

# **TRANSPORTATION**

**5**

## Chapter 5

### TRANSPORTATION

#### 5.1 INTRODUCTION

The extension of the Rockville line of the Metrorail Adopted Regional System (ARS), which includes a Metro transit station at Shady Grove, represents the first approved addition to the 98.5-mile system. Several public service facilities have been proposed for Shady Grove. Despite the fact the area consists mainly of large tracts of undeveloped land, severe traffic problems exist at present. Nevertheless, the Shady Grove sector plan provides for a greater degree of flexibility in transportation planning than exists for any other station area on the Rockville line. The transportation analysis for Shady Grove presents in detail the transportation impacts associated with the proposed Metro station, the county service park, and other land development activities. It also provides a basis for assuring the proper scheduling and coordination of projects within the area.

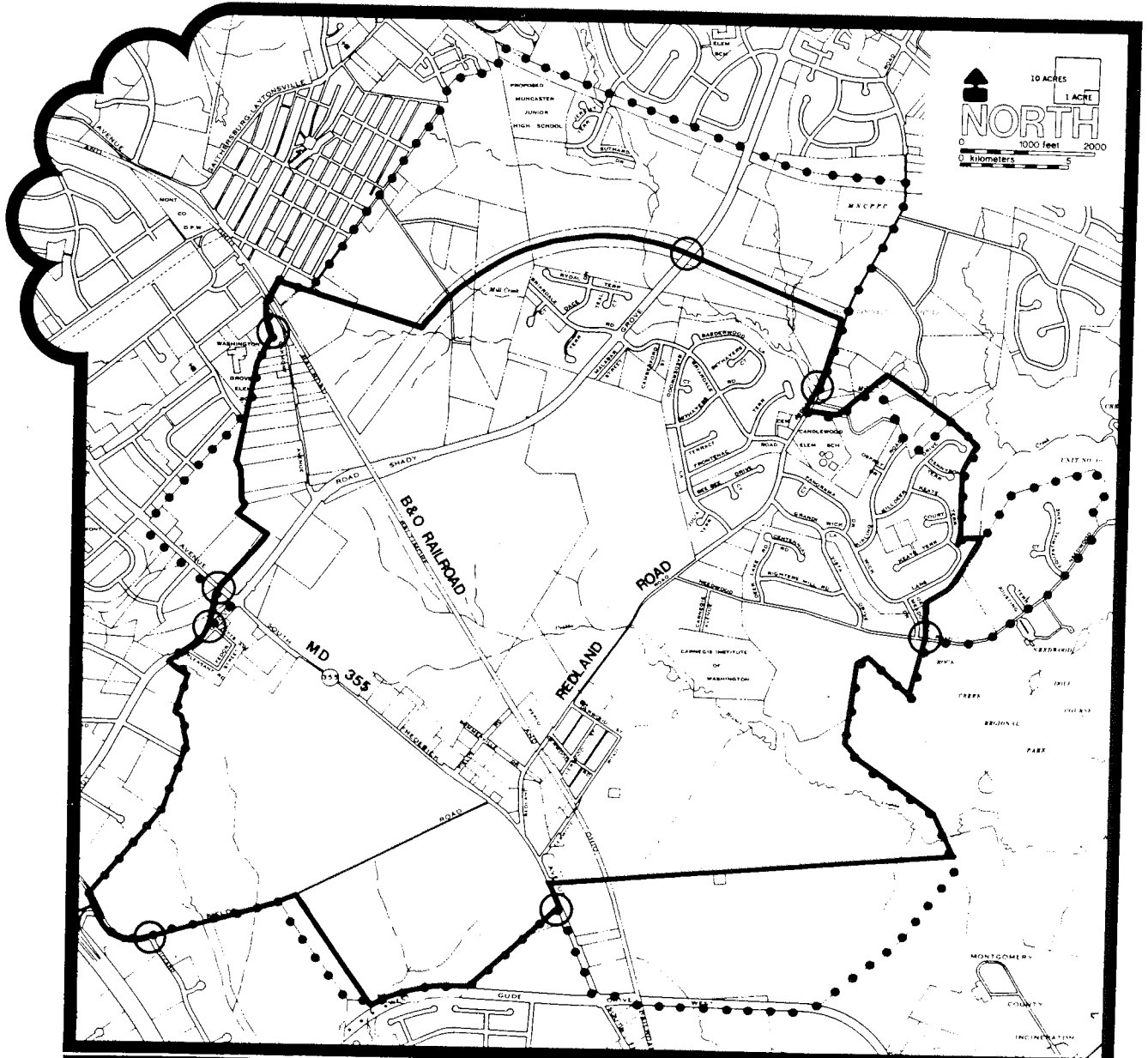
The analysis was applied to the area bounded by existing and proposed Gude Drive on the south, existing and proposed Gaither Road on the west, existing Shady Grove Road and the proposed outer beltway on the north and northeast, and Rock Creek Park on the east (See Figure 8 Transportation Analysis Area).

#### 5.2 EXISTING TRANSPORTATION SYSTEM

The existing highway network in the study area is characterized by two-lane roadways with grades, alignments, and widths inadequate for present traffic volumes. The exception is Shady Grove Road, which is a modern, four-lane, divided highway that provides access to I-270 and to adjacent commercial and industrial developments. This route, however, is severely restricted in the vicinity of the I-270 interchange, due to the single span across I-270 and the lack of a complete, free-flowing interchange. The major roadway elements, their general cross-sectional characteristics, and the traffic signal in the study area are shown in Figure 9.

As stated above, the traffic volume generally exceeds the capacity allowed for in the design. Average daily traffic (ADT) volumes for 1976 are depicted in Figure 10; the more critical peak-hour volumes in Figure 11. As in other sector plans, a peak-hour traffic analysis was made for the Shady Grove sector plan area to determine the level of service of the roadway system. The measure, "level of service," represents the ratio of traffic volume to carrying capacity of an intersection and is expressed in an alphabetical range of "A" to "F." Level D is the lowest level considered acceptable for planning purposes. A detailed explanation of the level of service methodology appears in Appendix B-1. Existing service levels in the Shady Grove study area during peak-hour periods are shown in Figure 11. The most critical, or most overcrowded, intersection is at Md. 355 and Shady Grove Road, which is now operating at service level E to F during morning and evening peak hour. Improvements to this intersection, beyond the widening of Md. 355 now underway, are being studied by the Maryland Department of Transportation as part of their Metro Access Study.

FIGURE 8

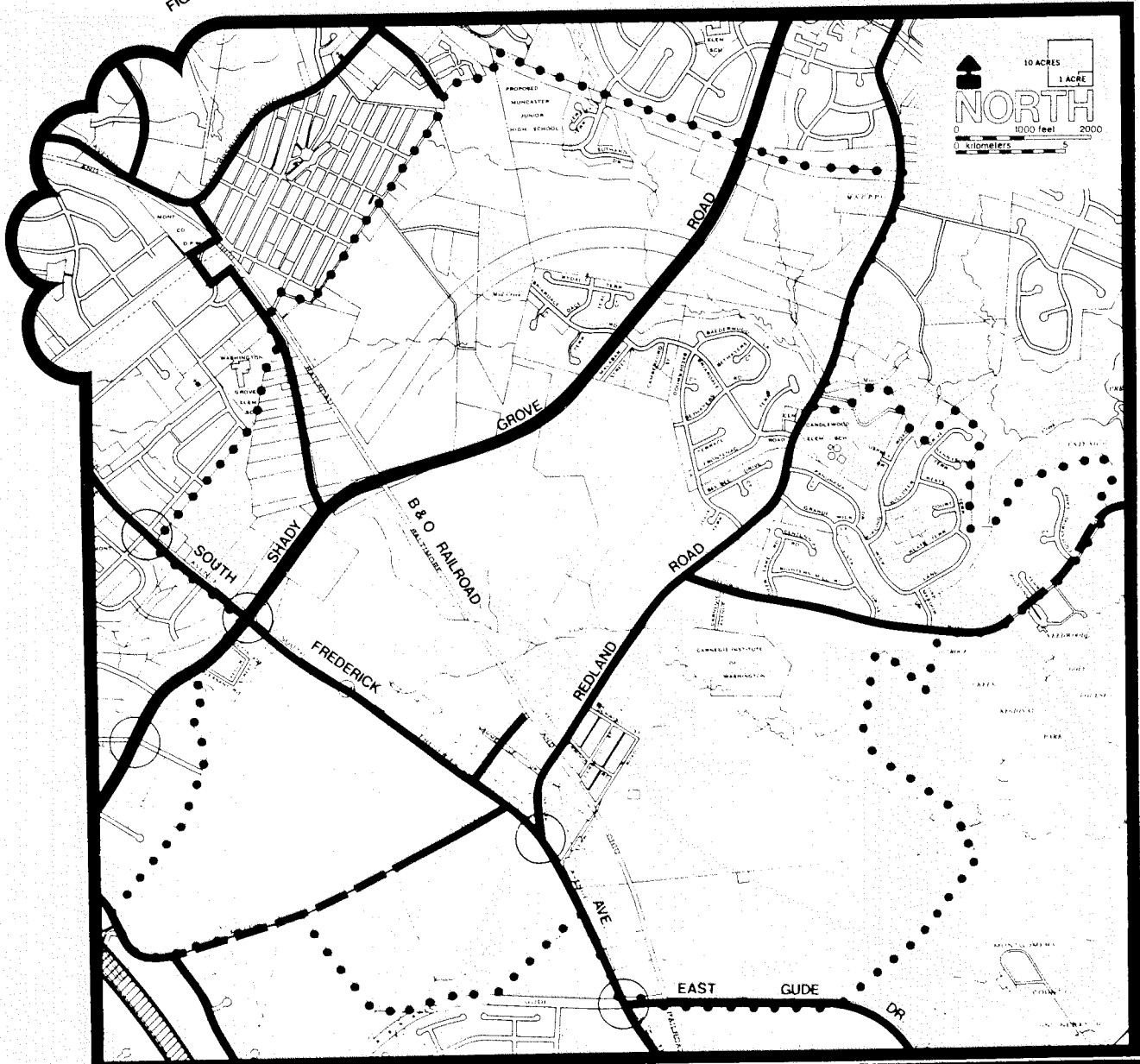


- General Extent of Traffic Analysis Area
- Cordon Stations / Traffic Count Stations
- ..... Sector Plan Boundary






## Transportation Analysis Area

**SHADY GROVE**  
SECTOR PLAN  
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FIGURE 9



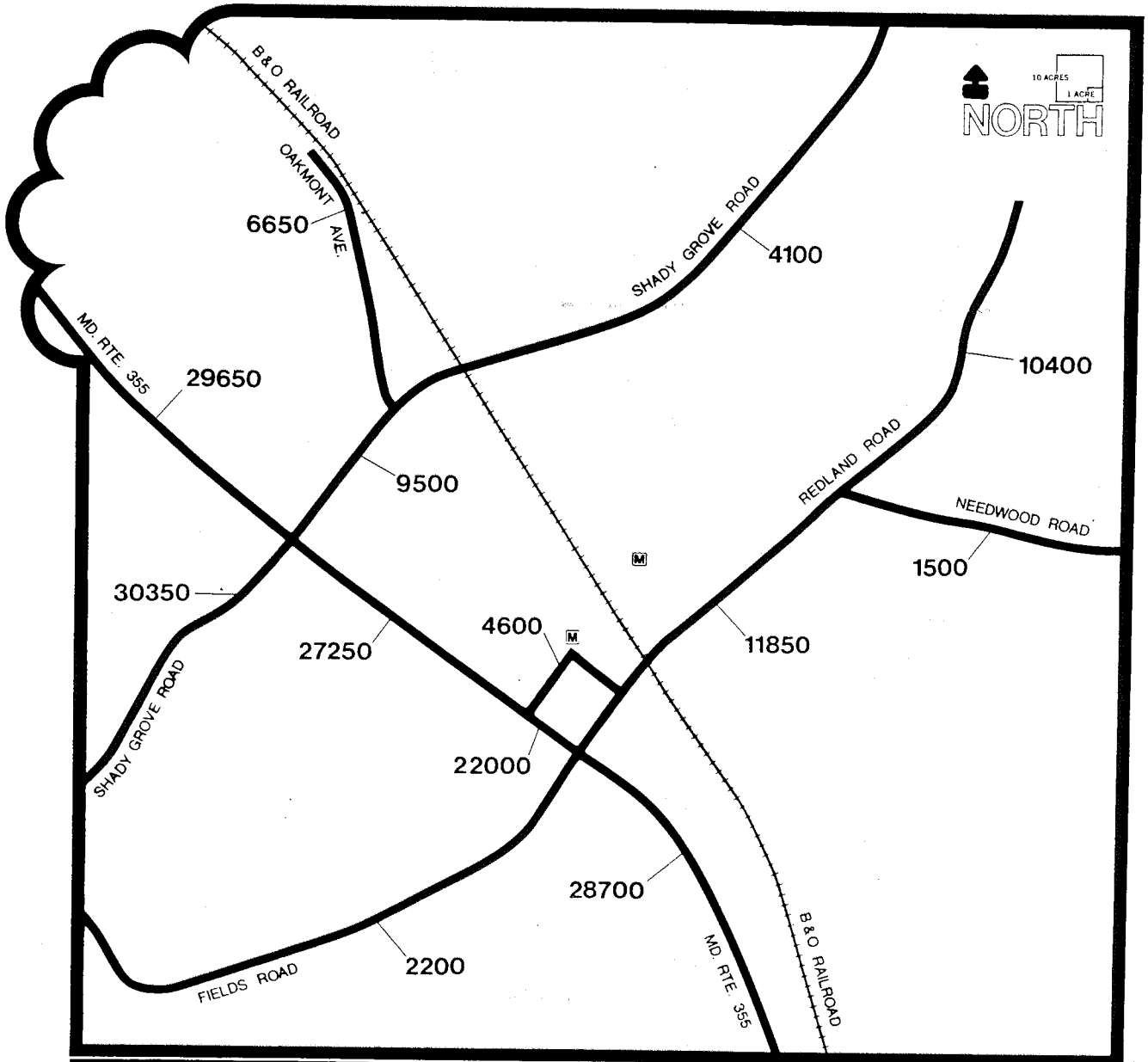
**Existing  
Roadway  
Network**

-  Unpaved Roadway
-  2-4 Lane Undivided Arterial
-  4-6 Lane Divided Arterial
-  Freeway
-  Traffic Signal

**SHADY GROVE**  
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FIGURE 10



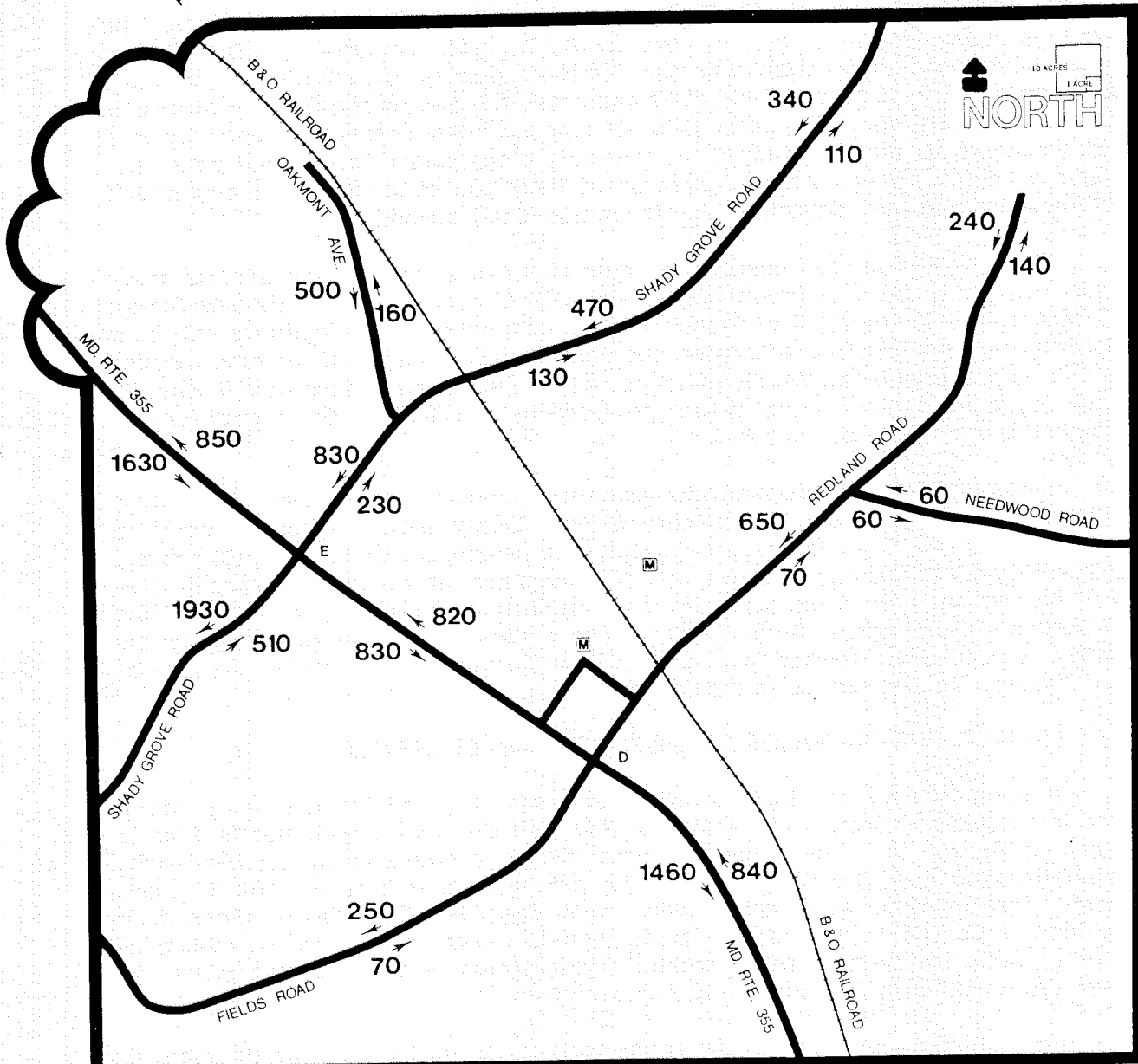
30350 Average Daily Traffic Volume (directional)

1976- Average  
Daily  
Traffic

**SHADY GROVE**  
**SECTOR PLAN**

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FIGURE 11



510  
 ← 7-8 AM Total Traffic Volume  
 (Corresponding PM Peak Hour Data Included in Appendix)  
 D/E Existing Level of Service

**1976 Total  
 Peak Hour  
 Traffic**

**SHADY GROVE**  
**SECTOR PLAN**  
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Metrobus operations in the Shady Grove area are limited to peak periods. The routes provide service from the down-county area to the Energy, Research and Development Administration and the National Bureau of Standards and from Montgomery Village to the Federal Triangle and the Southwest Mall. A Metrobus route map is shown in Appendix B-2. During each peak travel period, only five buses operate within the study area, generally along routes that do not penetrate major residential neighborhoods. Listings of these routes, their general origins and destinations, and their schedules also are included in Appendix B-2.

The B & O Railroad operates a commuter rail service in the general study area, with stations at Gaithersburg, Washington Grove, and Rockville (see Figure 12, Metro and Commuter Rail Systems). This commuter service operates only four morning inbound and four afternoon outbound trains. Additional morning inbound service is provided by an AMTRAK train, with stops at Gaithersburg and Rockville; however, there is no evening return provided by AMTRAK. The commuter rail schedule is shown in Appendix B-3.

Commuter rail has become increasingly popular in recent years. The latest survey, conducted by the Montgomery County Department of Transportation in September 1974, shows that approximately 250 passengers board at Gaithersburg, 15 passengers at Washington Grove, and 275 passengers at Rockville. Approximately 90 percent of these passengers ride to Union Station. Nearly all of the remaining 10 percent disembark at Silver Spring. The predominant mode of access to the system is automobile (either "park-and-ride" or "kiss-and-ride"), due to the lack of direct transit feeder service to the stations.

### 5.3 MASTER PLANS--MAJOR TRANSPORTATION ELEMENTS

A composite of the transportation elements proposed for the Shady Grove area in the Gaithersburg Vicinity Master Plan and the Rock Creek Master Plan is shown in Figure 13. The major elements include a Metro rapid rail extension, paralleling the B & O Railroad, I-270, the proposed outer beltway, Md. 355, the eastern arterial roadway (M-83), Shady Grove Road, and Gude Drive. Secondary elements proposed in the master plans include minor arterial roads, industrial streets, and primary residential streets. Typical cross sections characteristic of these types of highways are shown in Appendix B-4.

For a number of reasons, the framework established by the master plans is closely followed in the Shady Grove Transportation Analysis:

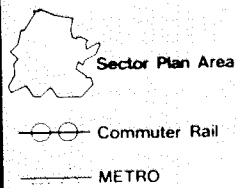
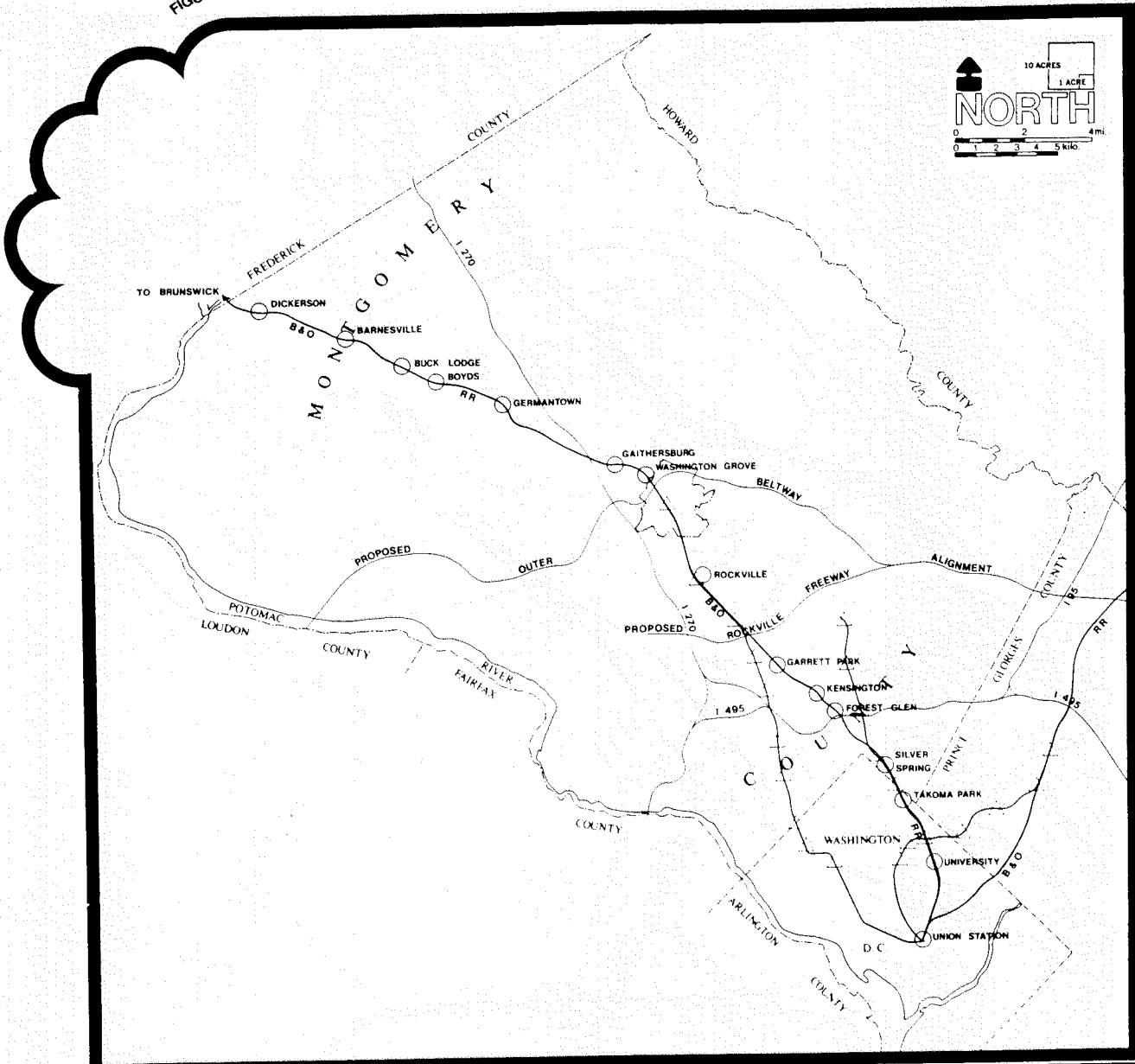
- \* Existing or committed development in this area has been predicted on the transportation network of the existing master plans.

- \* Much time and resources have been expended toward funding and implementation of the proposed transportation facilities. Foremost among these is the improvement of Md. 355 and the construction of Shady Grove Road Extended.

- \* Any unnecessary departures from the existing master plans would cause time delays and cost escalations.

This does not mean that the analysis was merely a reaffirmation of the existing master plans, but rather that the analysis recognized the need to develop a

FIGURE 12

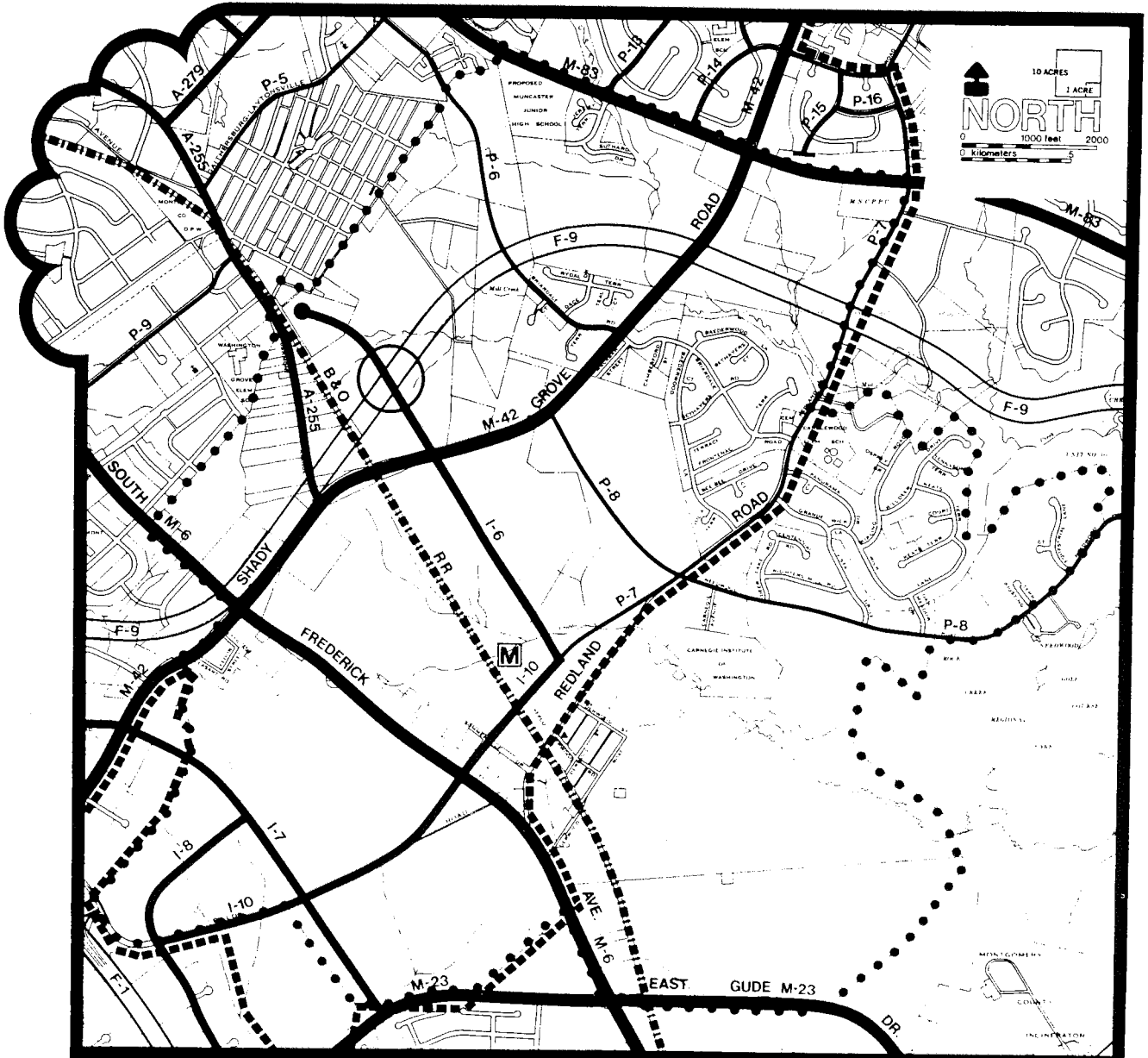


# Metro and Commuter Rail Systems

**SHADY GROVE**  
**SECTOR PLAN**  
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FIGURE 13



- Freeway
- Major Highway
- Arterial / Industrial Road
- Primary Street
- Interchange
- METRO Stop
- METRO and B&O RR
- Sector Plan Boundary
- Gaithersburg & Rock Creek Master Plan Boundaries

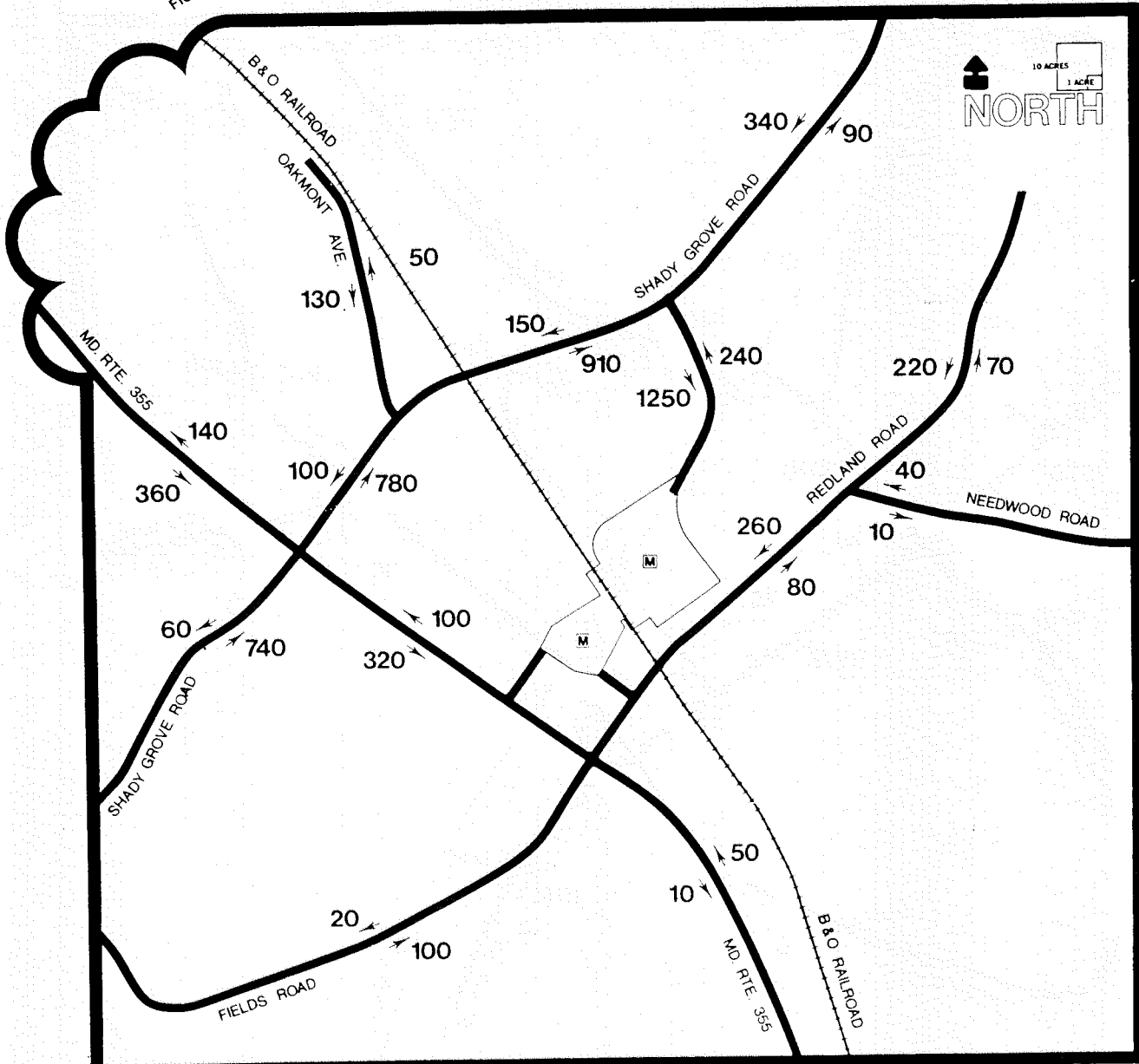
## Composite Gaithersburg Vicinity & Rock Creek Highway Plan

# SHADY GROVE

## SECTOR PLAN

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FIGURE 14



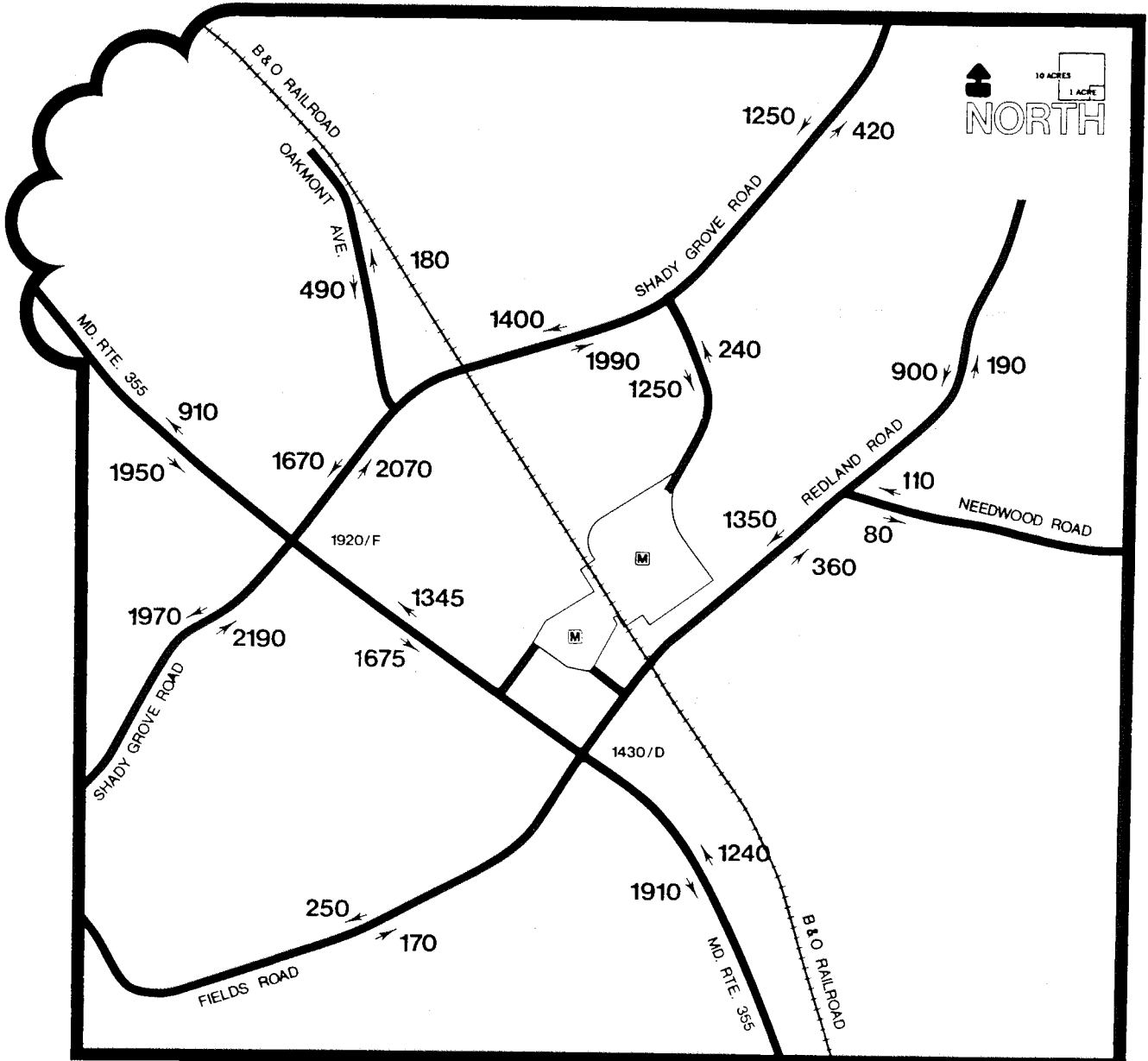
740 7-8 AM. Traffic Volumes

1984 Metro Traffic,  
Without - I-370  
 Connector Road

**SHADY GROVE**  
 SECTOR PLAN

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FIGURE 15



2190 7-8 AM. Traffic Volume  
 (Corresponding PM Peak Hour Data Included in Appendix)  
 1920/F Critical Lane Movements / Projected Level of Service

**1984 Total Traffic,  
 Without - I-370  
 Connector Road**

**SHADY GROVE**  
**SECTOR PLAN**  
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sector plan based on existing and committed elements, unless there was an overriding and justifiable reason for modifying these elements.

#### 5.4 TRANSPORTATION ANALYSIS

Due to the large amounts of undeveloped land and the differing transportation characteristics of each proposed activity within the Shady Grove transit station area, a cordon traffic analysis was undertaken prior to preparation of the sector plan. This technique, applicable to small-area analysis, identifies the specific elements of the transportation demand, aggregates the individual components of the demand, and then evaluates the impact on the overall system. A more detailed description of the cordon study process is included in Appendix B-5.

Since the planning time horizon of this analysis is 1984, future land uses and roadway networks were assumed for that date. Land uses were translated into numbers of dwelling units or employees. The associated traffic demand was then derived by applying accepted trip-generation factors to this land-use information. Initially, the 1984 roadway network was assumed to consist of the existing system plus those projects included in the State Five-Year Improvement Program for 1976-1980 and the County Capital Improvements Program for FY 76-81. Additionally, it was assumed that a Metro access road will extend from Shady Grove Road to the east parking area.

The projected Metro rider demand is based on estimates made by the staff of the Washington Metropolitan Area Transit Authority (WMATA) during preliminary analysis of the proposed Metro rail extension. It is estimated that approximately 22,000 people will use the Shady Grove station in each 24-hour period. During the morning peak hour, it is expected that 1100 people will arrive in private cars and park; about 270 people will car pool and park; 300 people will use "kiss-and-ride"; 1500 people will arrive by bus; and 20 people will walk to the station. The estimated distribution and assignment of these vehicle trips to the initial 1984 network is shown in Figure 14.

##### 5.41 Problem Areas and Alternative Solutions

After considering all travel factors, traffic volumes were estimated for the principal roads making up the planned 1984 highway network. The traffic volumes and levels of service for the peak periods considered in the analysis are shown in Figure 15. In 1984, the Md. 355-Shady Grove intersection will still present the greatest traffic problem, primarily because of the volume of Metro-related traffic on Shady Grove Road, the only major connector to I-270. As the diagram indicates, this intersection will be extremely congested during all peak periods. The total of conflicting or critical movements for the morning peak hour alone is approximately 20 percent above capacity and 32 percent above acceptable service levels. Other intersections in the network are shown to be operating generally at acceptable levels of service. Unless relief can be provided to the intersection at Md. 355 and Shady Grove Road, delays and queuing of traffic will disrupt these intersections and lower their service levels.

A number of alternatives were considered to alleviate this problem, including some suggested by members of the Advisory Committee:

- \* Grade separation of the intersection at Md. 355 and Shady Grove Road;
- \* Development of Fields Road as a major artery to serve Metro;
- \* Further expansion of transit feeder service to Metro by bus and/or commuter rail; and
- \* Provision of a separate limited-access roadway from I-270 to the Metro station.

#### 5.42 Md. 355-Shady Grove Road Grade Separation

This alternative provides for a full or partial interchange to eliminate many of the conflicting turning movements and the resulting traffic delays at the intersection. After considering topographical limitations, operational design, and relationship to the adopted outer beltway alignment, two interchanges were developed (schemes of these two plans are shown in Appendix B-6). Problems associated with this alternative include an estimated \$12 million cost, a prolonged construction period, and restricted access to abutting properties. In addition, relief provided by this proposal would not be fully realized, since congestion would subsequently be transferred to adjacent intersections along Shady Grove Road.

#### 5.43 Fields Road Improvements

A second alternative proposes that Fields Road be improved as a major artery connecting I-270 to Md. 355, providing an alternate route for Metro-related traffic. Problems with this scheme center in the Fields Road connection at the I-270-Shady Grove Road interchange. Providing a full, free-flowing interchange for both Shady Grove and Fields Roads at this location would require costly acquisition of large amounts of land, most of which is already developed or committed to development. Further, Fields Road is needed to serve future industrial uses planned west of Md. 355.

#### 5.44 Expanded Transit Feeder Service to Metro

A third alternative proposes to increase bus and/or commuter rail feeder service beyond planned programs. In the development of the Metro mode-of-arrival estimates, it was projected that there would be approximately 100 peak-hour feeder buses serving this station, which represents a substantial increase over existing bus service. The relatively large demand for auto access is due to the extensive size of the service area of this station and to the low residential density of the area it serves. The further expansion of bus service would become economically prohibitive due to this low density of residential development. Therefore, it does not appear feasible to provide additional bus feeder services beyond the level now programmed.

The proposal to expand commuter rail service significantly is also limited in other respects. Due to the additional transfer time, a commuter rail feeder system

would be generally attractive only to those patrons coming from the areas north of Gaithersburg. For most commuters, it would be simpler to drive directly to the Shady Grove Metro station rather than drive to a commuter rail stop; park, board, travel to Rockville; and transfer to Metro. Additional problems include:

- Shortages of equipment;
- At-grade rail crossings with major thoroughfares;
- Lack of adequate access roads to most stations; and
- Infringement on freight-service track time.

Because of these factors, an extensive restructuring of the commuter rail system and service is not considered a feasible solution to the traffic problems in the vicinity of the Shady Grove station.

#### 5.45 Limited Access Metro Connection

This alternative proposes a limited access roadway extending from I-270 to the Metro access road, within the right-of-way of the proposed outer beltway. This proposal would not only alleviate the severe traffic-capacity problem, but would also reduce travel time to the Metro station, making the diversion from I-270 to the station more attractive. Forty percent of the patrons arriving at the station by auto are expected to use I-270; approximately 27 percent of the eastbound and southbound traffic at the critical intersection are expected to be Metro bound.

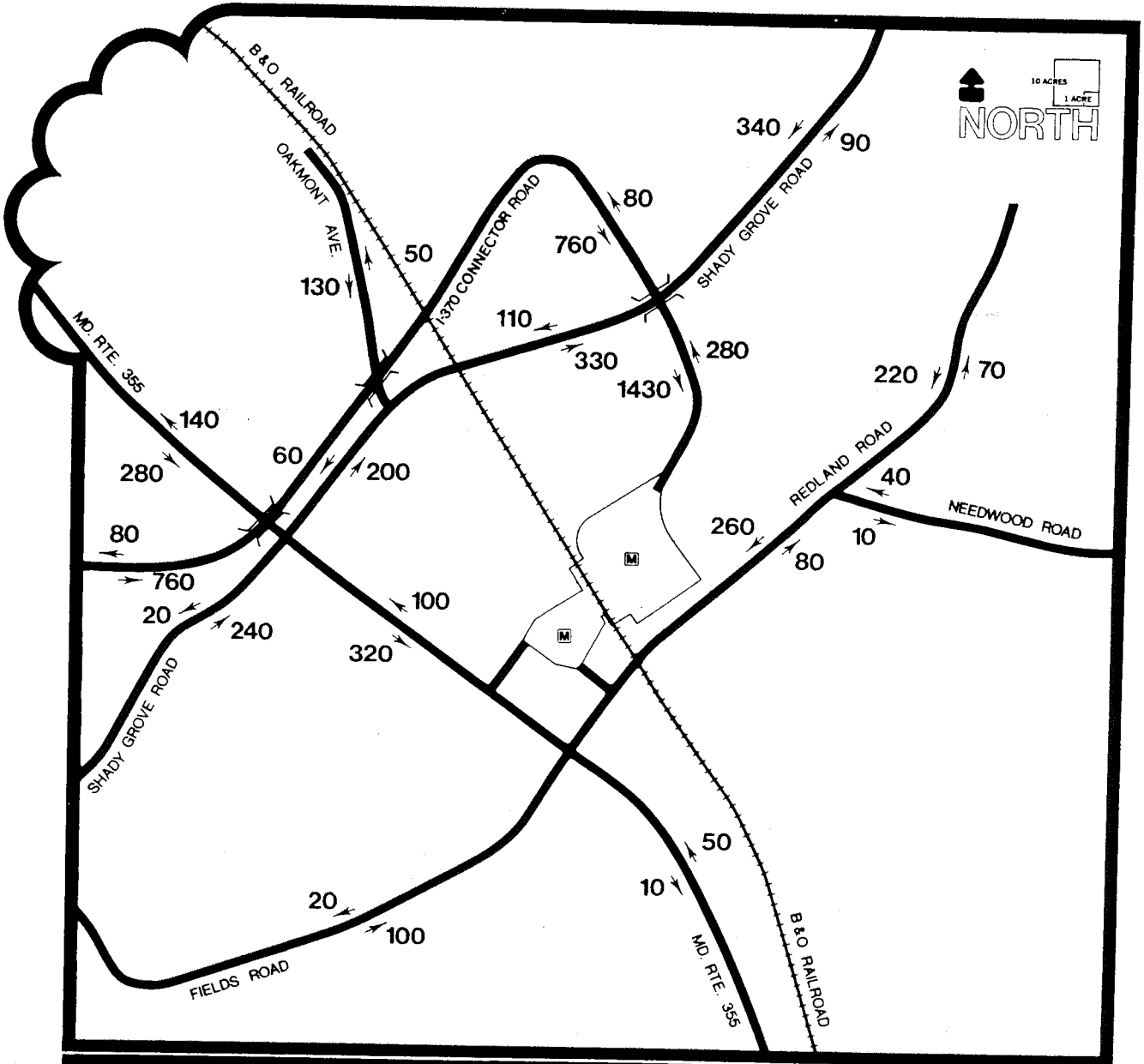
This proposal was added to the 1984 base network, and a recomputation of traffic assignments was made. The redistribution of Metro-bound traffic is shown in Figure 16, while the adjusted peak-period traffic volumes and service levels are shown in Figure 17. As the diagrams show, the addition of this proposal to the transportation system allows a significant amount of traffic to bypass the Md. 355-Shady Grove Road intersection, thereby alleviating the previous traffic problem. The direct connector, by providing reduced travel times from I-270, encourages additional auto diversion to the station and provides a rapid turn-around for feeder buses from I-270. This alternative provides the most feasible and desirable means of accommodating the projected travel demands while realizing the full advantage and potential of the Metrorail system.

### 5.5 PROPOSED TRANSPORTATION PLAN

#### 5.51 Primary Highway Network

The primary highways proposed in the Shady Grove Sector Plan consist of freeways, controlled major highways, and major arterials necessary to provide the proper balance between land use development and transportation demands for the region as well as the local area (see Figure 18). The basic components of this primary network are:

FIGURE 16



240 7-8 AM. Traffic Volume

1984 Metro Traffic,  
With I-370  
 Connector Road

**SHADY GROVE**  
 SECTOR PLAN

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\* Outer Beltway (F-9)

It is recommended that the outer beltway from I-270 to the Metro access road be constructed initially as a four-lane, divided freeway to serve as a rapid, limited-access connector to the Metro station with ultimate expansion to a six-lane divided freeway. The limited-access connector (I-370) is part of an interstate transfer proposal submitted by the Maryland Department of Transportation, which has received conditional Federal approval. It will be built according to Federal standards for a four-lane freeway. This project is critical to the successful operation of the Shady Grove Metro station since it will provide the necessary primary vehicular access. The importance for this type of service is underscored by the Maryland Department of Transportation's requirement that this road be part of its approved extension of the Metro system to Shady Grove. Appendix B-8 provides a more detailed explanation of the status of this project. In the environmental impact analysis conducted prior to final design of the I-370 Connector Road, consideration should be given to a design that would permit access to and from Md. 355 to provide better service to the central area of Gaithersburg. The ultimate right-of-way for this facility is a minimum of 300 feet.

\* Eastern Arterial Roadway (M-83)

The eastern arterial roadway is recommended as an ultimate six-lane, divided, controlled major artery. This road is included in the County's fiscal years 1977-82 Capital Improvements Program for initial construction as a two- or four-lane roadway from Shady Grove Road to Montgomery Village Avenue. This project will significantly improve access from the Montgomery Village and northeast Gaithersburg areas to the Metro station and the county service park. Construction of this road at the earliest opportunity is recommended. Construction of a two-lane road initially is being considered at present.

\* Md. 355 (M-6)

Maryland Route 355 is recommended for ultimate construction as a six-lane, divided major artery with five lanes through the City of Gaithersburg. The portion south of and including the Shady Grove intersection is included in the State Highway Administration's Five-Year Improvement Program, with construction underway at present. This project is critical since it provides the only north-south movement through the sector plan area.

\* Gude Drive (M-23)

Gude Drive is recommended for ultimate construction as a four- to six-lane divided major arterial road. The section west of Md. 355 is included in the County's Capital Improvements Program and the City of Rockville's Capital Improvements Program for initial construction as a two-lane road. The section east of Md. 355 is now a two-lane roadway. It is recommended that the West Gude Drive project be continued as planned and that a new project for the second parallel roadway along East Gude Drive be initiated in the Capital Improvements Program. This latter project is particularly critical since it may be necessary to disrupt the existing bridge over the B & O Railroad during Metro construction.

FIGURE 18



10 ACRES  
1 ACRE

**NORTH**

0 1000 feet 2000

0 kilometers 5

- Freeway
- Major Highway
- Arterial / Industrial Road
- Primary Street
- METRO & B&O RR
- Interchanges
- METRO Stop
- Sector Plan Boundary

# Proposed Transportation Plan

# SHADY GROVE SECTOR PLAN

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\* Shady Grove Road (M-42)

Shady Grove Road is recommended for ultimate construction as a four-to six-lane, divided major artery. The section of this road east of Md. 355 has recently been constructed as a four-lane road. This project is important because it is the major east-west highway through the sector plan area. It is recommended that the proposed reconstruction of the interchange I-270 and Shady Grove Road be immediately programmed by the Maryland Department of Transportation.

\* Metro Access Road (M-94)

The Metro access road is recommended as an ultimate four-lane, divided major artery, with grade separations. It is recommended that this roadway be constructed to link the Metro station with the proposed Metro connector road. It is further proposed that the segment north of Shady Grove Road, together with the interchange at the Metro connector road, replace the previously planned I-6 interchange as access to the outer beltway.

### 5.52 Secondary Highway Network

The secondary highway network consists of minor arterial roadways, industrial streets, and primary residential streets needed to provide the internal circulation and local-access requirements of the land-use plan (see Figure 18). With the exception of a few relatively minor changes, the sector plan recommendations are basically refinements of elements proposed in previous master plans. The basic components of the secondary network are:

\* Oakmont Avenue (A-255)

Extending from Shady Grove Road (M-42) to East Diamond Avenue within the City of Gaithersburg, this arterial roadway and proposed new bridge spanning the B & O Railroad will serve existing development in the area and will provide an additional grade-separated crossing of the railroad.

\* Proposed New Arterial Roadway (A-262)

Extending from Fields Road (I-10) to East Gude Drive (M-23), this arterial roadway, basically a southward extension of Crabb's Branch Way (I-6), will serve development within the Mobley and Gude tracts and will generally improve north-south circulation.

\* Crabb's Branch Way (I-6)

Extending from approximately 1200 feet north of Shady Grove Road (M-42) to Fields Road (I-10), this industrial street will provide access and circulation for the county service park and other industrial areas east of the B & O Railroad.

Particular attention should be given in the design of residential developments abutting A-262 to ensure that they are adequately set back and screened from the

roadway. Similarly, the road should be carefully designed to mitigate its impact on residential areas. Special attention may also need to be devoted to traffic controls and operational conditions on this road.

Extending from Redland-Fields Road to Shady Grove Road, the road will provide access for approximately 20 percent of the traffic from the county service park which will be traveling south. It will also provide a travel route parallel to Md. 355.

\* Gaither Road (I-7)

Extending from Shady Grove Road (M-42) to West Gude Drive (M-23), this street will provide access to the industrial areas west of Md. 355 and will generally improve north-south circulation in the area.

\* Piccard Drive (I-8)

Extending from West Gude Drive (M-23) to Md. 355 (M-6), this industrial street, previously proposed to extend only to Gaither Road, will provide access to existing and future development near I-270. The additional extension is intended to provide access to development west of Md. 355 by a secondary road and, hence, to discourage development with direct access to Md. 355. The intersection with Md. 355 is shown so as to coincide with a median break planned in the improvement of this roadway.

\* Fields Road (I-10)

Extending from Piccard Drive (I-8) to Crabb's Branch Way (I-6), this industrial street will provide additional access to areas west of Md. 355 and, with the new bridge over Metro and the B & O Railroad, will greatly improve east-west circulation in the area.

\* Derwood Road (I-4)

Extending from Md. 355 to the new proposed arterial roadway (A-262), this road will serve the industrial development along the railroad and the residential development farther east. The existing wooden bridge over the railroad should be replaced with a two-lane bridge.

\* Amity Drive (P-6)

Extending from Md. 124 to Crabb's Branch Way Extension (I-6), this primary residential street, realigned from previous plans, will provide access to residential areas north of the outer beltway. The proposed modification is intended to avoid affecting the existing residential developments through which it was previously routed. This road should be aligned as close as practical to the Outer Beltway alignment.

- Redland Road (P-7)

Extending from the eastern arterial roadway (M-83) to Crabb's Branch Way (I-6), this primary residential street will provide access to existing residential developments east of the Metro station area.

- Needwood Road (P-8)

Extending from the eastern arterial roadway (M-83) to just north of Redland Road (P-7); this primary residential street, no longer proposed to extend to Shady Grove Road, will provide access to the residential areas east of the Metro station, to Blueberry Hill School and Park, and to the Lake Needwood Park complex. Deletion of the previously proposed extension to Shady Grove Road is intended to minimize interference near the Metro access road and Shady Grove Road. Malabar Street and Bethayers Road will connect to Blueberry Hill School and Park but will not connect with Needwood Road.

- Miller Fall Road (P-13)

Miller Fall Road is a primary residential street, connecting Mill Creek Towne with Amity Drive and, thereby, to Gaithersburg-Laytonsville Road, Md. 124. Miller Fall Road and the extension of Amity Drive will be constructed by a private developer upon completion of the subdivision they will serve. There is concern that after this connection is made--which will undoubtedly happen before the eastern arterial roadway (M-83) is built--Miller Fall Road will provide a shortcut from Md. 124 through Mill Creek Towne to Shady Grove Road or existing Muncaster Mill Road. Therefore, signs should be placed along Miller Fall Road indicating "No Thru Traffic," until M-83 is completed.

- Proposed New Primary Residential Streets (P-28 and P-29)

Extending eastward from the proposed new arterial roadway (A-262), these residential streets will provide access and circulation for the residential areas proposed on the Gude and Mobley Tracts.

Table 2 summarizes street and highway classifications.

### 5.53 Metrorail and Metrobus

The extension of the Rockville Metro line to the vicinity of Shady Grove Road is an important element of a coordinated transportation system in the up-county area. The Shady Grove transit station represents the first major component of the mass transit system needed to support development of the I-270 corridor, as envisioned in the General Plan. By providing a viable and attractive transportation alternative, it will also contribute to the realization of various energy and environmental policy goals.

In addition to the extension of the Metrorail system to Shady Grove, the sector plan also includes a proposed transit easement for future extensions north toward Germantown and Clarksburg. This proposed easement, which parallels the west side of the B & O Railroad to the Md. 355 overpass, is intended to insure a right-of-way for future development.

The Metrobus feeder system for this station, now schematic and generalized, will evolve in greater detail as the rail system nears operation. In the development

TABLE 2

STREET AND HIGHWAY CLASSIFICATIONS

Project #	Name	Limits	Right-of-Way Width	Recommended # of Lanes
F-9	Outer Beltway	Maryland Route 355 (M-6) to Redland Road (P-7)	300'	6
M-83	Eastern Arterial	Maryland Route 124 (P-5) to Redland Road (P-7)	150'	4 - 6
M-6	Maryland Route 355	South Westland Drive to Gude Drive (M-23)	120'	6
M-23	Gude Drive	Gaither Road (I-7) to plan boundary	120'	4 - 6
M-42	Shady Grove Road	Comprint Court to Eastern Arterial (M-83)	120'	4 - 6
M-94	Metro Access Road	Outer Beltway (F-9) to Metro Station	150'	4
A-255	Oakmont Avenue	Shady Grove Road (M-42) to plan boundary	80'	4
A-262	New Road	Fields Road (I-10) to Gude Drive (M-23)	80'	4
I-4	Derwood Road	Maryland 355 (M-6) to New Road (A-262)	80'	4
I-6	Crabb's Branch Way	1200' North of Shady Grove Road (M-42) to Fields Road (I-10)	80'	4
I-7	Gaither Road	Gude Drive (M-23) to Shady Grove Road (M-42)	80'	4
I-8	Piccard Drive	Fields Road (I-10) to Maryland 355 (M-6)	80'	4
I-10	Fields Road	Piccard Drive (I-8) to Crabb's Branch Way (I-6)	80'	4

PRIMARY RESIDENTIAL STREETS - The alignments of primary residential streets are shown on the Zoning and Highway Plan only for illustrative purposes. At the time of subdivision review minor adjustments may be made to allow for flexibility of design. Primary residential streets have 70' rights-of-way with 24' of paving (open-section) or 36' of paving (closed section).

of this system, the sector plan recommends that two important concepts be considered:

\* First, that in addition to providing service and access to the station, the feeder system should be designed to provide efficient distribution from the station to major activity centers, including the proposed medical center, the National Bureau of Standards, and commercial centers, in the corridor. This recommendation is intended to encourage reverse commuting and to promote increased use of both Metrorail and the feeder system.

\* Second, that express service should be developed from the Germantown area as a forerunner to the future transit service proposed in the Germantown Master Plan. This service would use the (I-370) Connector Road to provide rapid access to the station. If demand warrants, preferential treatment along I-270 may be initiated as the next stage in development of this service.

Before the scheduled opening of the Shady Grove Metro station in 1981, it is recommended that express bus service be increased in the I-270 corridor. This service should connect with the Silver Spring and Grosvenor stations as they become operational, providing a forerunner to Metrorail service.

#### 5.54 Commuter Rail Station

In the initial development of the County Service Park, a new commuter rail station was proposed (see Figure 12, Metro and Commuter Rail Systems). This proposal, suggested prior to discussions of the Metrorail extension to Shady Grove, represented a logical attempt to improve rail transit service in the up-county area. As discussions and plans for the Metrorail extension proceeded, however, questions arose regarding the need for a commuter rail facility at this location. At subsequent worksessions of the Maryland Department of Transportation, the Washington Metropolitan Area Transit Authority and The Maryland-National Capital Park and Planning Commission, their staffs determined that with adoption of the Metrorail extension, neither a permanent nor an interim commuter rail facility at Shady Grove will be necessary.

Rather than proceed with construction of a new commuter rail station, it is recommended that development of Metro facilities in Rockville proceed and be used as a commuter rail facility prior to Metro's becoming operational. Subsequent to the opening of Metro, this station would then serve as the major interface between the Metro system and the commuter rail, with a second interface developed at Silver Spring. The general function of the system would then be as an up-county feeder to the radial Metro system, with a secondary function as a cross-county service linking Rockville and Silver Spring.

#### 5.55 Bikeways

##### Policy

While roadway activity is in its preliminary stages and land-use plans are being formulated, the development of a bikeway program in Shady Grove is most

important. The opportunity exists to incorporate bikeways into the initial land-development plans.

Montgomery County policy requires provisions for bike trails in conjunction with new road projects, where possible. Also, the state and county are in the process of developing plans for independent bike trails--trails not necessarily connected with road projects. The Maryland-National Capital Park and Planning Commission develops bike trails in its linear stream valley park system, with appropriate access to adjacent facilities. Shady Grove bike trails have been planned in accordance with these policies.

It is important that all parties involved in bikeway construction--state, county and private developers--commit themselves to a coordinated bikeway system that will serve not only the recreational but also the practical commuter and shopper needs of Shady Grove residents. Bike trail recommendations in this plan, therefore, emphasize both recreational and commuter needs.

The primary employment areas are located along Shady Grove Road west of Md. 355, along Md. 355, and along Oakmont Avenue (see Figure 6). The road-related bikeway system is designed to serve these employment-activity centers.

### Design

The design of bike trails and facilities, as well as proper signs, should be consistent throughout the area for safety of, and recognition by, the users. All bikeways should be located, designed, and constructed in compliance with applicable Montgomery County and/or M-NCPPC standards. It is also recommended that typical cross sections for proposed roads in new construction projects show the relative placement of bike-lanes for road-related bikeways.

### Types of Bikeways

A bikeway is defined as a facility or route that is explicitly designated for bicycle travel. There exists a full range of bikeway types--from exclusive paths to shared street routes. Two classes of routes are recommended within this sector plan area:

Type 1--Bike Paths. Independent bikeways on separate rights-of-way or easements, designated for exclusive use by nonmotorized bicycles.

A bikeway of this type is proposed along the Crabb's Valley Stream Park. This will be an eight-foot-wide bikeway.

Type 2--Bike Lanes. Restricted rights-of-way, designated for the exclusive or semi-exclusive use of nonmotorized bicycles, on roadways or sidewalks. The designation is made by striped pavement marking or by a physical barrier and signs. An example of this type of bike lane is proposed along Md. 355, a nine-foot bikeway including a five-foot-wide for bicycle traffic and four-foot-wide for pedestrian use. It will consist of a nine-foot-wide sidewalk/bikeway with five feet designated for bicycle traffic.



## 5.56 Proposed Bikeways (see Figure 19, Proposed Bikeway Plan).

### Road-Related Bike Lane Projects

There are four road-related bike lane projects in the Shady Grove area programmed at present: Md. 355, Needwood Road, Redland-Fields Road, and Crabb's Branch Way. The plan recommends that an additional county funded road-related bike lane be provided along new Shady Grove Road. This bike lane is desirable because an additional southwesterly bikeway is needed to link the core residential areas of Shady Grove to the existing and proposed industrial areas at Md. 355 and Shady Grove Road.

This project will cost approximately \$100,000. The plan also recommends that a county-funded bikeway link be provided from Washington Grove and Walnut Hill communities to Md. 355.

Five of the other bike lanes proposed in the plan are not being considered for funding. Some of these will be built by developers when the roads are constructed in developing areas. These include the following:

- A bike lane parallel to the existing Muncaster Mill Road.
- A bike lane along Gaithersburg-Laytonsville Road (Md. 124), to be constructed on a portion of the existing road right-of-way when it is abandoned after the relocation of new Md. 124.
- An extension of the bike lane parallel to Crabb's Branch Way, north of Shady Grove Road, which should include an independent bike path connecting to Brown Street in Washington Grove.
- A bike lane parallel to Amity Drive.
- A bike lane running along Fields Road, west of Md. 355, and continuing northward parallel to Gaither Road, thereby connecting new Redland-Fields Road with Shady Grove Road and the adjacent employment area.

### Independent Bike Path Projects

Being on separate rights-of-way, independent bike paths (in the sense of being constructed on or along road rights-of-way) are not road related. These bike paths are shown as desire lines on the bikeway map. They have not been designed or funded and their exact placement will depend on engineering feasibility, on building activity, and on the actual acquisition and development of parkland and conservation areas.

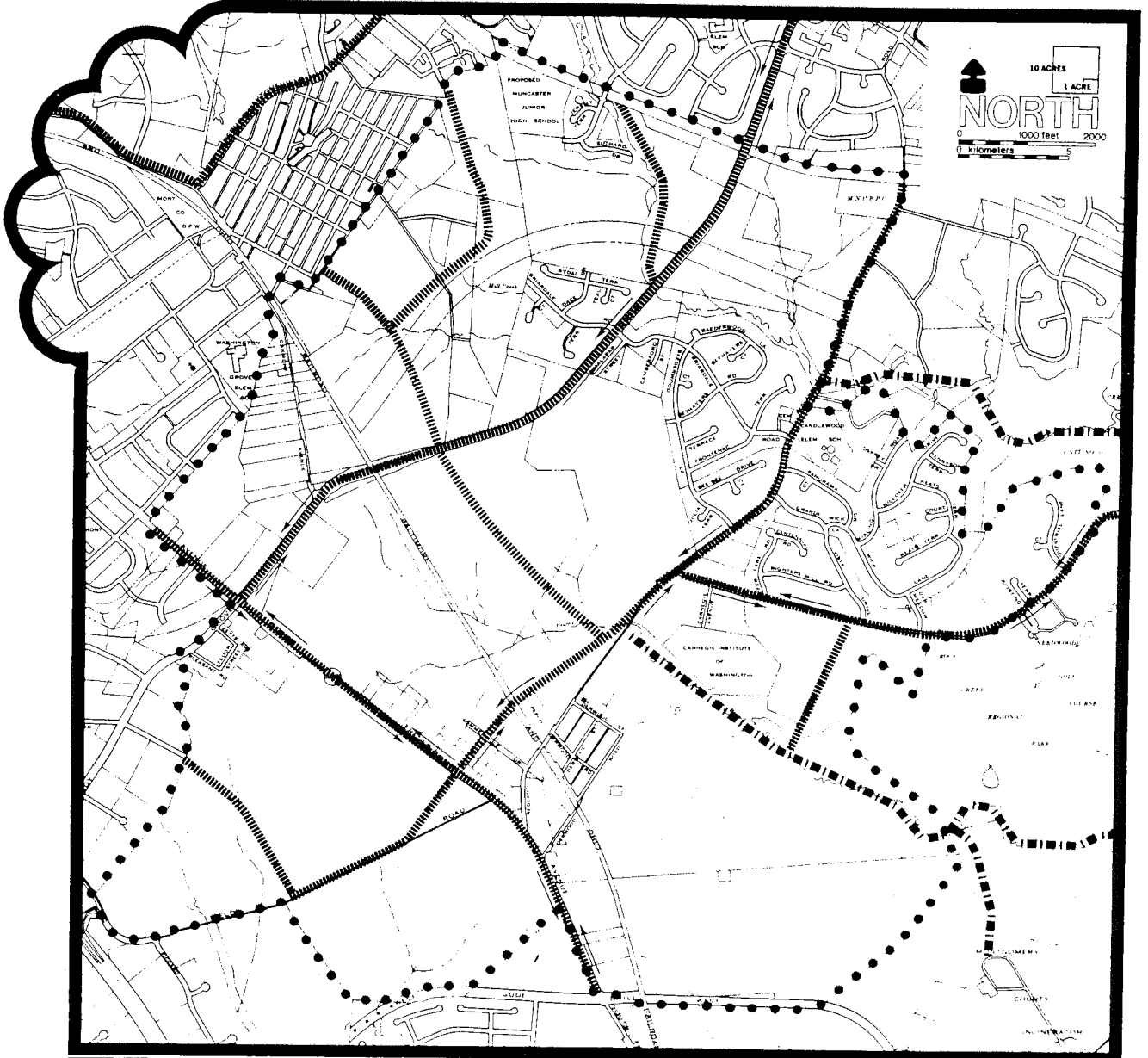
The bike paths are interconnecting and will serve community facilities, as well as existing and future residential areas where possible. They are also linked to the road-related bike lane system. The construction of these trails is the responsibility of The Maryland-National Capital Park and Planning Commission and of private developers. Three basic bike paths are proposed in this plan.

- A bike path along Mill Creek Stream Valley, connecting the Redland Road bike lane with Needwood Road at the entrance to Lake Needwood, including a proposed spur to link this bike path to Kipling Road in Candlewood Estates and thereby serving the Candlewood Elementary School.

- A bike path along Crabb's Branch Stream Valley, connecting Redland-Fields Road to the bike path proposed below Lake Needwood along Rock Creek, including a proposed spur connecting to the Gude landfill parcel, which is to be redeveloped for use for active recreation purposes.

- A bike path, connecting Crabb's Branch bike path with Needwood Road at Vista Drive, which may be constructed as a bike lane along future roads serving the subdivision as area development takes place.

FIGURE 19



- ||||| Bike Lane
- ▣▣▣▣ Bike Path
- Sector Plan Boundary

# Proposed Bikeway Plan

# SHADY GROVE SECTOR PLAN

THE MONTGOMERY COUNTY PLANNING BOARD