Table 14 (Cont'd.)
STREET AND HIGHWAY CLASSIFICATION

| Master Plan Designation | Name | Limits | Minimum Right-Of-Way Width | Ultimate Pavement Width Or Number Of Lanes (for consideration beyond Master Plan) |
|-------------------------|------|--------|----------------------------|---|
|-------------------------|------|--------|----------------------------|---|

Principal Secondary

| | | | | |
|------|----------------|--------------------------|-----|-----|
| PS-1 | Burdette Rd | Bradley Blvd to River Rd | 70' | 26' |
| PS-2 | Seven Locks Rd | I-495 to MacArthur Blvd | 60' | 26' |

- * This Plan recognizes that MacArthur Blvd and Wilson La function as arterial roads but recommends that they not be widened to urban standards. This also applies to Goldsboro Rd, from MacArthur Blvd to Massachusetts Ave. See Plan for discussion.
- ** This Plan recognizes that these newly classified streets function as primary streets.

Note: See the appropriate Sector Plan for street classification or specific transportation recommendations within each sector plan area.

| | |
|----------------|--|
| Seven Locks Rd | secondary residential street to principal secondary street between I-495 and MacArthur Blvd |
| Leland St | primary residential street to secondary street between the Bethesda CBD and East-West Hwy |

4.3 Transportation Analysis

An issue of great concern in preparing this Plan is whether the Master Plan's end-state land use recommendations can be adequately served by the recommended transportation system of the Master Plan. The following discussion presents some of the results of the transportation analysis of the land use plan. The results are viewed from the perspective of areawide congestion levels and a generalized pattern of more localized congestion levels throughout the B-CC area.

4.31 Areawide Analysis

In order to predict future average congestion levels for the Bethesda-Chevy Chase Planning Area, an approach was used that is comparable to that of the Annual Growth Policy to set Annual Staging Ceilings. This approach involves the use of: (a) a regional transportation model, with extra detail in Bethesda-Chevy Chase and adjoining areas, (b) the establishment of a standard of an acceptable average level of congestion, and (c) a comparison of average congestion levels resulting from the proposed land use plan against the standard of acceptable congestion.

Regional Context of the Analysis

Today, as well as in the future, traffic and congestion levels in the B-CC area depend upon many things. Among them are the location, mix and intensity of local development and transportation facilities within the area. Development levels and transportation facilities in the larger region beyond the B-CC area also play a major role in the levels of traffic and congestion

within B-CC. Therefore, in order to assess future congestion levels in B-CC, techniques are needed that account for these larger, regional traffic patterns. With that in mind, staff has adapted the regional transportation modeling system being used in the Countywide Annual Growth Policy for use in the areawide analysis of the proposed land uses within the B-CC area.

That adaptation considered land use activity and master-planned transportation facilities throughout the County and the greater Washington region. To do otherwise would result in travel patterns and traffic flows which would not be representative of Bethesda-Chevy Chase's relative location in the larger region.

Standard of Acceptable Congestion

The FY 89 Annual Growth Policy (AGP) has determined that Bethesda-Chevy Chase and Bethesda CBD Policy Areas are Group V areas, which means they have full transit service. The AGP sets the policy that a Group V area has an *Average Level of Service* Standard of LOS D/E for the standard of acceptable congestion.

This transportation analysis recommends that the appropriate standard of acceptable congestion, for the time frame of the B-CC Master Plan, should continue to be a Group V area with an Average Level of Service D/E Standard. That standard should also apply to the Bethesda CBD area and is consistent with the standard used in the cordon analysis for the *Bethesda CBD Sector Plan*. The cordon analysis establishes traffic capacity based on 10 major roadway exit points from the Bethesda CBD. The standard for acceptable local intersection congestion should continue to be the mid-point of Level of Service E.

Table 15 shows the correspondence between transit availability and Average Level of Service Standards. The columns describe a spectrum of transit service availability for various types of transit such as bus based systems, fixed-guideway

Table 15

CORRESPONDENCE BETWEEN TRANSIT AVAILABILITY AND AVERAGE LEVEL OF SERVICE STANDARDS

| Average Level of Service Standards | Group Classifications | Public Transport Alternatives to Automobile Travel | Transit Services Available or Programmed | | | | |
|------------------------------------|-----------------------|--|--|--------|--|---|--|
| | | | Auto Dependent System Park/Ride Access | and/or | Bus Based Systems | | Fixed Guideway Systems Commuter Rail or Light Rail Metrorail |
| | | | | | Community and Local Bus Service | Regional Park/Ride Express Bus and High Occupancy Vehicle Priority Systems | |
| * | I | Marginal to stations or | Marginal access available bus routes outside of the area | | Not Available | Not available | Marginal amount of the area is within walk access |
| \bar{C} | II | Limited | Limited number of park/ride spaces | | Limited coverage and frequency | Limited park/ride spaces or lots with local bus service | Limited park/ride access and walk access |
| \bar{C}/\bar{D} | III | Moderate | Moderate number of park/ride spaces, limited kiss/ride service | | Moderate coverage, service limited to policy frequencies | Moderate express bus service in conjunction with a system of park/ride lots | Moderate parking or walk access with system transfers |
| \bar{D} | IV | Frequent | Moderate park/ride spaces and moderate kiss/ride service | | Moderate coverage, combined policy and frequent demand-based service | Priority treatment for frequent express buses, local circulation feeder services in conjunction with a system of park/ride lots | Same as Group III above |
| \bar{D}/\bar{E} | V | Full | Limited park/ride with full reliance on kiss/ride access | | Full area coverage and a large number of routes with frequencies based on demand | Same as Group IV above | Same as Group III above |
| * | VI | Expanded | Expanded park/ride with reliance on kiss/ride access | | Expanded bus frequencies; 100 buses in PM peak | Same as Group IV above | as Group III above |
| | | | | | | | Designated CBD; controlled parking; Transportation Mgmt. District |

* See Text of the Recommended FY 89 AGP for Methods and Standard of Measuring Traffic.

systems and auto dependent transit systems. The rows show how the different degrees of available transit services correspond to different standards of *Average Levels of Service* for areas such as Master Plan areas.

For a better understanding of the standard of acceptable congestion, it is helpful to briefly elaborate on the measure that is being used to describe the concept — that of an average Level of Service. Level of service is an estimate of the quality of the traffic operations of a particular intersection or roadway segment. If one imagines oneself at the top of a tall building or in an aircraft looking down at many intersections or roadway segments that cover a large area, then the idea of an average Level of Service is one that represents the quality of the traffic operations throughout that whole area. Some intersections or roadway segments are less congested than the average, many are operating at the average, and some are more congested than the average. Thus, the average measure is a convenient indicator for comparing alternatives and monitoring conditions over time. For many purposes, it is still important to consider the patterns of localized congestion and Level of Service at particular locations.

Conditions might be such in the future that the Bethesda CBD could be considered an area of “expanded” transit services, and thus eligible for a Group VI standard for Average Level of Service. To meet Group VI criteria, several basic conditions beyond the currently programmed transit services would need to occur. (See Table 15.) First would be the establishment of a Transportation Management District such as the one recently implemented for the Silver Spring CBD. The second would be a significant increase in bus service with extra routings and greater frequencies on existing routes such that in total there would be more than 100 buses per hour serving the Bethesda CBD. If transit services are provided along the Georgetown Branch, they could be considered as adding to that amount of locally destined transit service. However, a transitway in and of itself would not be sufficient to classify the Bethesda CBD as a Group VI area. The next update of the Bethesda CBD Sector Plan should evaluate in more detail what

should be the appropriate Level of Service standard for that area.

Comparison of Average Congestion Level to the Standard

In this analysis, three basic development level alternatives have been analyzed. A comparison of the resulting average Level of Service estimate for each of these development level alternatives was made against the standard of Average Level of Service D/E, discussed above. This comparison shows that the first two development level alternatives, the low and moderate alternatives, would have acceptable average Level of Service conditions at the standard or somewhat less congested than the areawide standard.

The analysis for the third alternative, the high developmental level alternative, shows that it would probably have average Level of Service conditions that would be somewhat more congested than the average Level of Service standard of LOS D/E. It is possible that the high development level alternative, in combination with appropriate transportation improvements, might have an acceptable areawide congestion level.

The assessment of whether the Master Plan's land use plan can be adequately served by its transportation plan was done at a finer level of detail than just an areawide average. The remaining part of the transportation analysis considers the general pattern of changes in local congestion levels throughout different parts of the B-CC area.

4.32 Patterns of Localized Congestion

Travel demands and patterns, the capacities of transportation facilities and services, and the resulting use of those facilities are not uniform throughout the B-CC area nor will they be in the future. So, just as some parts of the roadway system in B-CC are presently more congested than others the situation will be similar in the future. Thus two basic questions arise. First, what will be the particular pattern of localized conges-

tion associated with the land use and transportation recommendations of the Master Plan? Second, will those particular localized congestion levels be acceptable?

The results of the areawide transportation analysis of the moderate growth land use/transportation alternative were examined for the expected pattern of localized congestion. Several generalizations can be made:

1. The Capital Beltway around the northern and western border of the B-CC area, an interstate freeway, will tend to operate at a more congested condition than most highways within the B-CC area. The most congested section will likely be the American Legion Bridge over the Potomac River and the section of the Beltway from River Road to the split to I-270. The least congested section is expected to be that part of the Beltway from the I-270 West Spur to Wisconsin Avenue (MD 355).
2. Within the B-CC area, the major highways are expected to be more congested than the other parts of the highway system. Most of these major highways will have LOS D and LOS E operating conditions, although some LOS F conditions might occur. The most congested sections of major highways will be: a) Connecticut Avenue north of East-West Highway, b) Old Georgetown Road between the Bethesda CBD and Huntington Parkway, c) East-West Highway from Leland Street to Brookville Road, and d) Wisconsin Avenue in the vicinity of Cedar Lane and Jones Bridge Road.
3. The eastern and northern part of the B-CC area are expected to be more congested than the western or southern portions of the area. While much of the expected congestion can be associated with the traffic going to and from the Bethesda CBD and the National Institutes of Health and the Naval Medical Command, a significant portion will be directly attributable to traffic passing entirely through B-CC. For example, a significant proportion of the estimated traffic on Connecticut Avenue, about 40 percent of the traffic just south of the Beltway, will be through traffic independent of the level of development within the area. Additional Master Plan strategies to reduce such through traf-

fic could result in less severely congested overall traffic in the northeastern part of the B-CC area.

4. The north-to-south radial highways are expected to be more congested than the east-to-west circumferential highways. Highways such as Connecticut Avenue, Wisconsin Avenue, Old Georgetown Road, River Road, and Massachusetts Avenue will tend to be more congested than east-west roads such as Wilson Lane and Goldsboro Road. While much of the traffic contributing to that congestion can be attributed to local residential and employment development within B-CC, through traffic would be expected to continue to be a major contributor to the congestion. In addition to the example already cited above for Connecticut Avenue, it is estimated that 40 to 50 percent of the traffic on River Road would be traffic passing through the B-CC area.

The eastern and northern part of the B-CC area are expected to be more congested than the western or southern portions of the area.

5. Traffic conditions around and approaching the Bethesda CBD and NIH may be more congested than the conditions within the Bethesda CBD. The results of the transportation analysis indicate somewhat greater congestion levels in areas outside the employment centers than within the employment centers. However, the analysis method has not yet been adjusted to accurately reflect the details of traffic circulation and local traffic patterns within the CBD area. This is an issue which will need to be addressed more explicitly in the preparation of the Bethesda CBD Sector Plan update.

Another aspect of the pattern of localized congestion is comparison of the effects of the high development level alternative on congestion levels, with the effect of the recommended (moderate) development level alternative. Again, some generalizations can be made based upon the results of the transporta-

tion analysis. The main expectation is that the effects would be very dispersed with marginal impacts throughout the B-CC area. However, relative to the recommended (moderate) development level alternative, the extra increment of development for the high development level alternative would tend to increase traffic more on the major highways to the north and to the west of the Bethesda CBD, and encourage greater reverse

commuting from the District of Columbia. The overall effect on congestion would probably be most noticeable along River Road. The traffic from this extra increment of development would tend in several locations to change LOS E conditions to LOS F conditions. Such changes are predicted, but with less certainty, at a few isolated locations along Old Georgetown Road or Wisconsin Avenue.