

Intersection Analysis

Possible Grade Separations

Following is a discussion of each intersection proposed to be grade-separated and a possible and feasible design. The schematic designs are illustrative only, since final design requires field study and survey. The design and proposed configuration may change as the result of this further study. Also, this study may indicate that equivalent at-grade solutions may work and are more appropriate. However, in all cases, the basic objective is to facilitate through movements.

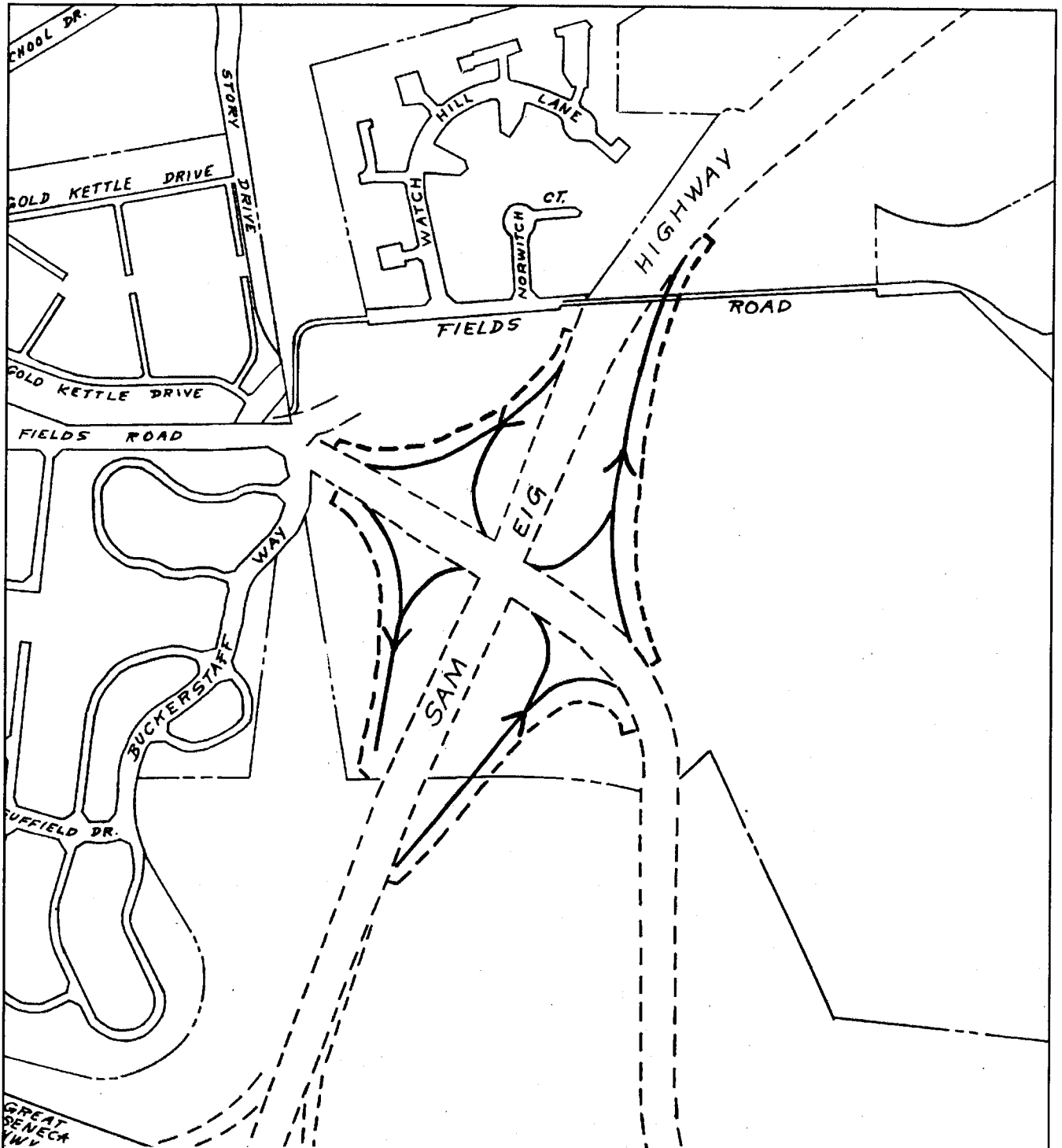
a. Fields Road/Sam Eig Highway:

The potential grade separation of Fields Road would be at the southern intersection of Fields Road with Sam Eig Highway and should be done only in conjunction with the extension of Louis Sullivan Drive. The proximity of developed subdivisions and local streets north of Sam Eig Highway severely restricts the space for interchange design at this location. Therefore, the most feasible design option appears to be an urban diamond interchange with Fields Road passing over Sam Eig Highway and ramp connections on all four quadrants from Sam Eig Highway to Fields Road. This would permit free flow on Sam Eig Highway. The northern intersection of Fields Road may have to be closed to permit adequate space for this design. The extension of Louis Sullivan Drive would, in essence, connect the terminus of this section of Fields Road directly to the interchange. This design treatment will significantly improve traffic flow on Sam Eig Highway by removing at-grade intersections without serious detriment to local access. (See Figure A.1, page 142.)

Future consideration of implementation of this proposed grade separation must include or be preceded by a traffic analysis to determine the desirable interchange design characteristics and impacts on local, through, and area-wide traffic, if any. This analysis would take into account

Schematic Grade Separation Proposal: Sam Eig Highway and Fields Road

Figure A.1



**ILLUSTRATIVE ONLY: FURTHER STUDY MAY MODIFY
FINAL DESIGN SUBSTANTIALLY**

M-NCPPC

projected traffic from committed and approved development, and development allocated by Stage III of the 1985 Gaithersburg Vicinity Master Plan, and related scheduled public or private transportation improvements. The interchange improvement should only be implemented to the extent that it provides a net positive benefit to the transportation system. However, reasonable and diligent efforts should be made to minimize specific circulation or access impacts on any nearby individual development or developer.

b. Key West Avenue/Great Seneca Highway:

The ability to provide a grade separation with an interchange configuration at Key West Avenue and Great Seneca Highway is limited by existing and proposed development east of Great Seneca Highway and due to the proximity of Decoverly Drive. Since this is a key intersection for both automobile traffic and transit, grade separation is recommended. This would remove conflicts between opposing through traffic and permit turn movements via connecting ramps. (See Figure A.2, page 144.)

c. Great Seneca Highway/Muddy Branch Road:

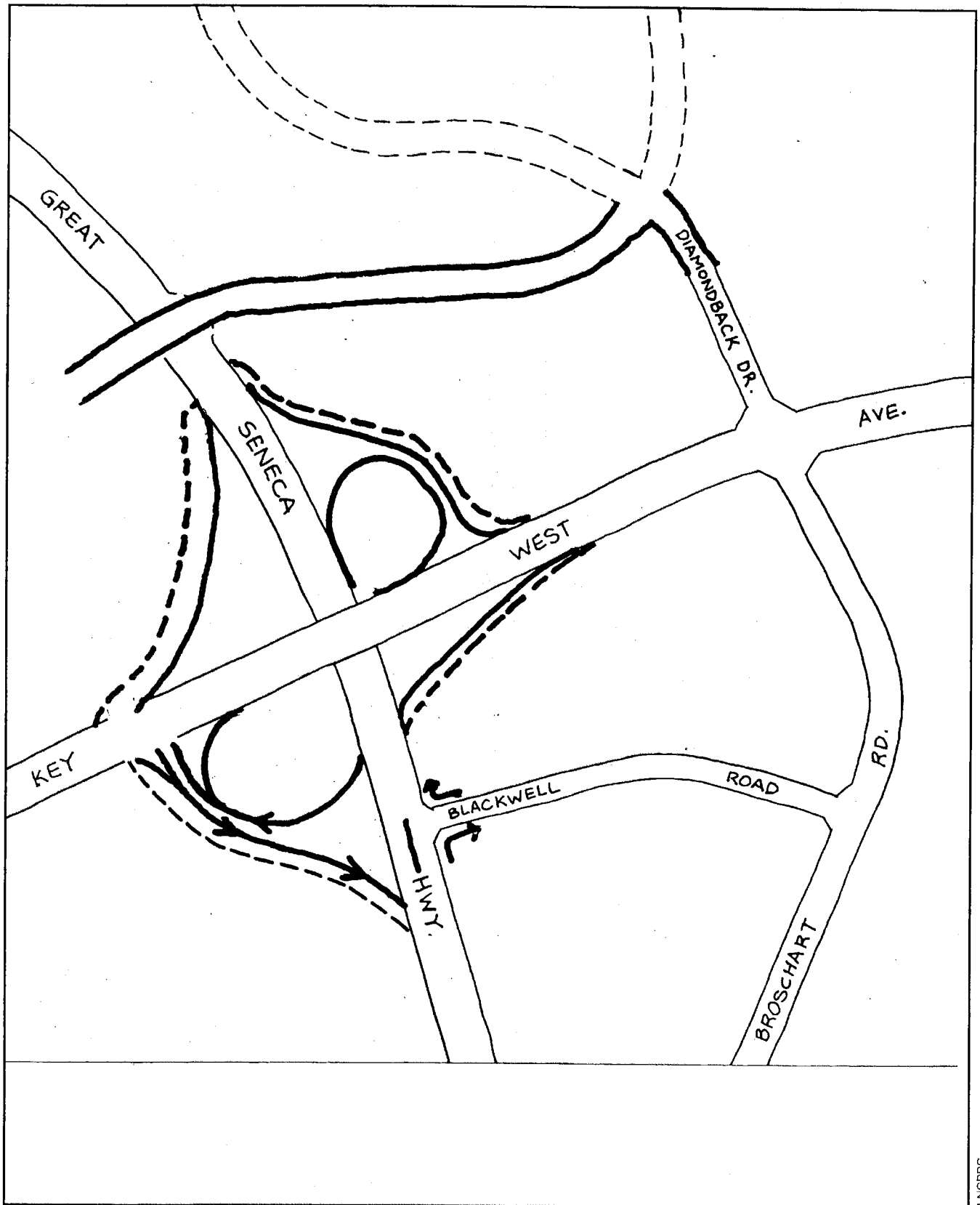
This intersection is highly constrained by adjacent development in the city of Gaithersburg. However, to facilitate the transitway, the Plan recommends this location as a grade separation for transit only. This is proposed to consist of the transitway passing over or under the intersection within the right-of-way of the roadway.

d. Great Seneca Highway/Shady Grove Road and Ritchie Parkway:

Consistent with the recommended changes in the alignment of Great Seneca Highway and Darnestown Road through this area, grade separation is recommended at Shady Grove Road and Ritchie Parkway. The design of the interchange of these roadways is to accommodate movement between Great Seneca Highway and both Ritchie Parkway and Darnestown Road. This configuration must also include space for the transitway along Darnestown Road. (See Figure A.3, page 145.)

Schematic Grade Separation Proposal: Great Seneca Highway and Key West Avenue

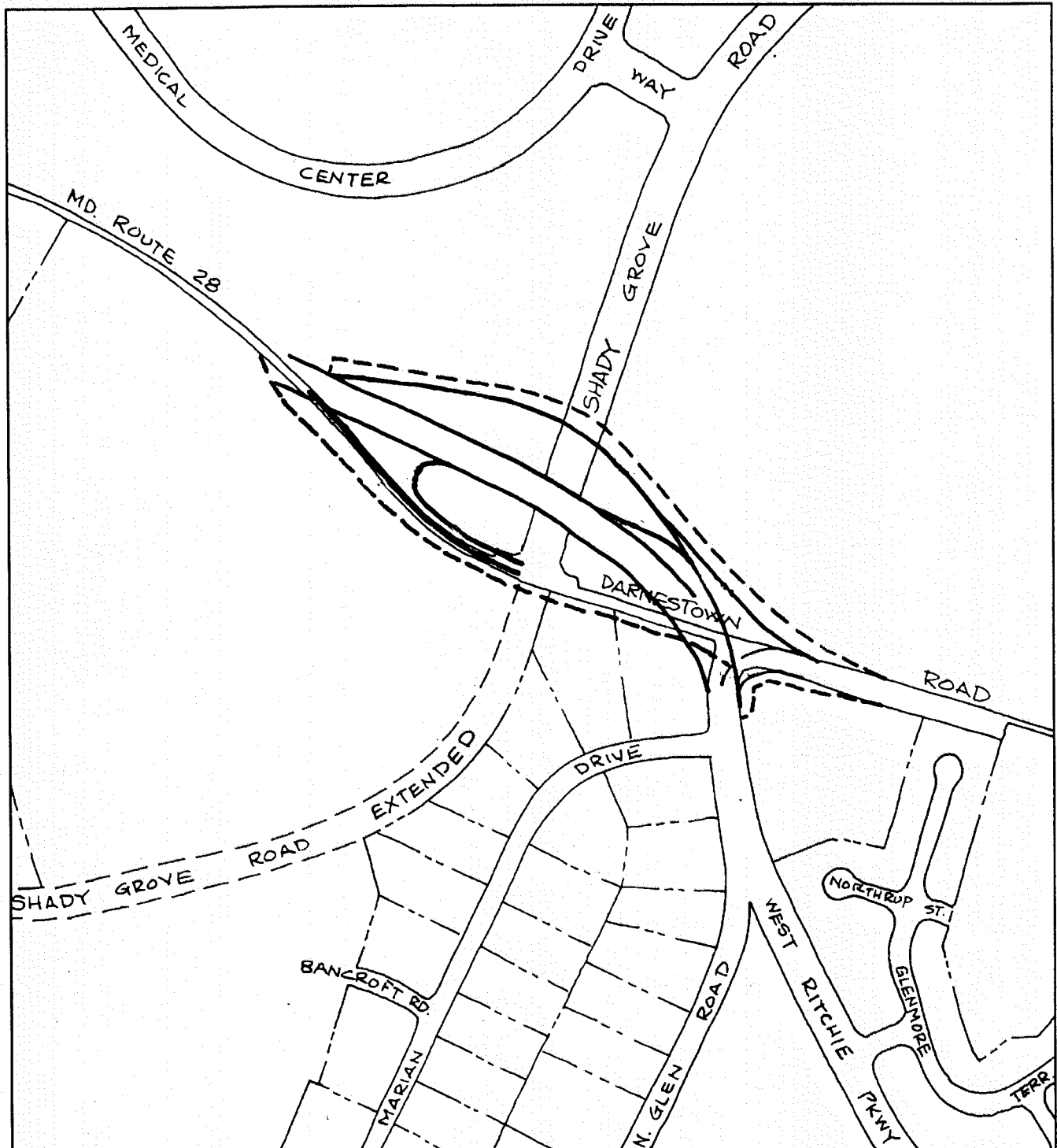
Figure A.2



M-NCPPC

Schematic Grade Separation Proposal: Shady Grove Road and Darnestown Road

Figure A.3



**ILLUSTRATIVE ONLY: FURTHER STUDY MAY MODIFY
FINAL DESIGN SUBSTANTIALLY**

Transportation Systems Analysis

Analysis Results

A major concern during any master plan process is whether the end-state transportation network proposed in a master plan can support the end-state land use pattern.

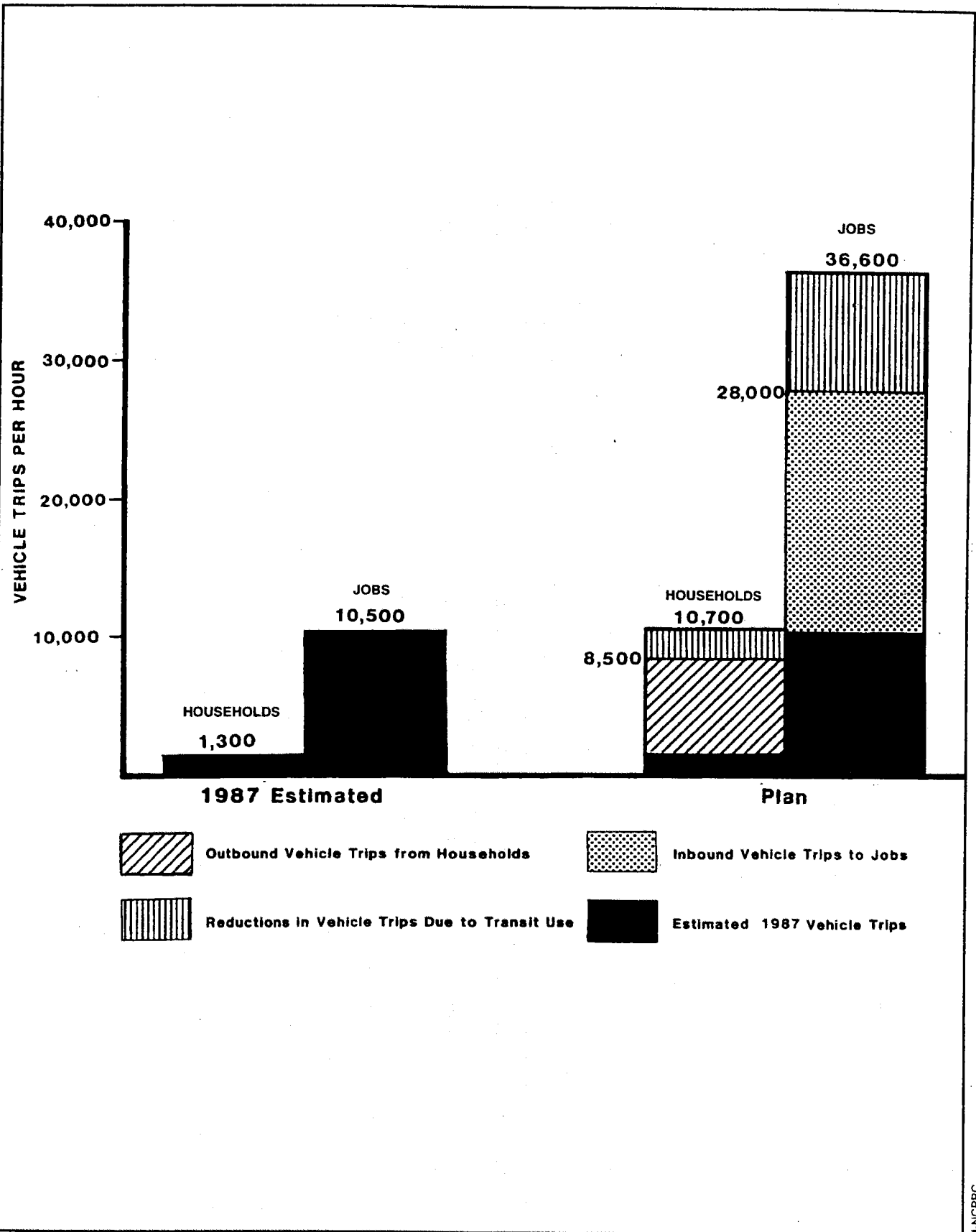
To address this concern, the master planned land use pattern has been tested against the end-state master plan transportation network. This analysis is based on a land use scenario which anticipates approximately 80,400 jobs and 11,300 households within the Shady Grove Study Area. A description of methodology is discussed later in this chapter.

A key issue in the Plan is the anticipated effect of the transitways proposed for the Shady Grove Study area on traffic. Table B.1 summarizes the number of A.M. peak-hour vehicle trips associated with the Land Use Plan, with and without the inclusion of the transitways envisioned in the Plan. One of the key features of this figure is the effect of transit availability upon travel mode. It shows that, due to the expected higher levels of transit use resulting from the active use of the transit easements traversing the Study Area, there will be a reduction in peak-hour vehicle trips which dampens the traffic effects of the development densities associated with the Plan. It is estimated that the Plan would produce approximately 8,500 outbound A.M. peak-hour vehicle trips from households and attract approximately 28,000 inbound trips to jobs within the Study Area. Transit ridership projections are based on the observed ridership patterns in areas such as Silver Spring, Takoma Park, Bethesda- Chevy Chase, North Bethesda, and Gaithersburg, as well as future transit ridership estimates resulting from the Comprehensive Growth Policy Study and the transportation analysis of the Shady Grove Study Area. These projections take into account such features as the transit serviceability of both the land use pattern and infrastructure of the Plan, as well as the anticipated nature and quality of the transit service to be provided.

As shown in Table B.2, the availability of transit significantly increases the percentage of people

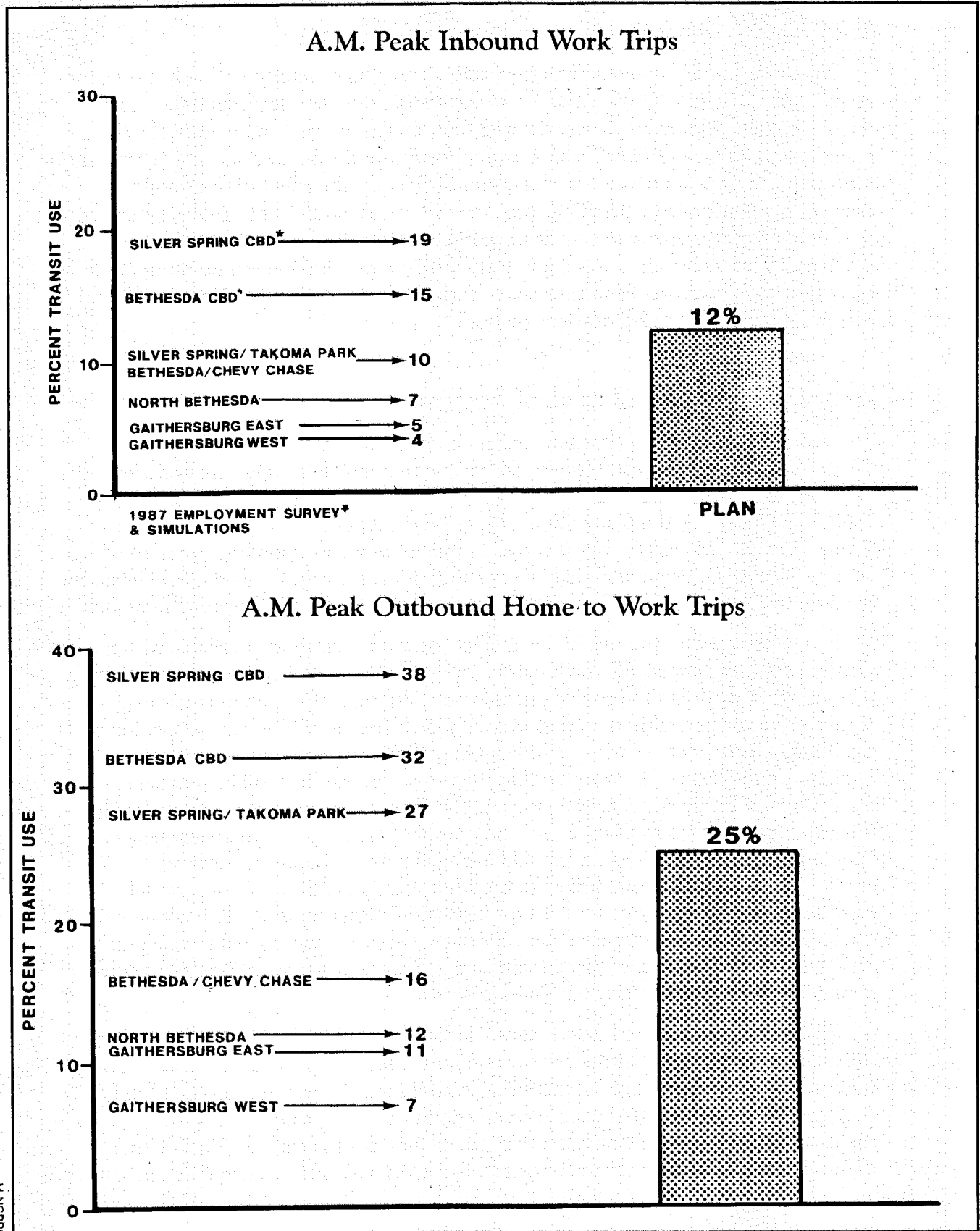
Summary of A.M. Peak Hour Trips (Shady Grove Study Area)

Table B.1



Estimated Transit Use for the Shady Grove Study Area

Table B.2



living in the Study Area who travel by transit to work (work trip origin from homes). It is estimated that, on the average, approximately 25 percent of the people living in the Study Area will commute to work by transit.

For those people living outside the Study Area who commute to Shady Grove for employment, the impact of active use of the transit easement traversing the Study Area is equally significant. It is estimated that, on the average, approximately 12 percent of the home-to-work trips originating outside the Study Area which are bound for Shady Grove will arrive at work via transit. Hence, the effect of the transit easements upon transit ridership is projected to be substantial. It is unlikely, however, that a significant increase in transit ridership in and of itself will eliminate long-term roadway and intersection congestion in the Study Area. An analysis of intersection conditions was prepared from the results of the areawide transportation analysis and is presented in the Grade Separations section.

Average Areawide Level of Service

The Annual Growth Policy, which assesses current conditions and allowable development levels, has established standards of acceptable average areawide level of service (LOS) based upon the extent of available transit services. These are given in Table B.3. Currently, the Gaithersburg East and West policy areas are identified as Group III areas (moderate transit service), which has a corresponding standard of average LOS C/D. If the analyzed average LOS for the area exceeds the C/D level, the condition is unacceptable. The result of the areawide analysis is shown in Table B.4.

It is expected that the overall level of transit service currently available within Gaithersburg, and especially the Shady Grove Study Area, will be increased during the time frame of this Plan to provide public transit alternatives to automobile travel equivalent to or better than an area such as North Bethesda. The recent opening of the Shady Grove Metro Park-and-Ride lot expansion represents such a service increase. In addition, it is expected that the transit service that will be provided traversing the Study Area, as well as using the Transit Easement north of Shady Grove, through Germantown to Clarksburg (and possibly to Frederick), whether it be a bus-based or fixed guideway system, would have moderate- to high-transit travel characteristics. This service, linked to the Metro station at Shady Grove, would provide a transit alternative for both through and Gaithersburg-oriented commuter traffic. Beyond this, an extensive network of bus service is anticipated throughout the area, with route frequencies being increasingly demand-based as contrasted to current minimum policy frequencies of 30-minute service.

Therefore, the expected future transit availability within the Gaithersburg Area is sufficient to considering a standard average areawide level of service of at least LOS D (Group IV) as a standard of acceptability. In addition, an average areawide LOS D/E (Group V) may be considered appropriate within the Shady Grove Study Area, given the expectation of future transit service (which includes the existing Shady Grove Metro Station, as well as several anticipated transitways) within its boundaries.

Correspondence Between Transit Availability and Average Level of Service Standards

Table B.3

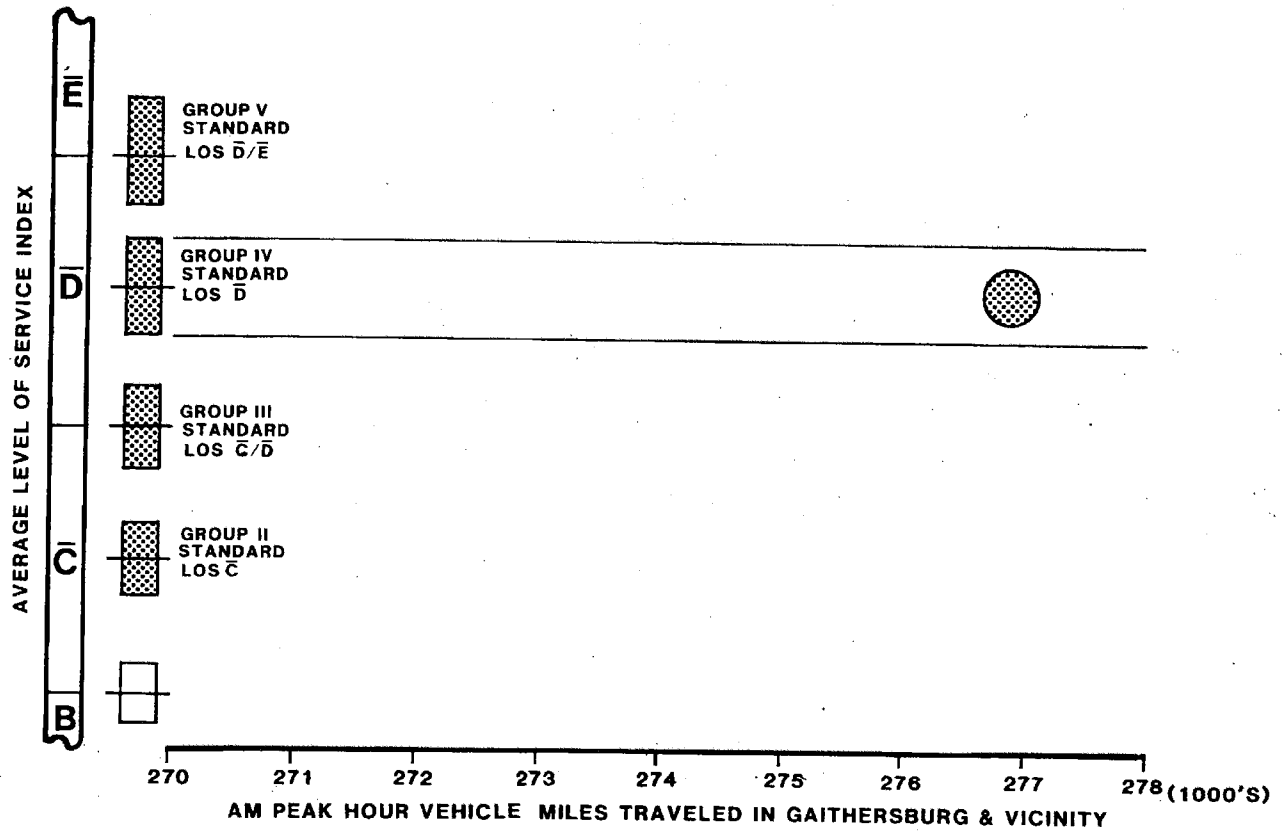
M-NCPPC Average Level of Service Standards	Transit Services Available or Programmed					
	Public Transport Alternatives to Automobile Travel	Auto Dependent System	and/or		Bus Base Systems	Fixed Guideway Systems
			Community and Local Bus Service	Regional Park/Ride Express Bus and High Occupancy Vehicle Priority Systems		
*	I	Marginal	Not available	Not available	Marginal amount of the area is within walk access	Not available
	II	Limited	Limited coverage of park/ ride spaces and frequency	Limited park/ride spaces or lots with local bus service	Limited park/ ride access and walk access	Park/ride and kiss/ride access limited to nearby stations out- side of the area
C/D	III	Moderate	Moderate number of park/ ride spaces, limited kiss/ride service	Moderate coverage, service limited to policy frequencies with a system of park/ ride lots`	Moderate parking or walk access with system transfers	Moderate station coverage in the area with associated feeder access
D	IV	Frequent	Moderate park/ ride spaces and moderate kiss/ride service	Moderate coverage, combined policy and frequent demand-based service	Same as Group III above	More dense spacing of stations and bus routes
D/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 III above easier walk and bicycle access	Full frequency and full reliance on kiss/ride, bicycle access
*	VI	Expanded	Expanded park/ride with reliance on kiss/ride access	Expanded bus frequencies; 100 buses in PM peak	Same as Group III above	Designated CBD; controlled parking; Transportation Mgmt. District

* See text of the Recommended FY 90 AGP for Methods and Standards of Measuring Traffic.

Source: Montgomery County Planning Department.

Summary Results of the Areawide Analysis

Table B.4



The result of the transportation analysis, based on an analysis area covering the Gaithersburg East and West policy areas, is an average areawide LOS D for the Master Planned land use.

Methodology

To assess future transportation conditions for the Study 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 regional transportation model, with extra detail in Gaithersburg and adjoining areas, and the computation of an average areawide level-of-service.

The Land Use Plan for the Shady Grove Study Area was analyzed using the regional transportation model, assuming the employment and household levels in the Study Area and the effect of providing the transitways through the Study Area. To represent or "model" the effect of the transitways on the transportation system within the regional transportation model system, it was necessary to assign assumed potential mode splits to the land uses in the station service areas. A scale of probable transit usage was developed for the two major trip-making categories of household outbound trips and employment inbound trips in the morning peak period. This range is based on the levels of usage currently experienced around Metro stations and judgment developed in other model work from the Annual Growth Policy. Thus, development located closest to future transit stations is assumed to have a higher transit use than locations further away.

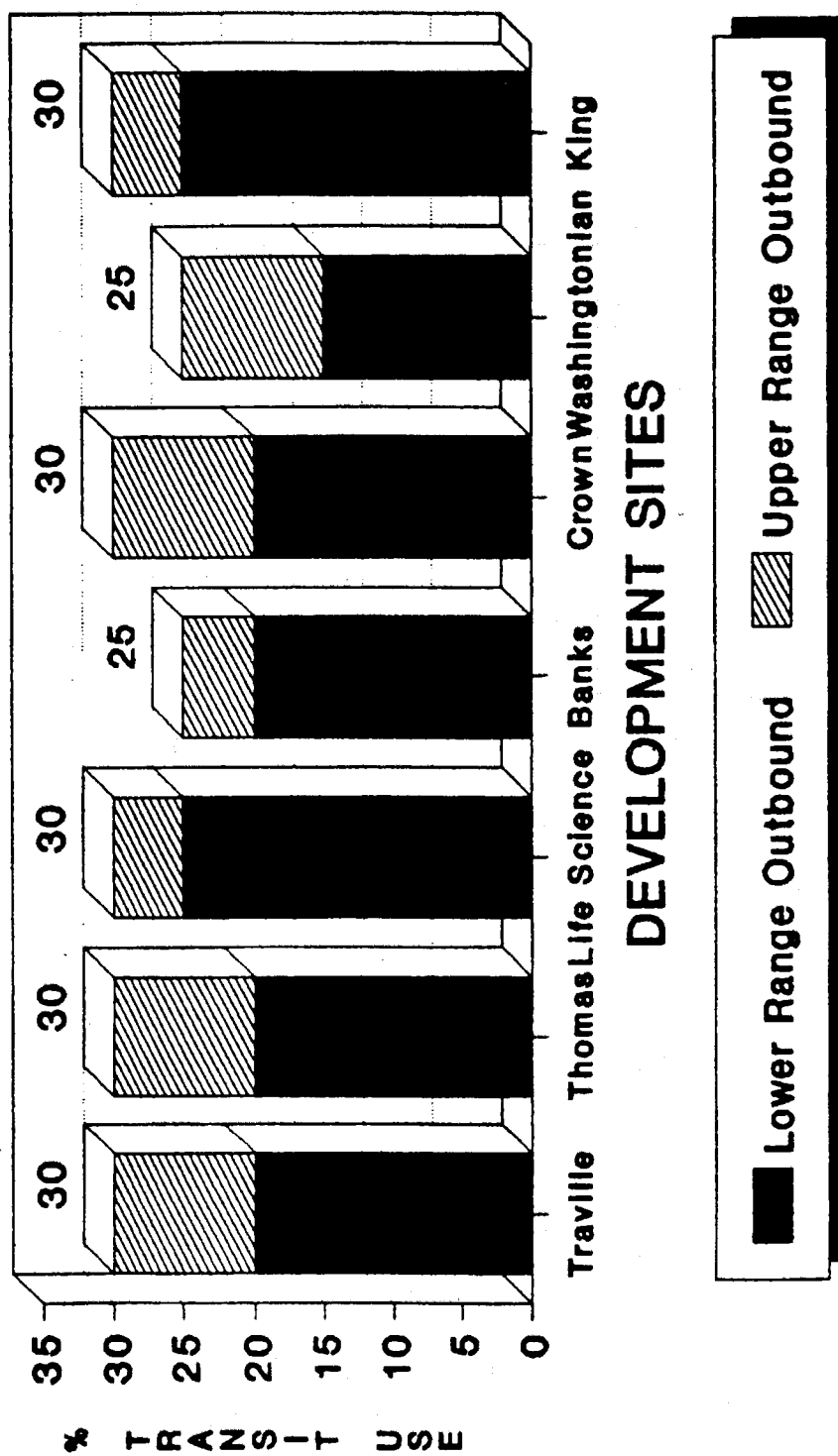
The primary development sites were identified and defined by their projected amount of households and employment according to the Land Use Plan. The total numbers of inbound and outbound trips were computed for each site using appropriate Institute of Transportation Engineers' trip generation rates. The total trips for each site were reduced by the mode split factors appropriate to each land use and site location. The ranges of mode split factors are shown on Table B.5 for the primary development sites considered in this analysis.

The reduction of trips computed from this methodology was applied to the regional transportation model to determine the potential impact on the transportation system. The transportation model computes the areawide average level-of-service conditions by policy area for each alternative and the corresponding vehicle-miles of travel.

The intersection movements resulting from the model trip distribution can be analyzed to determine intersection congestion. However, this application is a fairly coarse analysis due to the simplified network and zone system used for the model of the land use and transportation system. The model provides the turning movements at intersections which can be used to determine estimates of critical lane volumes and level of service. While this level of analysis has been completed, it must be noted that the aggregation of volumes of traffic to specific intersection movements are, in many cases, extremely high due to the limited paths available for assigning traffic movements in the model system. Therefore, the results are more indicative of conditions where

Mode Split Assumptions – Shady Grove Study Area Outbound A.M Peak

Table B.5



Source: MCPD, Transportation Planning Division. 1989

traffic is funneled into a limited number of arterial roadways comprising the master plan network, when in reality, the area will develop with a complementary set of access driveways and primary roadways to more evenly distribute traffic volumes generated by development. To replicate these conditions, it would be necessary to both know the detail of actual future site plans and to "construct" a much more complex model network (zones and traffic links) to more accurately model these circumstances.

Current Transit Services in the Study Area Vicinity

Table B.6

Route	Between	Primary Service Area	Approximate Service Frequency	
			Rush Hours	Non-Rush/ Saturday
55	Montgomery College to Rockville Metro (Germantown)	Rockville Pike	30 min.	30 min.
59	Montgomery Village to Rockville Metro	Rockville Pike	30 min.	30 min.
61	Montgomery College to Shady Grove Metro (Germantown)	Rockville Pike	30 min.	—
43	Life Sciences Center to Shady Grove Metro	Life Sciences Center and Shady Grove Road Areas	20 min.	30 min.
Q-2	Shady Grove Metro to Rockville	Piccard/Research Areas	30 min.	
54	Lake Forest Mall to Rockville Metro	Fields/Omega/Research Areas	30 min.	30 min.
56	Lake Forest Mall to Rockville Metro	Life Sciences Center Area	30 min.	30 min.

APPENDIX C

Child Care Facilities In and Near the Shady Grove Area*

Table C.1

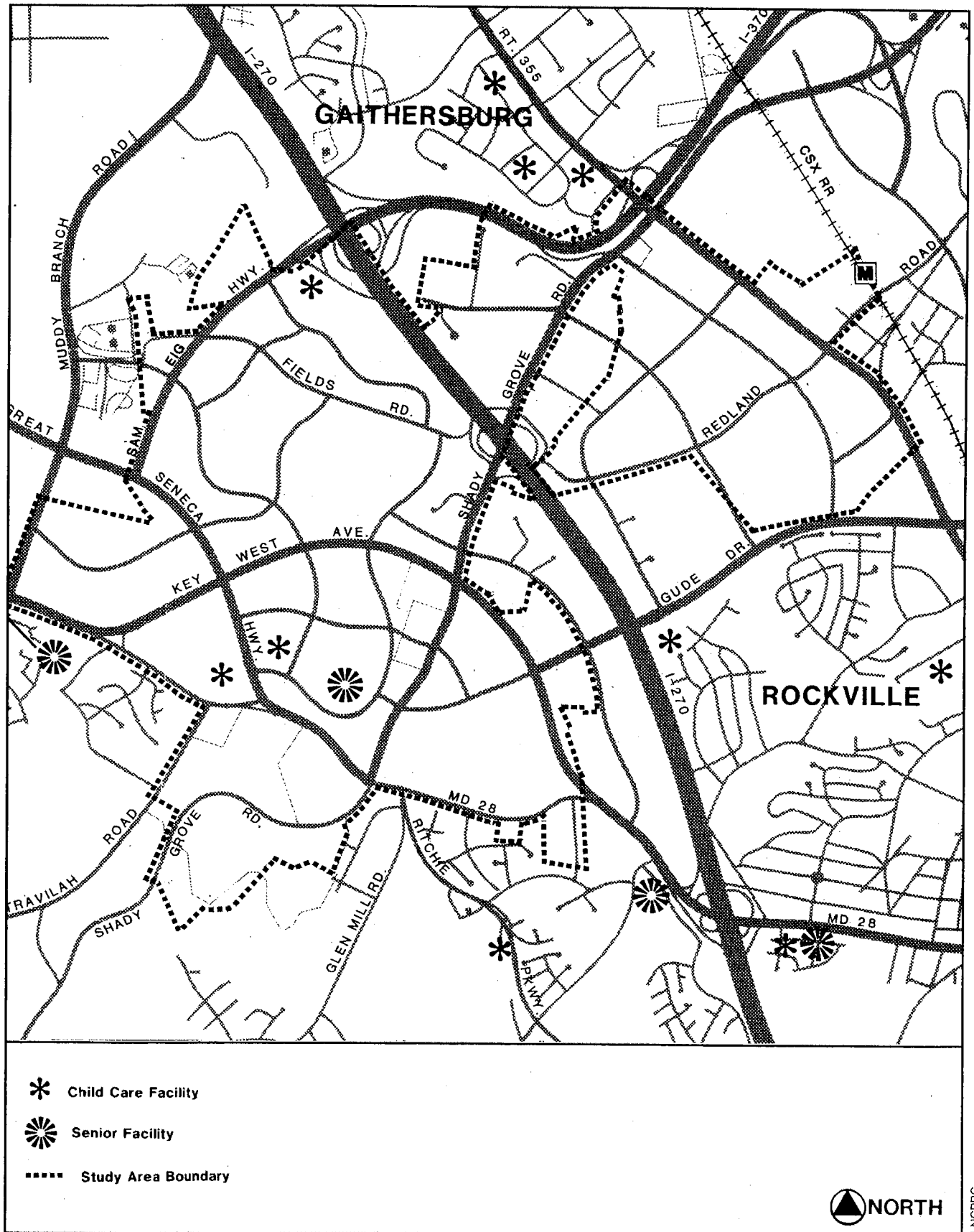
1. Child Development Laboratory/TS Wootton High School
2. Franklin Montessori School and Day Care
3. Franklin Day School
4. Montgomery College Child Care
5. Potomac Nursery School I
6. Potomac Nursery School II
7. Rockville Nursery School and Kindergarten, Inc.
8. W.E.E. Center/First Baptist Church
9. Shady Grove Child Care Center
10. Shady Grove Learning Center
11. Child Development Lab/Richard Montgomery High School
12. Creative Tot Time (Casey Community Center)
13. Epworth Pre-School & Child Care/Epworth United Methodist Church
14. Gaithersburg Presbyterian Church Pre-School
15. Rosemont Pre-School and School Age Care Center
16. North Potomac Children's Center
17. Noah's Ark Day Care Center
18. Montgomery County Child Watch

* List does not include the public elementary school headstart and/or after-school programs which are available at most schools.

Source: Blue Book on Child Care, Child Care Connection, Inc., 1988.

Child Care and Senior Facilities

Figure C.1



M-NCPPC Retail Study Findings

The Planning Department staff has estimated the amount of neighborhood retail space which could be supported under the Land Use Plan recommendations. Neighborhood retail convenience centers generally comprise uses such as a grocery store, drug store, restaurant, smaller eateries, ice cream parlors, and specialty fast foods. The average size of a neighborhood convenience center is approximately 100,000 square feet.

For purposes of estimating retail demand, staff identified four potential sites for future retail centers; these are shown in Figure D. The market area for each site was determined by using the Urban Land Institute's standard radius of 1.5 miles for a neighborhood retail center. Estimates of employment, population, and households were calculated by market area for the Land Use Plan recommendations.

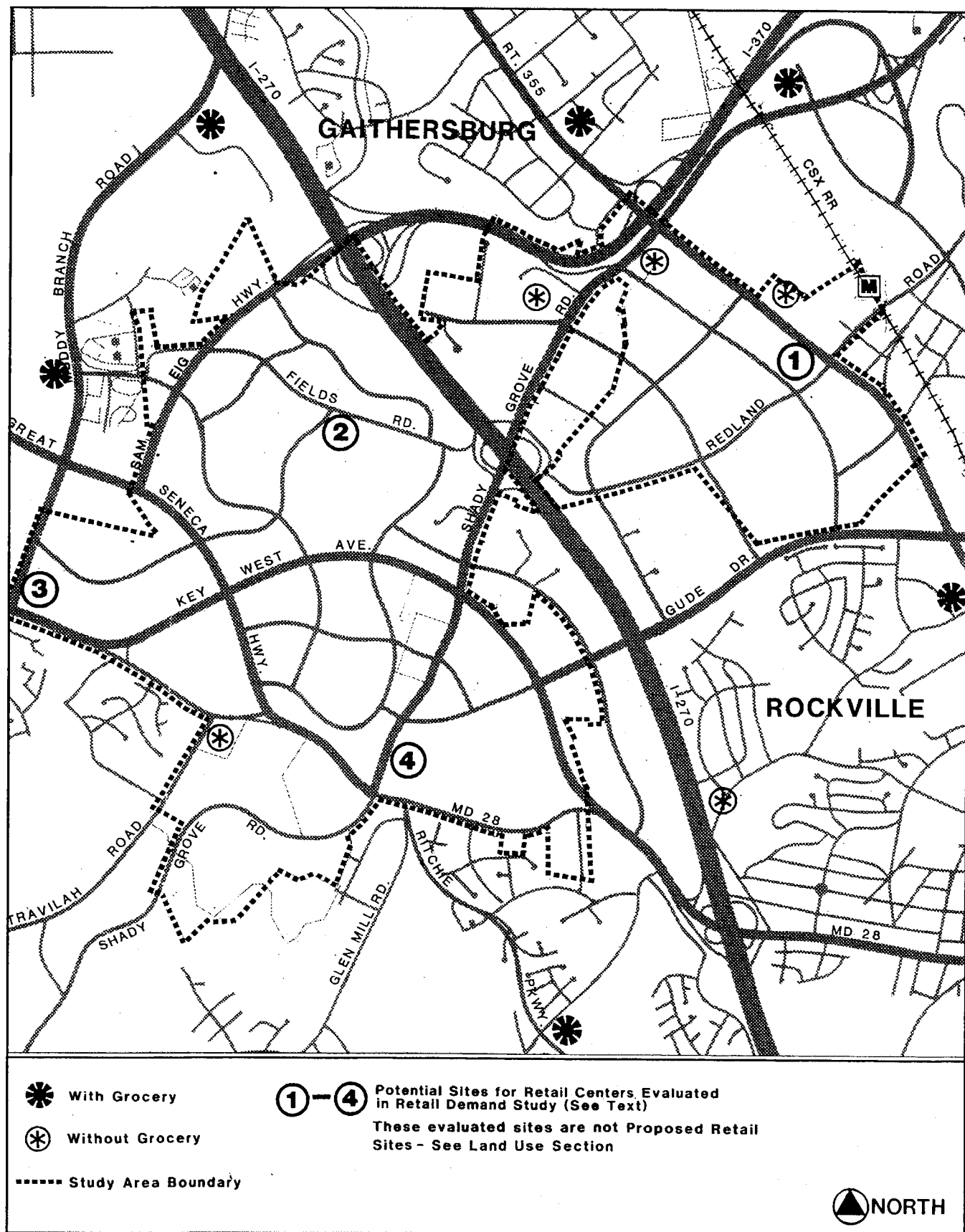
The key results of the retail demand study are as follows:

- The entire Shady Grove Study Area could support anywhere from 80,000 to 237,000 square feet of neighborhood retail space.
- There is no demand for a neighborhood retail center in the vicinity of Site 1. The main reason for a lack of demand is sufficient retail uses exist in the area.
- There is potential demand for a retail center at Site 3.
- There is potential demand for a retail center at Site 4.
- There is potential demand for a retail center at Site 2.

It is important to note that each of the four sites was analyzed independently of others. Thus, when the study finds there is potential demand for a retail center at Site 3 and Site 4, it does not mean both sites can be supported. Demand for any two new centers at any two sites must be analyzed in tandem, taking into consideration overlapping market areas.

Existing Retail Centers

Figure D.1



APPENDIX E

Capital Projects for the Shady Grove Study Area and Vicinity

Table E.1

CIP Number ¹	Description	Responsible Agency	Estimated Project Cost (1989 Dollars) ²	Status
Projects in Current Approved Capital Improvements Program (FY 90-95)				
7-66	Fields Rd/Muddy Branch to Omega: Construct 5 lanes of an ultimate 6-lane roadway	MCDOT	\$5,695,000	Under Construction
7-77	Great Seneca Highway—Phase I & II: Construct 4-lane divided major roadway	MCDOT	\$21,080,000	Operational
7-82	Gude Drive Extension: Reimbursement to Rockville for construction of 2 lanes for ultimate 4-lane divided highway	MCDOT/ Rockville	\$4,700,000	Phase I: 2 lanes completed Phase II: 2 new lanes— Detailed Design Stage
7-88	Key West Ave–Gude Dr to I-270: Construct 6-lane divided roadway or 7-lane undivided	SMHA	\$440,000	Planning Stage
7-90	Key West Ave–Shady Grove to Gude Drive: Construct 4 lanes of ultimate 6-lane divided roadway	SMHA	\$5,993,000	Phase I: Operational Phase II: Under Construction
7-92	Key West Ave and MD 28: Construct 2 lanes of ultimate 6-lane roadway	SMHA	\$11,195,000	Phase I & II: Operational Phase III: Under Construction
7-95	Life Sciences Center (LSC) Roadway Improvements: Intersection improvements within LSC	MCDOT	\$4,910,000	Planning Stage
7-118	Muddy Branch Road: Construct 4 lanes of ultimate 6-lane divided major roadway	MCDOT	\$13,997,000	Under Construction
7-133	Sam Eig Highway: Construct 6-lane divided major roadway from I-270 to Fields Road and 4 lanes from Fields Road to Great Seneca Highway	MCDOT	\$15,974,000	Phase I: Bids let Phase II: Preliminary
10-23	Metro Station Library Kiosk: 300 modular structure for rush hour library service	Public Libraries	\$196,000	Conceptual Stage

Capital Projects for the Shady Grove Study Area (cont.)

Table E.1

CIP Number ¹	Description	Responsible Agency	Estimated Project Cost (1989 Dollars) ²	Status
17-216	Gaithersburg Area Public Elementary Schools: Construct 30 teacher stations to reach core capacity of 740 students	Public Schools	\$7,069,000	Planning Stage
17-219	Summit Hall Elementary Addition: Construct 7 teacher stations to reach core capacity of 600 students	Public Schools	\$2,045,000	Planning Stage
17-274	Stone Mill: Construct 34 teacher stations to reach core capacity of 740 students	Public Schools	\$8,860,000	Final Stage of Construction and Furnishing
19-94	Muddy Branch SV Park Unit 3: Acquire 2 acres and develop Stream Valley Park	M-NCPPC	\$627,000	Acquisition: 99% complete
19-123	Big Pines Local Park: Construct recreation shelter, athletic field, multi-use court, play equipment, parking area, benches, bicycle racks, drinking fountain and landscaping at existing 11-acre park	M-NCPPC	\$537,000	Conceptual Stage of Development
19-137	Fields Road Local Park: Acquisition and development of 10-acre park with a recreation shelter, athletic fields, tennis courts, multi-use court, play equipment, parking area, benches, bicycle rack, drinking fountain and landscaping	M-NCPPC	\$385,000	Conceptual Stage
5-36	Life Sciences Center—New Design: Design and construct improvements to enhance the image of the Life Sciences Center	County	\$4,000,000	Preliminary Engineering
5-37	Shady Grove Life Sciences Center: Design and construction of site improvements to support the Johns Hopkins University Center for Advanced Studies	County	\$6,976,000	Phase II: Under Construction

Projects Not Included in Current Capital Improvements Program³

A	Key West Avenue:	SMHA
	Widen from 4 lanes to 6 lanes from MD 28 west to Great Seneca Highway	

Capital Projects for the Shady Grove Study Area (cont.)

Table E.1

CIP Number ¹	Description	Responsible Agency	Estimated Project Cost (1989 Dollars) ²	Status
B	Muddy Branch Road: Widen from 4 lanes to 6 lanes from MD 28 to I-270	County		
C	Shady Grove Road: Construct 4 lanes from Great Seneca Highway to Piney Meetinghouse Road	County/ Developer		
D	Ritchie Parkway: Construct 4 lanes from Glen Mill Road to MD 28	MCDOT/ Rockville		
E	Decoverly Drive: Construct 4 lanes from Muddy Branch Road to Fields Road	Developer		
F	Fields Road: Widen from 5 lanes to 6 lanes from Sam Eig Highway to Omega Drive	County/ Developer		
G	Gaither Road: Construct 4 lanes from Redland to Gude Drive	Rockville/ Developer		
H	Piccard Road: Construct 4 lanes from MD 355 to Gude Drive	Rockville/ Developer		
I	Exclusive transitway connection from Redland Road west to Shady Grove Road	MCDOT/ MDDOT/ Developers		
J	Great Seneca Highway: Widen from 4 lanes to 6 lanes from Muddy Branch Road to Shady Grove Road	MCDOT		
K	Sam Eig Highway: Widen from 4 lanes to 6 lanes from Great Seneca Highway to Fields Road	MCDOT		
L	Construct expanded intersections or interchanges (6)	County		
M	Construct exclusive Transitways through the Shady Grove Study Area	MCDOT/ MDDOT/		
N	Construct 2 Park-and Ride Facilities	MCDOT Developer		

Capital Projects for the Shady Grove Study Area (cont.)

Table E.1

CIP Number ¹	Description	Responsible Agency	Estimated Project Cost (1989 Dollars) ²	Status
O	Construct 3 elementary schools of 690 pupil capacity	MCPS		
P	Construct one middle school of 690 pupil capacity	MCPS		
Q	Construct 4 local parks	M-NCPPC		
R	Study need for County-wide heliport facility	MCDOT		

¹ These numbers are the project description form numbers from the FY 90-95 CIP.

² Costs, where available, of projects not included in the Current Capital Improvements Program are based on comparable projects in the FY 90-95 Capital Improvements Program. Costs include those road portions not within the Shady Grove Area.

³ This list is still being reviewed and revised. Additional projects may be added, but the list is to be confined to those projects for which some County funding may be needed.

Glossary of Terms

Adequate Public Facilities Ordinance (APFO):

The APFO, adopted in 1973, is a tool to promote orderly growth by synchronizing development with the availability of the public facilities (roads, sewer, water, safety, police) needed to support it. Refinements to the ordinance were adopted in 1986.

The APFO is a part of the Subdivision Ordinance and is administered by the Planning Board at time of subdivision, after review by other agencies, including the County Executive. The subdivision regulations require that "public facilities" be existing or programmed for construction within a defined time period before approval can be granted. These facilities, therefore, would normally be included in the Capital Improvements Program (CIP), as described below. Criteria and guidelines for administration of the APFO are included in the Annual Growth Policy, which is adopted annually by the County Council.

Annual Growth Policy (AGP): A policy document adopted annually by the County Council intended to facilitate and coordinate government's powers in limiting or encouraging growth and development in the County. The AGP addresses conflicting policies of various agencies that may be serving different public interests, and provides guidance in resolving differences. It includes criteria and guidance for the administration of the APFO, and recommended development capacity Staging Ceilings for each policy area of the County. The overall purpose is to chart, each year, a direction for government which will

enhance the quality of life of the County's present and future residents.

The AGP is prepared by the Planning Board based on its comprehensive land use process, data collected through administration of the Adequate Public Facilities Ordinance, and through population and housing projections. It is prepared in close coordination with the Executive's CIP, and is transmitted to the County Executive in Final Draft Form, after public hearings. The County Executive submits his modifications in writing to the County Council, and Council must adopt the AGP by June 30 of each fiscal year. (The legislation providing for the AGP was adopted by the County Council in May 1986.)

Agricultural Reserve: Primary agricultural areas of Montgomery County, which include the majority of the County's remaining working farms and certain non-farm land uses.

Arterial Highway: A road that provides a similar amount of traffic service and land access functions. Commercial and industrial land uses may have driveway access, single-family residential may not. Master planned as four-lane roads (current design calls for either a landscaped median or a continuous left-turn lane) with curb and gutter (closed section) where traffic warrants four lanes, but may be two lanes with shoulders and open drainage system in areas of light traffic or on an interim basis. Right-of-way is usually 100 feet; older roads or roads to be maintained as two-lane roads may have 80-foot rights-of-way. Sidewalks and bikepaths are appropriate; bike paths may sometimes be adjacent to travel lanes.

Assisted Housing: Housing which is built and/or operated with government financial assistance, including subsidies, low interest loans and mortgage guarantees. There are two types of assisted housing: moderate-income housing, for which the eligibility standard for residents is an income less than 80 percent of the metropolitan area median income; and low-income housing, for which the eligibility standard is less than 50 percent of the metropolitan area median income.

Base Density: The maximum number of dwelling units or square footage of nonresidential space per unit of land that can be built in an area in the absence of bonuses which accrue from the application of transferable development rights (TDR's), floating zones, planned development zones, or public amenities and benefits recommended in a master plan; that density which is reasonable and acceptable from a planning perspective without consideration of such bonuses.

Base Zone: A Euclidean zone recommended in a master plan to achieve the base density.

Buffering: Isolation or separation of different land uses by a third land use, by open space, or by a physical separator such as a wall. Low density offices and townhouses are frequently used to separate commercial and detached residential areas.

Business District Street: Similar to Arterial Highway, but is only in commercial areas. Sidewalks are wider than those along an arterial. Bicycles may share travel lane with other vehicles.

Capital Improvements Program (CIP):

A six-year comprehensive statement of the objectives of capital programs, with cost estimates and proposed construction schedules for specific projects. The CIP is submitted annually to the County Council by the Executive.

The CIP is the tool through which locally funded public facilities, such as sewers, local roads, storm drains, schools, libraries, and parks, can be scheduled and built, in coordination with, and guided by, the Annual Growth Policy and area Master Plans. It is used in conjunction with the APFO to programming for public facilities needed to service subdivisions.

Concept Plan: A generalized idea or set of ideas that forms the basis for a master plan.

Consolidated Transportation Program (CTP): The State Highway Administration's five year construction program for roads and other transportation facilities within the State of Maryland. This program is an important consideration in transportation planning by the County since many of the major roads in the area are State highways.

Development Plan Review: Some zones require approval of a development plan at the time of rezoning. The development plan shows the layout, unit mix, uses, building densities, circulation, parking and open space configuration. When a development plan is required, the subsequent site plan must be in conformance with it. The preparation of an acceptable development plan helps to assure that the intent of the master plan is achieved.

Development Right: One dwelling unit of transferable density in the transferable development rights program. Also see Transfer of Development Rights.

Easement: A contractual agreement to gain temporary or permanent use of, and/or access through, a property.

End-State-Development: Future land use as prescribed by the most recent master plan, assuming total implementation of that plan. In actual practice, development densities rarely exceed 80 percent of ultimate land use.

Euclidean Zones: See Zoning

Floating Zones: See Zoning

Floodplain: That area of land adjoining a stream which is inundated temporarily by water whenever the stream overflows its banks. The ultimate 100-year floodplain represents the area which would be inundated by flooding due to a 100-year frequency storm after the ultimate planned development occurs.

Floor Area Ratio (FAR): The ratio of the gross floor area of a building to the area of the lot on which it is located. Parking and unoccupiable space in the building are generally excluded from the computation. For example, a building with a gross floor area of one acre on a two-acre lot would have a Floor Area Ratio of 0.5.

Freeway: A road that provides total traffic service and no land access. A freeway has multiple lanes, interchanges to provide free flow traffic connections with cross-streets, and traffic moves at a high speed.

General Plan: The Countywide comprehensive plan entitled On Wedges and

Corridors, adopted in 1964 and updated in 1969. It provides the overall framework for the County's future. Each master plan adopted since 1969 amends the General Plan.

Homeowners Associations: When development occurs under the cluster provisions of the subdivision regulations, a homeowners association is frequently required to assure the maintenance and operation of private open space, recreational facilities, private streets, and other common space in the subdivision. The homeowners association generally levies a fee in the form of a property assessment to maintain these facilities. It also must provide a management structure to supervise their orderly maintenance.

Impervious Surface: Land surface through which water cannot penetrate, usually because of pavement or buildings.

Industrial Street: Similar to Arterial Highway, but only in industrial areas.

- Sidewalks are wider than those along an arterial. Bicycles may share travel lane with other vehicles.

Infrastructure: The built facilities, such as streets, bridges, schools, water and sewer lines, other utilities, parks, etc., that service a community's developmental and operational needs.

Level of Service (LOS): A traffic engineering term that describes relative operating conditions and congestion levels on a segment of roadway or at an intersection. There are six levels, ranging from free flowing conditions (level of service "A") to very heavy traffic, extremely unstable flows, and long delays (level of service "F").

Local Map Amendment: A change of zoning, normally sought by the owner or other person having a proprietary interest. Applications for local map amendments may be filed only during the months of February, May, August, and November, and are considered according to procedures specified in the Zoning Ordinance. A local map amendment can include more than one tract of land. Land can be combined for purpose of rezoning. Approval of a local map amendment normally requires the affirmative vote of a majority (five members) of the County Council. If the proposed rezoning is contrary to the zone recommended in a master plan, however, approval requires affirmative vote of five Council members, unless the Planning Board has recommended in favor of that approval, in which case a four-vote majority of the Council is sufficient for approval.

Major Highway: A road that provides a high level of traffic service and a low degree of land access. Master planned for four or six travel lanes (usually six) and a landscaped median within a 120-, 150-, or 170-foot right-of-way. New construction is generally not allowed to have driveway connections and intersecting streets are spaced relatively far apart. Sidewalks and bikepaths are appropriate along a major highway.

Mandatory Referral: Under the Regional District Act "no road, park, or other public way or ground, no public (including Federal) buildings or structures, and no public utility whether publicly or privately owned shall be located, constructed, or authorized in the regional district until and unless the proposed location, character,

grade and extent thereof has been submitted to and approved by the [Maryland-National Capital Park and Planning] Commission." (Art. 28, #7-112 of the Regional District Act.) One of the major purposes of this review authority is to assure that public land acquisition and development are compatible with surrounding development, both existing and planned. Mandatory referral results in recommendations that are not binding on the public agency, but it does provide an opportunity to encourage the agency to modify their proposals, where necessary, in order to improve their compatibility.

Master Plan: A document which guides the government and private individuals in the way an area should be developed. In Montgomery County, master plans amend and/or detail, for portions of the County, the recommendations of the County's General Plan.

Mixed-Use Development: The integration of different, usually compatible or mutually supportive, land uses on a site or into a single building or complex.

Moderately Priced Dwelling Units (MPDU): A dwelling unit which meets price levels specified under Chapter 25A of the Montgomery County Code. The levels are adjusted annually by the County Executive. Developments of 50 or more units must include at least 12.5 percent which are MPDU's.

Nontidal Wetland: An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typi-

cally adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation; provided, however, that the Maryland Department of Natural Resources, in designating a nontidal wetland, shall use the approach (i.e., hydrology, soils and vegetation) enumerated in the April 1988, Revised Interim Final Draft Wetland Identification and Delineation Manual developed by the United States Environmental Protection Agency, and any subsequent amendments thereto.

On-Site Stormwater Management:

Stormwater management techniques applied within a given site boundary, usually near the source of stormwater runoff.

One-Hundred Year Ultimate

Floodplain: The floodplain that would result from a 100-year frequency flood, calculated on total development in a watershed.

Optional Density: Density in dwelling units, or square footage of nonresidential space per unit of land, that would be compatible with surrounding land uses (existing and proposed) and would be within the carrying capacity of the public facilities. Optional density can be achieved through the use of various bonuses, including transferred development rights (TDR's) or planned development (PD). Also see Planned Development Zoning and Transfer of Development Rights.

Planned Development Zoning (PD): A group of "floating" zones that allow a broad range of housing types, flexibility of design, and mix of land uses, and which encourage better land planning with greater efficiency, convenience, and more amenities than convention-

al, or Euclidean, zoning categories. A development plan must be approved at the time of zoning.

Planning: The orderly, reasoned process of evaluating the existing and future needs of an area and its residents, and the preparation of alternatives and recommendations to meet those needs.

Primary Residential Street: A street that provides a moderate level of traffic service and a high level of land access. Two travel lanes are provided within a 70-foot right-of-way. An urban design provides 36 feet of roadway pavement—sufficient for two lanes of moving traffic with parking along each side—with curb and gutter. A rural design provides 24 feet of pavement with a shoulder (usually grass) and an open drainage system. Sidewalks are appropriate though extremely difficult to provide on the rural design. Residences are usually allowed to have driveways on this type of street. MCDOT will not provide neighborhood protection measures to reduce traffic along a master planned primary street.

Receiving Area: An area designated on a master plan to receive transferred development rights. The addition of development rights permits a higher density of development than that permitted by the base density, but the density may not exceed that recommended in the master plan. The base density may be increased by one dwelling unit for each development right received. Development rights are transferred by easement and the transfer is recorded in the County land records. Also see Base Density and Transfer of Development Rights.

Schematic Development Plan: A development plan for Planning Board review and County Council approval submitted as part of an application for the rezoning of land into floating zones at the option of the applicant. Such schematic development plans limit development to that specified in the application.

Secondary Residential Street: A street that provides very limited traffic service and a very high level of land access. This street is intended to serve the immediate residential area only. The street provides two travel lanes within a 60-foot right-of-way. An urban design provides 26 feet of paving with curb and gutter or 24 feet of paving with shoulders. Sidewalks are usually appropriate though difficult to provide in the rural design. Bicyclists should use the travel lane. MCDOT will provide neighborhood protection measures to reduce traffic along this type of street if needed. Tertiary streets provide land access to residences immediately adjacent to the street. Right-of-way may be as narrow as 27 feet.

Sectional Map Amendment: A comprehensive rezoning, initiated by the Planning Board or County Council, covering a section of the County, and usually including several tracts of land. It normally follows a master plan study. It may propose various zones to be applied to various individual tracts. The County Council must hold a public hearing on a proposed sectional map amendment. Since enactment of a sectional map amendment is considered a legislative action of the government, and is intended as a comprehensive implementation of public policy, it does not require a finding of

a change in the character of the neighborhood or a mistake in the original zoning. Approval is by majority vote of the council.

Setback: The required distance that a proposed structure or parking area must be located from the property lines or from other buildings. Setbacks are specified in certain zones.

Site Plan: A detailed plan, required in certain zones, that usually shows proposed development on a site in relation to immediately adjacent areas. It indicates roads, walks, parking areas, buildings, landscaping, open space, recreation facilities, lighting, etc. The Planning Board must approve the site plan before building permits can be issued.

Site Plan Review: The detailed site plans carry out the policies and recommendations of the master plan. As there is flexibility in the layout of buildings and other features on the site, the Planning Board and its staff carefully review these elements with ample room for public input.

Site plan review is required of all floating zones and as a result of the use of optional development provisions of other zones. Further, facilities that fall under the provisions of the County parking ordinance (part of the Zoning Ordinance) are also subject to site plan review for the parking areas.

Site plan review is more detailed than development plan review. It examines such elements as building mass and location, parking area design, grading, landscaping, lighting, fencing and signage. Through this review, issues of compatibility with adjacent land uses can be resolved.

Special Exception: Most zoning classifications include a set of permitted uses and a set of "special exception" or conditional uses. These are uses that, because of the level or nature of the activity associated with them, need to be carefully reviewed before being allowed to be developed on land in that zoning classification. In residential areas, for example, special exception uses include, among others, day-care centers for more than six children, medical clinics, and horticultural nurseries. Gas stations are always special exception uses. Hotels are special exception uses in most industrial zones.

The Zoning Ordinance contains, for each special exception use, a set of criteria that must be met by an application. The applications are reviewed by staff of the Montgomery County Planning Department and recommendations are made by The Montgomery County Planning Board. The decisions regarding each application are made by the Montgomery County Board of Appeals.

Staging: An element of a master plan and the County's growth management system that coordinates the schedule of public facility construction with the pace of private development.

Stormwater Management: The application of various techniques for mitigating the adverse effects of stormwater runoff.

Subdivision: (1) The division of a lot, tract, or parcel of land into two or more lots, plots, sites, tracts, parcels or other divisions for the purpose, whether immediate or future, of sale or building development. (2) The recombination of lots previously created into a new configuration.

Ten-Year Comprehensive Water Supply and Sewerage System Plan: The program of the Washington Suburban Sanitary Commission, subject to approval by the County Council, for the provision of water and sewage service in Montgomery County.

Transit Serviceable: Having sufficient population, employment, and/or commercial density to be served efficiently by public transit.

Two-Year Storm: A storm with a 50 percent statistical probability of being equaled or exceeded in a given year.

Vehicular Capacity: The maximum number of vehicles that can pass through a given road segment, or intersection, during a given time period under prevailing roadway conditions. Also see Level of Service.

Watershed: The area contained within a topographic divide above a specified point on a stream; the area that drains into that stream.

Zoning: Zoning regulates the use of land. All land in Montgomery County (except public rights-of-way) is zoned. Within each zone, the County Zoning Ordinance permits certain uses by right and permits others conditionally. The Ordinance also excludes certain uses from each zone. Zoning is the division of a municipality or county into districts for the purpose of regulating the use of private land. These zones are shown on an official atlas which is part of the Zoning Ordinance. Within each of these districts, the text of the Zoning Ordinance specifies the permitted uses, the bulk of buildings, the required yards, the necessary off-street parking, and other prerequisites to obtaining permission to develop.

Maryland law permits the use of two types of zones, Euclidean and floating zones. There are important distinctions between the two which affect the manner in which they can be employed.

Euclidean Zones: A Euclidean zone is a zone that contains fixed standards. Certain uses are permitted in these zones, but they are subject to rigid requirements such as: lot size; front, side, and rear setbacks; and maximum height. Application for a Euclidean zone may be made either by the property owner or by the government, and thus it may be applied by sectional map amendment or local map amendment (see below).

Maryland law provides that a local map amendment rezoning to a Euclidean zone is permissible only if there has been a change in the planned character of the neighborhood since the last comprehensive rezoning or a mistake in the original zoning. All zones in Montgomery County that are not identified as floating zones (see next paragraph) are Euclidean zones.

Floating Zones: A floating zone does

not contain fixed standards. Findings of change or mistake, required for granting a Euclidean zone, do not have to be made before the application for a floating zone can be granted. Instead, the County Council must find that the proposed rezoning is compatible with surrounding uses and meets other requirements set forth in its "purpose clause."

All floating zones require Planning Board approval of a site plan for development of the property prior to the issuance of a building permit.

Zoning Map Amendment: A change to the regulations of a given zone or zones, as stated in the text of the Zoning Ordinance.

APPENDIX G

Summary of Zoning Classifications Discussed in the Land Use and Zoning Chapter¹

Table G.1

Zone		Maximum Density (Units Per Acre) ² / Building Height
Residential Zones³		
R-200	Single-family	2.0/Acre
R-90	Single-family	3.6/Acre
TDR-3 to 5	Single-family	Varies from 3.0 to 5.0/ acre as determined by the Master Plan.
R-60	Single-family	5.0/Acre
RT-8	Single-family Attached	8.0/Acre
TDR-8 to 10	Single-family (Detached, Attached, and Multi- Family)	Varies from 8.0 to 10.0/ acre as determined by the Master Plan.
R-20	Multi-Family	21.7/Acre
R-10	Multi-Family	43.5/Acre
RS-R	Transit Station-Residential	150/Acre/2.5 FAR
TS-M	Transit Station-Mixed Uses	Variable/3.0 FAR
Commercial Zones		
C-2	General Commercial	3 Stories/42 Feet
C-3	Highway Commercial	3 Stories/42 Feet
C-4	Limited Commercial	3 Stories/40 Feet
O-M	Office Buildings	5 Stories/60 Feet
H-M	Hotel-Motel	15 Stories/1.0 FAR
Employment Zones		
I-1	Light Industrial	10 Stories/120 Feet
I-3	Industrial Park	100 Feet 0.5 FAR ⁴
R&D	Low Density Research and Development	50 Feet/0.3 FAR ⁵
Planned Development and Mixed-Use Zones⁶		
PD (Planned Development) Variable		
MXPDP (Mixed-Use Planned Development) Variable		
RMX01/TDR	Residential-Mixed Use Development, Community Center/Transferable Development Rights	

See Notes on Next Page.

Summary of Zoning Classifications Discussed in the Land Use and Zoning Chapter¹ (cont.)

Table G.1

NOTES

- ¹ The Montgomery County Zoning Ordinance gives the specific provisions for each zone. In certain instances, dwelling unit types and building heights may be changed.
- ² Densities indicated are the maximum permissible, without the bonus for inclusion of Moderately Priced Dwelling Units (MPDU's). These densities do include the cluster option where applicable. Maximum density can only be obtained on land with dedicated rights-of-way and the capability to accommodate required lot sizes. Any subdivision of 50 or more units must include 12.5 percent MPDU's, in which case a density increase of up to 20 percent and optional development standards and unit types are permitted.
- ³ In order to utilize the cluster provisions of the Zoning Ordinance, a developer must receive the approval of the Montgomery County Planning Board. The property must be posted and a public hearing must be held on the application prior to the Planning Board's action.
- ⁴ Optional Method permits increase to 0.6 FAR with extensive traffic mitigation.
- ⁵ Optional Method permits increase to 0.5 FAR
- ⁶ See Land Use chapter for density limitations.

Explanation of Euclidean and Floating Zones

It is standard practice in all master plans adopted in Montgomery County since 1971 to designate a base, or "Euclidean," zone for every parcel and to indicate for some parcels an appropriate floating or optional zone that allows somewhat different development and sets a higher limit on the intensity of development than the base zone. Euclidean zones contain rigid requirements, such as lot size, setbacks, and height limits. Except when developed under the cluster option, the entire land area will be divided into approximately equal size lots.

Base or Euclidean zones may be applied to an entire area by the County Council in a comprehensive rezoning following a master plan study. Piecemeal requests for Euclidean rezonings may be granted only upon a showing that there has been a change in the character of the neighborhood since the last comprehensive rezoning or that there was a mistake in that comprehensive rezoning.

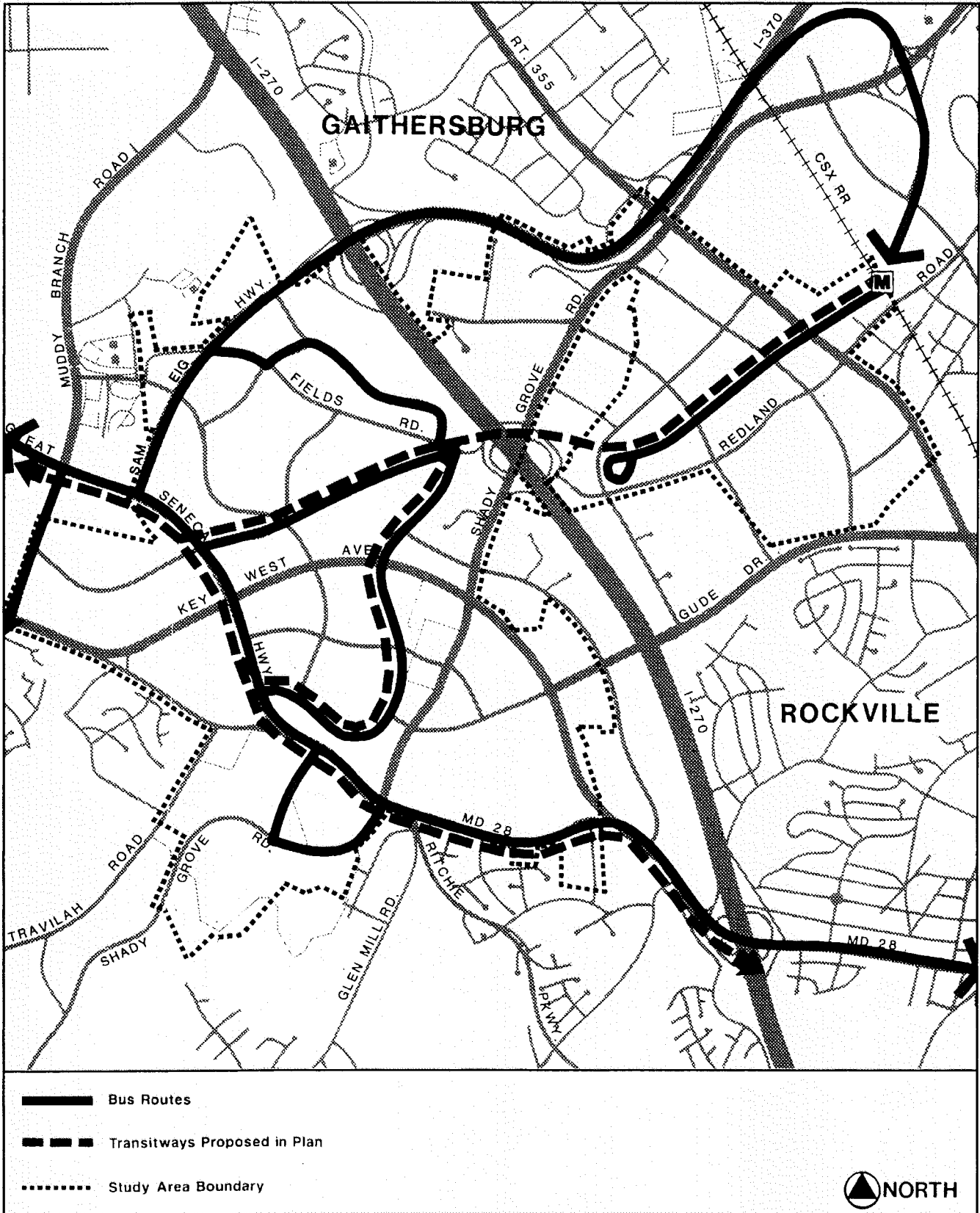
Floating zones have more flexible development standards, but they may be approved by County Council only upon a finding that the development will be compatible with surrounding land uses and is in accord with the purpose clause of the zone. In all floating zones, development can only occur in accordance with a detailed site plan approved by the Planning Board.

The practice of following a master plan with a comprehensive rezoning through a sectional map amendment is a safeguard against piecemeal Euclidean rezonings which could, themselves, establish a precedent for even more rezonings. The comprehensive rezoning establishes the base against which "change" or "mistake" will be measured. Since the comprehensive rezoning conforms to the master plan, and floating zones cannot be considered changes in the character of the neighborhood, there is a strong safeguard against future Euclidean rezoning. This is an important element in assuring the stability of the area.

APPENDIX H

Interim Bus Transit System (Illustrative)

Figure H.1



M-NCPPC