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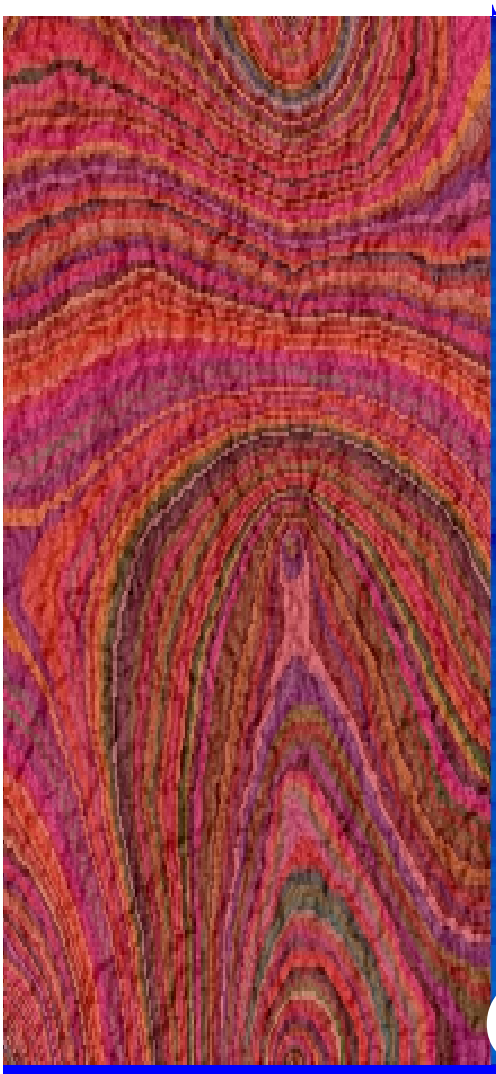

GUIDELINES

for the

Analysis of the Traffic Impact of Development Proposals

The Maryland-National Capital Park & Planning Commission
Prince George's County Planning Department

Abstract

TITLE:	Guidelines for the Analysis of the Traffic Impact of Development Proposals
AUTHOR:	The Maryland-National Capital Park and Planning Commission
SUBJECT:	The technical standard for the evaluation of the adequacy of transportation facilities by the Prince George's County Planning Board
DATE:	September 2002
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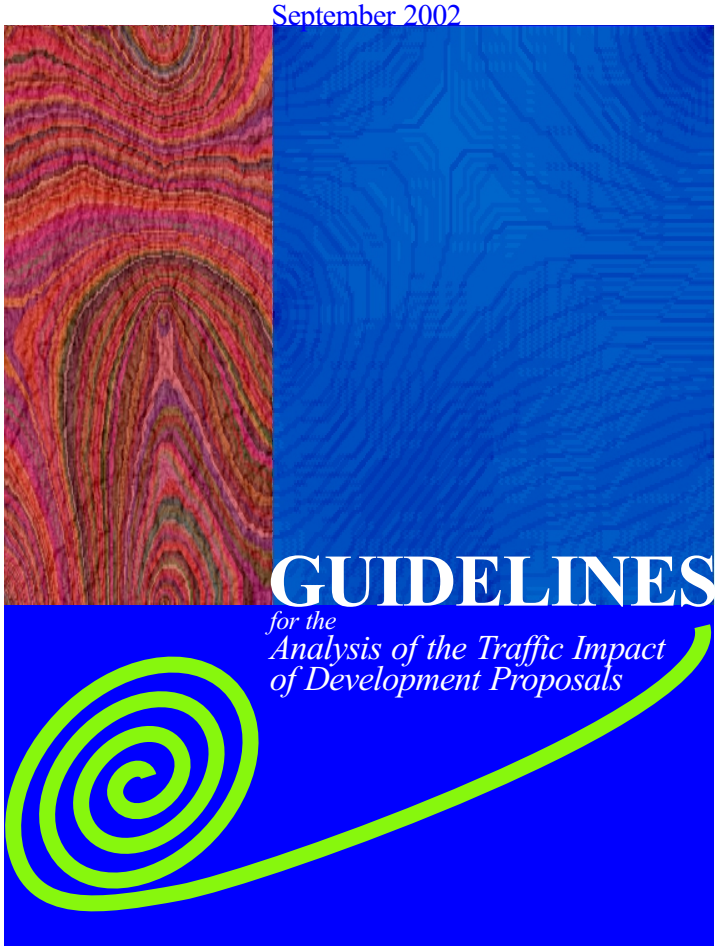
ABSTRACT: This document is the technical standard for the evaluation of the adequacy of transportation facilities by the Prince George's County Planning Board. The *Guidelines* establish criteria by which staff and applicants with land development proposals can assess the traffic impact of the development proposals. They also indicate the manner in which the information will be presented to the Planning Board. A glossary of terms frequently used by transportation professionals is provided in Section 1 of these *Guidelines*. General information for initiating a traffic study is provided in Sections 2 through 4. Section 5 provides detailed guidance on study requirements for each type of application. Sections 6 through 10 describe the specific procedures required for the traffic study. Section 11 describes the procedure for Transportation Facilities Mitigation Plans. Section 12 addresses the procedure for establishment of Road Clubs. The *Guidelines* incorporate methods and practices which are currently being used by the Prince George's County Planning Department's Transportation Planning Section (TPS) staff.

September 2002



The Maryland-National Capital Park & Planning Commission

March 1977
Revised November 1980
Revised February 1984
Revised April 1989
Revised January 1997
Revised September 2002

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The Maryland-National Capital Park and Planning Commission is a bi-county agency, created by the General Assembly of Maryland in 1927. The Commission's geographic authority extends to the great majority of Montgomery and Prince George's Counties: the Maryland-Washington Regional District (M-NCPPC planning jurisdiction) comprises 1,001 square miles, while the Metropolitan District (parks) comprises 919 square miles, in the two counties.

The Commission has three major functions:

- The preparation, adoption, and, from time to time, amendment or extension of the General Plan for the physical development of the Maryland-Washington Regional District;
- The acquisition, development, operation, and maintenance of a public park system; and
- In Prince George's County only, the operation of the entire County public recreation program.

The Commission operates in each county through a Planning Board appointed by and responsible to the County government. All local plans, recommendations on zoning amendments, administration of subdivision regulations, and general administration of parks are responsibilities of the Planning Boards.

The Prince George's County Department of Planning (M-NCPPC):

- Our mission is to help preserve, protect and manage the County's resources by providing the highest quality planning services and growth management guidance and by facilitating effective intergovernmental and citizen involvement through education and technical assistance.
- Our vision is to be a model planning department comprised of responsive and respected staff who provide superior planning and technical services and work cooperatively with decision-makers, citizens and other agencies to continuously improve development quality and the environment and act as a catalyst for positive change.

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The County Council has three main responsibilities in the planning process: (1) setting policy, (2) plan approval, and (3) plan implementation. Applicable policies are incorporated into area plans, functional plans, and the general plan. The Council, after holding a hearing on the plan adopted by the Planning Board, may approve the plan as adopted, approve the plan with amendments based on the public record, or disapprove the plan and return it to the Planning Board for revision. Implementation is primarily through adoption of the annual Capital Improvement Program, the annual Budget, the Ten-Year Water and Sewerage Plan, and adoption of zoning map amendments.

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Table of Contents

Preface

The Prince George's County Planning Board initially adopted general criteria and guidelines for the analytical review of the traffic impacts of land development proposals on March 3, 1977. These criteria and guidelines were revised in 1980, 1984, 1989 and 1997. The information which follows is the fifth revision of the guidelines, pursuant to the County Council's approval of the General Plan in 2002. This action provides new policy direction by identifying geographic policy areas with different level-of-service standards in each policy area. Additionally, the guidelines have been modified to incorporate methods and practices which are currently being used by the Prince George's County Planning Department's Transportation Planning Section (TPS) staff.

The guidelines establish criteria by which staff and applicants with land development proposals can assess the traffic impact of the development proposals. They also indicate the manner in which information will be presented to the Planning Board. Traffic studies employing the mitigation procedures in Section 11 of these guidelines should place all analyses and recommendations concerning mitigation into a separate section of the report. This section, titled the "Transportation Facilities Mitigation Plan," should be placed at the end of the text of the traffic study and prior to the appendices.

To facilitate staff review, all traffic studies should include the following:

1. Name of the project, applicant and correspondent.
2. Application type and/or number (if available).
3. A plan of appropriate scale showing all proposed driveways and internal roadways and the acreage of the subject parcel.
4. A vicinity map showing the exact location of the property.

Any previous application numbers and approvals associated with the parcel.

A glossary of terms frequently used by transportation professionals is provided in Section 1 of these guidelines. General information for initiating a traffic study is provided in Sections 2 through 4. Section 5 provides detailed guidance on study requirements for each type of application. Sections 6 through 10 describe the specific procedures required for the traffic study. Section 11 describes the procedure for Transportation Facilities Mitigation Plans. Section 12 addresses the procedure for establishment of Road Clubs. Figure 2 is a table of Traffic Study Requirements and Findings. Appendix A includes the text of CB-61-1993, which provides procedures for establishing a Transportation Demand Management District.

1 Glossary of Terms Used in the Guidelines

Access Controls	Regulations by which access to a road facility from individual driveways, minor streets or major streets may be limited for the purpose of increasing roadway capacity and improving safety
Arterial	A roadway for through traffic with partial control of access linking major traffic generators and communities to regional highway facilities
At-Grade Intersection	The location at which two roadways cross and join at the same vertical elevation; access through the intersection may be controlled by traffic signals or stop/yield signs
Average Daily Traffic (ADT)	The total traffic volume passing a point or segment of a roadway in both directions during an average 24-hour period
Background Traffic	In a traffic analysis, current traffic in accordance with recent traffic counts + traffic generated by pipeline development + growth in through traffic on the current road network + all roadway improvements which are fully funded by the state, the county or another party
Capacity	On a roadway link, the maximum number of vehicles which can pass a given point during one hour under prevailing roadway and traffic conditions
Collector	A roadway with no control of access linking residential communities with the arterial system
Critical Lane Volume (CLV)	At an intersection, the sum of the critical movements in the north-south direction and the east-west direction
Critical Movement	At an intersection, the highest total of the through movement + its opposing left-turn movement in one direction on an hourly, per-lane basis (for example, the critical movement in the north-south direction is the higher of the northbound through movement + the southbound left-turn movement, computed on an hourly per-lane basis, and the southbound through movement + the northbound left-turn movement, computed on an hourly per-lane basis)
Cycle	The time period required for one complete sequence of traffic signal indications
De Minimus Development	A development which generates five or fewer peak hour trips
Design Speed	The maximum safe speed for which the various physical features of the roadway are designed

Diverge Point	A location at which a single lane of traffic separates into two separate lanes, such as where a ramp leaves a highway
Existing Traffic	In a traffic analysis, current traffic in accordance with recent traffic counts on the current road network
Expressway	A divided highway for through traffic with full control of access using grade-separated interchanges and some well-spaced at-grade intersections
Freeway	A divided highway for through traffic with full control of access using grade-separated interchanges exclusively
Grade Separation	A location where two roadways cross, with one passing over the other on an overpass, but lacking a direct connection via a system of ramps
Grade-Separated Interchange	A location where two roadways cross, with one passing over the other on an overpass, and with a system of ramps joining the two roadways
Level of Service (LOS)	A qualitative measure using a sequence of letters from A through F to describe the quality of operational conditions within an intersection or a roadway link. The LOS standards used in the guidelines are based on the Prince George's County General Plan, approved by the County Council in 2002.
Merge Point	A location where a ramp enters a highway, allowing traffic to enter the main traffic flow on the highway
Modal Split	The percentage of people using a particular means of transport, such as auto, transit, or walk, to make a trip
Operating Speed	The maximum average observed speed for a given set of roadway and traffic conditions
Pass-By Trip	A trip generated by a land use which is already using the road adjacent to the land use; most frequently associated with land uses such as retail centers, service stations and fast-food restaurants
Peak Hour	The one-hour period of greatest utilization of a transportation facility; weekdays normally have two peaks, one in the morning and one in the afternoon
Peak Period	A three-hour period during which a transportation facility has significantly increased levels of use; includes the peak hour
Phase	A portion of a traffic signal cycle allocated to any traffic movement or combination of traffic movements
Pipeline Development	Development having an approved and valid Preliminary Plan of Subdivision, Final Plat or Record Plat

Ramp	A length of roadway providing an exclusive connection between two highway facilities
Roadway Link	A segment of roadway between two points
Through Traffic	Trips which begin **and** end outside of a given study area which pass through the study area
Total Traffic	In a traffic analysis, background traffic plus traffic generated by the development under consideration
Traffic Control Device	Any sign, signal, pavement marking or device placed or erected for the purpose of regulating, warning or directing traffic and/or pedestrians
Transportation Staff	The Transportation Planning staff located in the Transportation Planning Section (TPS) in the Countywide Planning Division of M-NCPPC, or such other staff persons who may be designated to advise the Planning Board on transportation issues
Trip	A one-way movement by a person or a vehicle having an origin and a destination
Trip Assignment	The process of allocating vehicle travel generated within a land parcel to each link of the roadway network
Trip Distribution	The process of estimating the direction of travel and the length of vehicle trips originating from or destined for the uses on a land parcel
Trip Generation	The process of estimating the number of vehicle trips originating from or destined for the uses on a land parcel
Volume-to-Capacity Ratio (V/C)	A performance measure computed using the ratio of an actual roadway volume to the capacity of a roadway link
Weaving Section	A highway section where the pattern of traffic entering and leaving at adjacent points of access results in vehicle paths crossing each other

2 Traffic Study Scope and Submittal

An assessment of the area that will be affected by traffic generated by the proposed development must be made. The size and shape of the study area will depend on the size and type of development proposed, the existing and planned roadway system, adjacent and proposed land uses, and the presence of natural or man-made barriers. Prior to beginning a traffic study, the applicant or designee shall submit a Scoping Agreement (Figure 1) and request concurrence of the M-NCPPC Transportation Planning Section (TPS) staff in the Countywide Planning Division of the Prince George's County Planning Department. The Scoping Agreement specifies the study area and the other relevant assumptions associated with the traffic study. The study area should generally include all significant transportation facilities (defined as any site access point, intersection between collector, arterial, and/or expressway facility, interchange, or roadway link where there is typically a two-mile interval between signalized intersections) to which 20 percent, or 150 peak hour trips, of the applicant's site-generated traffic is assigned, whichever is less. **It is strongly recommended that traffic study scoping issues be identified at or before the Subdivision Review Committee Meeting, or at or before the first meeting between staff and the applicant following submission of development applications subject to the county's adequate public facilities requirements for transportation facilities**. Staff will review the applicant's proposed Scoping Agreement with the operating agencies, including municipalities, and respond with comments or concurrence within 10 working days.

Where the traffic study report is submitted in paper hardcopy, seven copies must be provided, with additional copies for municipalities if needed. Alternatively, applicants may provide one paper hardcopy of the study report and one copy in .pdf (Adobe Acrobat) format via the internet. **All submissions of traffic study reports or other traffic data for the record must be made via the Development Review Division of the Prince George's County Planning Department.** The traffic study reports received by Development Review are immediately logged and turned over to TPS staff.

Once a traffic study is received by TPS staff, a review of the study for sufficiency will be completed within three days. This review consists of the following:

a. Verifying existing conditions.

b. Checking consistency of all assumptions with the Scoping Agreement and other supporting documentation of the application.

c. Confirming the appropriate use of procedures and methods of analysis from these guidelines or from other professionally recognized sources.

d. Confirming the submission of all count sheets, surveys or other site-specific field data.

Upon completion of this review, if the traffic study is acceptable, it is referred to other agencies for review and comment. Traffic studies in support of a subdivision application must be accepted for review no fewer than 45 days prior to the scheduled Planning Board hearing date. Traffic studies in support of Comprehensive Design Plans or Conceptual Site Plans require a similar review period. Traffic studies in support of zoning applications must be accepted for review no fewer than 75 days prior to the scheduled Planning Board hearing date because staff reports are required to be completed 30 days in advance of the Planning Board hearing date.

Figure 1

The Maryland-National Capital Park and Planning Commission
Prince George's County Planning Department
Transportation Planning Section, Countywide Planning Division

TRAFFIC IMPACT STUDY SCOPING AGREEMENT

This form must be completed prior to commencing a Traffic Impact Study. The completed Scoping Agreement should be submitted to the Transportation Planning Section (TPS) by the traffic consultant for concurrence and signature. TPS will return a signed copy, with any comments, to the traffic consultant for inclusion in the Traffic Impact Study. Failure to conduct the study in accordance with the guidelines and the signed Scoping Agreement may be grounds for rejection of the study, thereby necessitating an addendum or a new study prior to the start of the staff review.

1. Date:_____ 2. Consultant: _____
3. Project Name:_____
4. Type of Application (see Figure 2 of Guidelines): _____
5. Location (please attach map showing site location and boundaries)
   Policy Tier_____ Center_____ Corridor_____
6. Municipality _____
7. Use (check one): Residential_____ Commercial_____ Other_____
   If Residential, number and type of units proposed: _____
   If Commercial, amount and type of space proposed: _____
   If Other, describe: _____
8. SHA/DPW&T improvements assumed: _____
   _____
9. Other improvements assumed: _____
   _____
10. Will study assume trip reduction? (check one) Yes _____ No_____
    Describe the source: _____
11. Is Mitigation (Section 11 in Guidelines) proffered? (check one) Yes_____ No____
12. Will SCRP (Section 12 in Guidelines) be used? (check one) Yes_____ No____
13. Will summer counts be used? (check one) Yes_____ No____
14. Do you want staff to provide you with a list of background development? (check one)
    Yes_____ No____

Please attach a map (or maps) showing Study Area network with included intersections and links, estimated site trip distribution, and growth factors for through traffic. Please note any other assumptions and/or comments on a separate sheet with initials.

SIGNED: _____ _____
Consultant **Date**

APPROVED: _____ _____
TPS Coordinator (or Supervisor) **Date**

3 Inventory

a. Roadway Configuration

Within the study area an inventory indicating the characteristics of existing roadways should be compiled, shown on a map of appropriate scale, and included in the traffic study. A field inspection of the roadways which will be affected by traffic generated by the proposed development should be made to determine the number of lanes, the number of approach lanes at intersections, the location of median openings, type of intersection controls in place, signal phasing, horizontal and vertical alignment (if irregular), and location of existing access points.

b. Traffic Counts

Recent traffic counts must be included for all links and intersections within the study area. Counts at intersections should consist of AM and PM weekday peak-hour turning movements and/or turning movements at other times as deemed necessary by TPS staff.

The beginning and ending times for the peak hours will be identified by inspection of peak period or longer duration count tabulations based on counts not more than one year old at the time the traffic study is submitted.

Traffic counts are generally available from the State Highway Administration (SHA) and the county Department of Public Works and Transportation (DPW&T). Currently, SHA has a website with a traffic count database. Traffic data must reflect existing normal peak-hour conditions at the time of the study, and should not be used if more than one year old at the time of original submission of the application or if significant changes have occurred at or near the count location. The traffic consultant or the applicant shall be responsible for providing traffic counts that are not available through the state or the county. Traffic counts should not be conducted during periods or days when schools are closed, or on days before or after national or local holidays, or on Mondays or Fridays. Currently, the Prince George's County school year calendar is posted on a page linked to http://www.pgcps.org. While summer counts are discouraged, they can be used in selected cases with seasonal adjustment factors. Traffic consultants should obtain TPS staff approval, however, before taking summer counts. When acceptable, summer counts should be adjusted with the following factors:

Month	AM Peak Hour	PM Peak Hour
June	1.04	1.05
July	1.07	1.06
August	1.06	1.04

The occurrence of significant traffic incidents (accidents, closures, etc.) or inclement weather in the vicinity of the count location during the count may provide a basis for disallowing the count. In addition, ongoing construction on nearby roadways may cause temporary diversions that could result in counts which do not reflect normal conditions. Adjustments to counts taken under these circumstances should be made using a method acceptable to TPS staff.

c. Transit

Existing transit service that serves the proposed development should be noted. The location of bus routes, location of bus stops, frequency of service, and hours of operation should be noted; however, this information is required if vehicle trip reductions are being assumed because of this service. Proximity to Metrorail or commuter rail station(s) should also be cited (if applicable) with accompanying information such as Metro ridership and mode of arrivals data provided. This information is available from the Washington Metropolitan Area Transit Authority (WMATA) and the Prince George's County DPW&T, Division of Transit.

d. Pedestrian and Bikeway Facilities

Pedestrian and bikeway facilities which connect or are proposed to connect the proposed development to adjacent trip-generating uses should be noted; however, this information is required if vehicle trip reductions are being assumed because of these facilities. Proximity to these adjacent trip-generating uses should be within a 10-minute walk or bike ride. Data on the expected share and distribution of pedestrian and cyclist trips may be considered in the preparation of the traffic study by the TPS staff. However, this information should be verified with TPS staff, including the Trails Planner.

e. Land Use

A knowledge of nearby existing land uses and their approved access locations is useful in assessing the access required from the roadways in the study area. Field inspection will determine existing land uses.

f. Traffic Accident Data

Section 24-125 of the Prince George's County Code provides that the Planning Board may "impose such conditions as are needed to protect the public health and safety" in the case of a "commercial or industrial subdivision fronting on an arterial road or a road of greater capacity." In such cases, the applicant may be required to provide information relating to "traffic safety and efficiency," including "access points, directional signing, internal circulation and general parking proposals." In addition, Section 27-317 of the Code (pertaining to Special Exceptions) lists the findings required for approval of Special Exceptions, including Subsection (a)(4), "The proposed use will not adversely affect the health, safety or welfare of residents or workers in the area." However, the Planning Board does not have authority to make its own findings regarding the causes of traffic accidents and the corrective actions needed to address safety issues, so the analysis does not need to go into that level of detail.

If requested at a scoping meeting or by the Planning Board, the accident data to be presented should be obtained along the roadway link subject to the required findings for Sections 24-125 and 27-317 (generally the frontage of the property) for the three-year period prior to the submission of the study. Accident rates (based on total accidents) for the subject roadway link should be compared to the average for roadways of comparable classification in Prince George's County. Accident data are available from the state's traffic accident reporting system and can be accessed through SHA's Office of Traffic and Safety (OOTS) or DPW&T's Division of Traffic Engineering. These contacts should be made as early as possible to allow time for processing the information request.

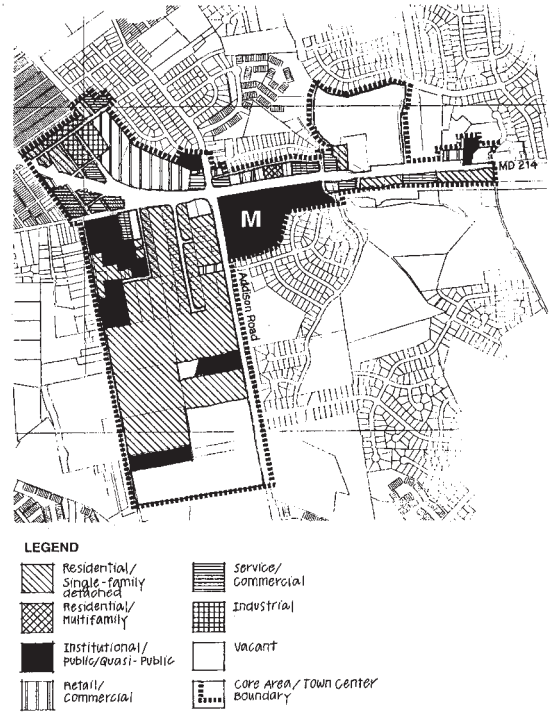
4 Projected Traffic Growth and Planned Transportation Improvements

The growth in traffic within a study area should include traffic generated by other planned development in the study area and an estimate of growth in through traffic (trips with both an origin and a destination outside the study area).

Growth in through traffic may be estimated using either historical traffic data, knowledge of the surrounding area or application of a gravity model. Extrapolation of historical data from at least the past ten years may be considered acceptable for developments that will be built within a six-year time horizon. More in-depth study of the surrounding area is encouraged for development proposals of a broader scale.

For those study areas that are adjacent or very near to the county line, an effort should be made to identify those through trips in the study area that have an origin or destination outside the county. The technique utilized should be decided in consultation with TPS staff.

The amount of planned development that must be considered in traffic studies for various types of development reviews (i.e., approved zoning, subdivisions, etc.) will vary depending on the type of development review underway. The requirements for considering planned development for each type of study are identified in the appropriate paragraphs in Section 5. At this time, there is no singular source of reference for planned, or background, development. TPS staff has a listing of subdivisions in the county with the status of preliminary plans or final plats and an indication of the number of building permits issued within the subdivision. While the Planning Department will provide limited assistance to consultants, identifying relevant background developments in the study area, it is the ultimate responsibility of the traffic consultant to ensure that the background development list is complete prior to detailed staff review of the traffic study. As new resources for identifying background development become available, the TPS staff will inform traffic consultants of their availability.



Information concerning approved Basic Plans, Comprehensive Design Plans, and other types of applications that do not involve plats should be obtained from the appropriate planner in the Community Planning Division in cooperation with TPS staff. Field checking of background development is strongly advised. Older subdivisions for which a final plat has not been approved or recorded should also be researched; the preliminary plan of subdivision may have expired. The types of background development that require consideration are identified in the appropriate paragraphs in Section 5.

Planned transportation system improvements considered in preparing traffic studies will also vary depending on the type and phasing of development under study. Planned improvements that should be considered are identified in the

appropriate paragraphs in Section 5. Improvements in the county's Capital Improvement Program (CIP) and SHA's Consolidated Transportation Program (CTP) which are fully funded for construction can be considered. Bonded improvements have the same status as CIP or CTP improvements when the following criteria are met:

a. The bonding is sufficient to cover 100 percent of the construction cost of the improvement assumed in the traffic analysis.

b. The construction permit has been approved by SHA or DPW&T.

c. A construction schedule (for the improvements to be built within the next six years) has been included in the permit package.

In order to include a bonded improvement in a traffic analysis, the applicant must demonstrate that the above criteria have been met.

5 Requirements for Traffic Studies For Various Types of Applications

The Prince George's County Planning Board processes hundreds of development applications in any given year, and only a portion of these applications should be accompanied by a traffic study. Figure 2 summarizes the types of applications handled by the Development Review Division (which includes the Subdivision, Urban Design Review, and Zoning Sections) and the traffic study requirements for each type of application. Also, Figure 2 paraphrases the required transportation finding(s) for each type of application, with a reference to the appropriate section of the Prince George's County Code if clarification is needed. Any submitted traffic study should provide the necessary information to support the required finding(s) for the appropriate application.

Whether a traffic study is required or not, TPS staff must address the required finding(s) at the time that any application is reviewed. This is particularly true for subdivision applications; regardless of the size of the subdivision, TPS staff is required to address the subdivision findings during their review. In doing so, all development applications are treated fairly regardless of size. The Planning Board may find that the traffic impact of a very small development is a de minimus or insignificant impact. Under the guidelines, a de minimus development is one that generates five **or fewer** peak-hour trips.

While Figure 2 provides general information for each type of development application, the following discussions highlight more detailed information associated with the major types of applications.

a. Conventional or Euclidean Zone and Special Exception Petitions

The Zoning Ordinance does not require traffic studies for most Conventional Zones or Special Exceptions. However, to ensure that applicants, the public and reviewing agencies are aware of the traffic impacts of some zoning applications and special exceptions, traffic studies may be requested in accordance with the criteria in Figure 2. Should a study be required or should the applicant elect to submit a study, the scope of the traffic study should vary according to whether or not the changes are in accordance with the land use recommendations of the adopted master plan.

It is strongly suggested that a zoning application that is in conformance with the land use densities and staging recommended in the master plan or a Special Exception application be accompanied by traffic studies if the recommended land use(s) will attract or produce 100 new or diverted trips or more in the peak hour of the adjacent roadway or the generator. For Conventional Zones, trip generation rates for the highest use of the land allowed in the requested zone will be used for traffic studies (unless otherwise specified). For Special Exceptions, the proposed use(s) will provide the basis for trip generation.

All traffic studies prepared in support of applications for Special Exceptions must include a comparison of the traffic generated by the land use requested under the Special Exception and the land use allowed under the applicable basic zoning. Special Exception traffic studies should focus on conditions based on all existing and approved development within the study area.

Traffic studies for rezonings which are in accordance with the land use recommendations of the adopted master plan should focus on existing conditions, “pipeline” development (development having an approved and valid Preliminary Plan of Subdivision, Final Plat or Record Plat), and the timing of transportation system improvements. Since the land use recommendations for such properties were developed in concert with recommendations for transportation facilities, the only item that must be addressed is if the timing of planned transportation improvements and the

Figure 2
Traffic Study Requirements And Findings

TYPE OF APPLICATION	TRAFFIC IMPACT STUDY (TIS) REQUIREMENT	REQUIRED TRANSPORTATION FINDINGS FOR APPROVAL
SUBDIVISION		
Preliminary Plan of Subdivision	TIS required if development generates 50 trips or more during any peak hour; in cases where a development generates fewer than 50 trips, the transportation staff must still make the required subdivision findings, and may request (but not require) a limited traffic study or traffic counts to assist in making these findings.	(1) There will be adequate access roads available to serve traffic which would be generated by the proposed subdivision, or such roads have 100% construction funding in the CIP or the CTP. (2) Traffic generated by the proposed subdivision will be accommodated on nearby intersections and roadways such that they would function below the minimum peak-hour service levels defined in the Prince George's County General Plan; or roadway improvements and/or trip reduction programs fully funded by the subdivider will alleviate the inadequacy. (3) Pursuant to CR-29-1994, applicant may proffer a Transportation Facilities Mitigation Plan which provides for roadway improvements, trip reduction programs, or (for developments generating 25 or fewer peak-hour trips), a pro rata share of the cost of roadway improvements. (Sec. 24-124)
Final Plat	No TIS required	The Final Plat is in accordance with the approved Preliminary Plan and includes any modifications made by the Planning Board. (Sec. 24-119(e)).
ZONING		
Conventional or Euclidean Rezoning	TIS recommended for applications generating 100 or more net trips in any peak hour. Also, if proposed zoning is not in conformance with master plan land use recommendations, an additional analysis is required to determine whether the uses proposed will generate traffic which would lower the level of service anticipated by the land use and circulation systems on the general or the area master plan.	The applicant must prove that either there has been a substantial change in the character of the neighborhood, or there was a mistake in the original zoning or subsequent rezoning by adoption of the SMA. The District Council may impose conditions which are necessary to protect surrounding properties from adverse effects or to further enhance the development of the Regional District. (Sec. 27-157)

TYPE OF APPLICATION	TRAFFIC IMPACT STUDY (TIS) REQUIREMENT	REQUIRED TRANSPORTATION FINDINGS FOR APPROVAL
Comprehensive Design Zone	If proposed zoning is not in conformance with master plan land use recommendations, an analysis is required to determine whether the uses proposed will generate traffic which would lower the level of service anticipated by the land use and circulation systems on the general or the area master plan.	The uses proposed will not generate traffic which would lower the level of service anticipated by the land use and circulation systems on the general or the area master plan. (Sec. 27-195)
M-X-T Zone	If proposed zoning is not in conformance with master plan land use recommendations, an analysis is required to determine whether the uses proposed will generate traffic which would lower the level of service anticipated by the land use and circulation systems on the General or the area master plan.	The entire tract is located within the vicinity of a major intersection (at least two of the streets forming the intersection are of arterial classification or higher) or a major transit stop or station which is reasonably expected to be in place in the foreseeable future; or the applicable master plan recommends mixed land uses similar to those permitted in the M-X-T Zone. Also, the location of the proposed uses will not substantially impair the integrity of any master plan or the General Plan and is in keeping with the purposes of the M-X-T Zone. The District Council may impose conditions which are necessary to protect surrounding properties or to enhance the development of the Regional District. (Sec. 27-213)
M-X-C Zone	Due to the size and mixed-use character of such a zone, TIS required for all applications, with TIS primarily addressing long-term effects on the transportation system.	Transportation facilities (including streets and public transit) which are existing, under construction, or which are provided for in an adopted and approved master plan or the General Plan, or which will be otherwise provided, will be adequate to carry anticipated traffic. (Sec. 27-213)

TYPE OF APPLICATION	TRAFFIC IMPACT STUDY (TIS) REQUIREMENT	REQUIRED TRANSPORTATION FINDINGS FOR APPROVAL
Special Exception	TIS recommended for applications generating 100 or more net trips in any peak hour; however, TIS is specifically required for the following uses: amusement park, asphalt mixing plant, concrete mixing or batching plant, sand and gravel wet processing plant, surface mining.	The proposed use will not substantially impair the integrity of any master plan or the General Plan; will not adversely affect the health, safety, or welfare of workers or residents in the area; and will not be detrimental to the use or development of adjacent properties or the general neighborhood. The District Council may impose conditions which are necessary to protect surrounding properties or the general neighborhood. (Sec. 27-317)
Departure	No TIS recommended. However, specialized studies may be needed in support of specific findings, particularly for Departures from Parking and Loading Standards.	Departures from Design Standards and Departures from Sign Design Standards require a finding that the purposes of the Zoning Ordinance are better served by the alternative method proposed by the applicant. Departures from Parking and Loading Standards require findings that the request meets the purposes of the Zoning Ordinance; the request is the minimum necessary; the departure is needed to alleviate circumstances which are special to the subject use and its location; all methods for calculating the required spaces have been used or are impractical; and needs of adjacent residential areas will not be infringed upon if the departure is granted. (Sec. 27-587, Sec. 27-588, Sec. 27-614)
URBAN DESIGN		
Conceptual Site Plan	TIS is ordinarily not required at this time. In cases where the M-X-T Zone was granted during a sectional map amendment, or in other cases where a particular zone was granted with the condition that a TIS be submitted at the time of Conceptual Site Plan, a TIS would be required.	The submitted plan represents a most reasonable alternative for satisfying the site design guidelines without requiring unreasonable costs or detracting substantially from the utility of the development (Sec. 27-276(b)). In cases where a more transportation-specific finding is required, the transportation finding for a Comprehensive Design Plan is recommended.

TYPE OF APPLICATION	TRAFFIC IMPACT STUDY (TIS) REQUIREMENT	REQUIRED TRANSPORTATION FINDINGS FOR APPROVAL
Comprehensive Design Plan	TIS required for applications generating 50 or more net trips in any peak hour.	The proposed development will be compatible with existing land use, zoning, and facilities in the area; transportation facilities will be adequate as required under Section 24-124; and the land use and facilities proposed by the plan are compatible in relation to building coverage/open space, setbacks, and circulation access points. (Sec. 27-521)
Detailed Site Plan	TIS is ordinarily not required at this time. In cases where the M-X-T Zone was granted during a sectional map amendment, or in other cases where a particular zone was granted with the condition that a TIS be submitted at the time of Detailed Site Plan, a TIS would be required.	The submitted plan represents a reasonable alternative for satisfying the site design guidelines without requiring unreasonable costs or detracting substantially from the utility of the development; and is in general conformance with the Conceptual Site Plan, if one was required (Sec. 27-285(b)). In cases where a more transportation-specific finding is required, the transportation finding for a Specific Design Plan is recommended.
Specific Design Plan	TIS is ordinarily not required at this time. However, in cases where more than five years have passed since APF findings were made in conjunction with the subdivision process, or where the funding of transportation facilities required for the development of the subject property has been delayed, a TIS is strongly recommended for applications generating 50 or more net trips in any peak hour.	The development will be served within a reasonable period of time with existing or programmed public facilities shown in the CIP or CTP, or provided as part of the development; and the plan conforms to the approved Comprehensive Design Plan. (Sec. 27-528)

proposed development will coincide. The applicant must show that adequate transportation facilities consistent with the requirements of the Subdivision Ordinance (see 5.e below) will be available to support the proposed development.

All zoning applications which suggest a change of land use which is not in accordance with the land use recommendations of the adopted master plan should be accompanied by a traffic study which is more comprehensive in scope. The reason for this is that the ability of the planned transportation system to accommodate such development proposals has never been tested. Therefore, testing must take place to ensure that the planned transportation system will not become inadequate as the area around the subject parcel develops. This is basically the same analytical process used by TPS staff to evaluate master plans. The procedure for this type of study is described in the next subsection of the guidelines (Comprehensive Design Zones).

In circumstances where the traffic impact of a proposed rezoning results in an unacceptable condition on the study area transportation network, transportation amendments to the adopted and approved master plan or General Plan may be considered by the Planning Board and/or the District Council as a part of the application. This is provided that such improvements are agreed to as a condition of the approval of the rezoning by the responsible road agency, and that such improvements are participated in or funded by the applicant.

Traffic impact analyses for Special Exceptions for sand and gravel wet processing plants, sanitary landfills, rubblefills and surface mining shall include traffic generated by other approved but nonoperating sand and gravel wet processing plants, sanitary landfills, rubblefills and surface mines in addition to existing traffic, traffic from approved pipeline development, site-generated traffic and future growth in through traffic on major roadways. An inventory of approved but nonoperating sand and gravel wet processing plants, sanitary landfills, rubblefills and surface mines is maintained by the Planning Department's Development Review Division pursuant to Section 27-410(a)(8).

b. Comprehensive Design Zones

Comprehensive Design Zone (CDZ), Comprehensive Design Plan (CDP), and some Specific Design Plan (SDP) applications normally are accompanied by traffic studies, as indicated in Figure 2. A summary of these requirements follows for information purposes. Additional guidance can be provided as well from TPS staff.

(1) Basic Plan Petitions

The procedures for completing a traffic study for a CDZ submission should support the findings required for CDZ approval. The Zoning Ordinance requires that a report be prepared to evaluate the transportation facilities on the adopted and approved master plan or *Master Plan of Transportation* in conjunction with the full development of the area, taking into consideration any known changes that have taken place in development since the master plans were approved. It is recommended that testing for applications which suggest a change in land use which is not in accordance with the land use recommendations of the adopted master plan be performed using the Planning Department's travel demand forecasting

model. The applicant should meet with TPS staff to identify the study parameters and either (a) obtain data lease agreement forms for use of the Planning Department's travel demand forecasting model datasets by his consultant, or (b) arrange for a payment schedule for TPS staff to prepare the analysis.

The traffic analysis will be based on forecasts of average daily traffic (ADT) volumes developed utilizing the Planning Department's travel demand forecasting model or another long-range forecasting methodology acceptable to TPS staff. These forecasts shall incorporate the following:

(a) Land use assumptions reflecting the buildout condition within Prince George's County, in accordance with adopted and approved master plans or the General Plan.

(b) Land use assumptions reflecting the latest available long-range land use forecasts outside of Prince George's County, as provided by the Metropolitan Washington Council of Governments, the Baltimore Regional Council of Governments, or the Tri-County Council of Southern Maryland.

(c) Transportation facilities (including streets and public transit) which are existing, under construction, or which are provided for in an adopted and approved master plan or the General Plan, or which will be otherwise provided.

The traffic study will report the results of two modeled scenarios:

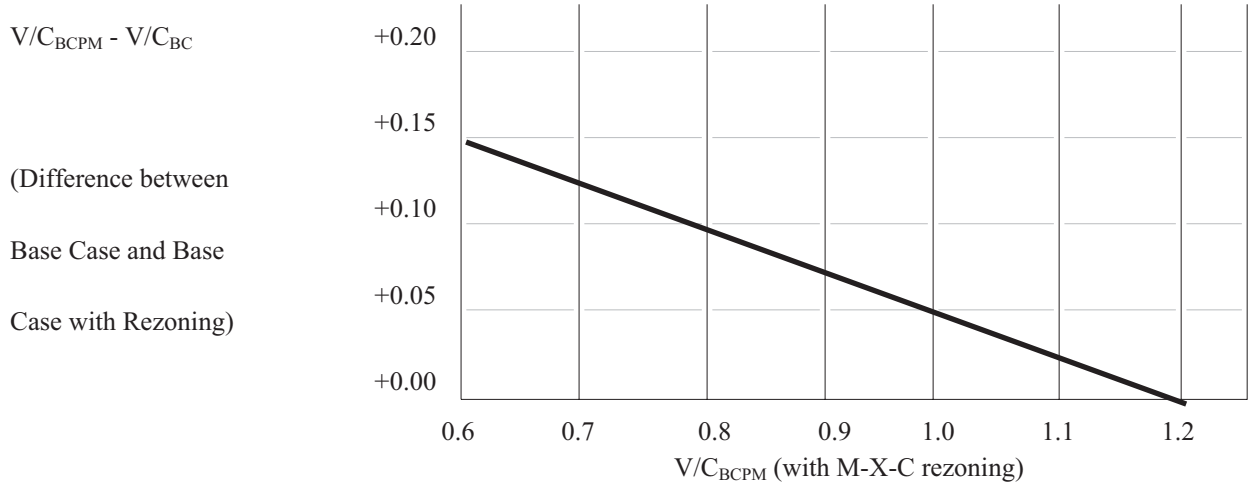
(a) The Base Case model run shall incorporate the elements listed above **without** the subject rezoning.

(b) The Base Case Plus Rezoning model run shall incorporate the elements listed above **with** the subject rezoning. The land uses on the subject property to be incorporated into this model shall be determined by the applicant, subject to agreement by the staff at the time the traffic study is scoped.

Traffic adequacy will be measured based on daily volume-to-capacity (V/C) ratios. Transportation facilities will be considered adequate if the V/C ratios under the Base Case Plus Rezoning scenario are no greater than either (a) the V/C ratios shown in Figure 3 or (b) the V/C ratios from the Base Case scenario.

In circumstances where the traffic impact of a proposed rezoning results in an unacceptable

Figure 3
Acceptable Change in V/C Ratio for M-X-C Zoning



condition on the study area transportation network, transportation amendments to the adopted and approved master plan or the General Plan may be considered by the Planning Board and/or the District Council as a part of the application. This is provided that such improvements are agreed to as a condition of the approval of the rezoning by the responsible road agency, and that such improvements are participated in or funded by the applicant.

(2) Comprehensive Design Plans (CDPs)

The Zoning Ordinance requires that the traffic impact of each stage of the CDP be evaluated. The applicant must show that adequate transportation facilities consistent with the requirements of the Subdivision Ordinance (see 5.e below) will be available to support the proposed development.

(3) Specific Design Plans (SDPs)

The Zoning Ordinance requires that the Planning Board find that the development proposed in an SDP will be adequately served within a reasonable period of time with existing or programmed public facilities (shown in the county CIP, the state CTP, or provided as part of the private development). While a traffic study is not normally requested to accompany the SDP application, there are occasions when a new study may be necessary to make the required findings. These circumstances are described in Figure 2; the applicant should meet with TPS staff prior to SDP submittal to determine traffic study requirements. If a traffic study is required, it must show that adequate transportation facilities consistent with the requirements of the Subdivision Ordinance (see 5.e below) will be available to support the proposed development.

For needed transportation facilities that do not exist at the time of SDP submittal, a schedule for constructing these needed facilities must be furnished by the applicant as a part of the SDP application or the accompanying traffic study.

c. M-X-T (Mixed-Use Transportation-Oriented) Zone Petitions

The method previously described for traffic studies for CDZ applications also applies to M-X-T applications. Unless the M-X-T zoning was granted under a sectional map amendment, the CDP procedures (see 5.e below) should be used in the analysis of Conceptual Site Plan applications in the M-X-T Zone. Also, unless the M-X-T zoning was granted under a sectional map amendment, the SDP procedures should be used for the analysis of Detailed Site Plan applications in the M-X-T Zone.

d. M-X-C (Mixed-Use Community) Zone Petitions

Applications for an M-X-C Zone shall be accompanied by a traffic study. The scope of the traffic study, including the study area, traffic assumptions, network assumptions, land use assumptions, and analysis methodology, will be submitted to TPS staff for review and approval prior to the preparation and submittal of the traffic study.

The traffic analysis will be based on forecasts of average daily traffic (ADT) volumes developed utilizing the Planning Department's travel demand forecasting model or another long-range forecasting methodology acceptable to TPS staff. It is recommended that testing for applications which suggest a change in land use which is not in accordance with the land use recommendations of the adopted master plan be performed using the Planning Department's travel demand forecasting model. The applicant should meet with TPS staff to identify the study parameters and either (1) obtain data lease agreement forms for use of the Planning Department's travel demand forecasting model datasets by his consultant, or (2) arrange for a payment schedule for TPS staff to prepare the analysis. These forecasts shall incorporate the following:

(1) Land use assumptions reflecting the buildout condition within Prince George's County, in

accordance with adopted and approved master plans or the General Plan.

(2) Land use assumptions reflecting the latest available long-range land use forecasts outside of Prince George's County, as provided by the Metropolitan Washington Council of Governments, the Baltimore Regional Council of Governments, or the Tri-County Council of Southern Maryland.

(3) Transportation facilities (including streets and public transit) which are existing, under construction, or which are provided for in an adopted and approved master plan or the General Plan, or which will be otherwise provided.

The traffic study will report the results of two model runs:

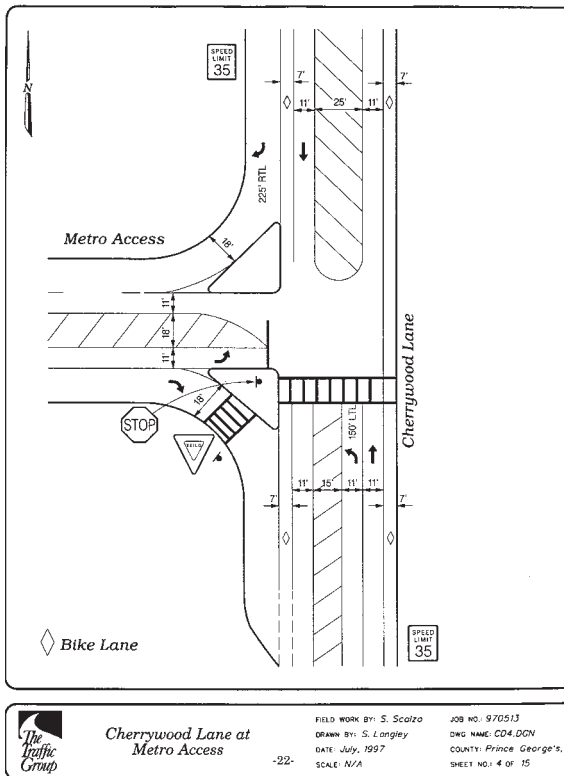
(1) The Base Case model run shall incorporate the elements listed above **without** the subject M-X-C rezoning.

(2) The Base Case Plus M-X-C model run shall incorporate the elements listed above **with** the subject M-X-C rezoning. The land uses on the subject property to be incorporated into this model shall be determined by the applicant, subject to agreement by the staff at the time the traffic study is scoped.

Traffic adequacy will be measured based on daily volume-to-capacity (V/C) ratios. Transportation facilities will be considered adequate if the additional traffic generated under the Base Case Plus M-X-C scenario does not significantly affect V/C ratios from their Base Case levels as noted below.

Thresholds of significant impact on individual links will be based on the daily link V/C ratios developed by the Base Case Plus M-X-C model. These thresholds are defined as follows:

(1) For V/C ratios between 0.61 and 1.20, a sliding scale is used to determine the maximum allowable change in the V/C ratio. This sliding scale is shown in Figure 3 and is defined by the following linear relationship:



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$$(V/C_{BCPM} - V/C_{BC}) = 0.30 - (0.25 * V/C_{BCPM}),$$

where V/C_{BCPM} = V/C from the Base Case + M-X-C model

V/C_{BC} = V/C from the Base Case model

Therefore, for adequacy when $0.61 < V/C_{BCPM} < 1.20$:

$$(V/C_{BCPM} - V/C_{BC}) < 0.30 - (0.25 * V/C_{BCPM})$$

For example, if the added density of an M-X-C application causes the V/C ratio on a facility to increase from 0.95 to 1.00 (an increase of 0.05), the increase in V/C would be acceptable under this methodology. If the added density of an M-X-C application causes the V/C ratio on a facility to increase from 0.92 to 1.00 (an increase of 0.08), the increase in V/C would not be acceptable; this increase exceeds the allowable change in V/C of 0.05 at a final V/C of 1.00. Also, if the added density of an M-X-C application causes the V/C ratio on a facility to increase from 1.05 to 1.10 (an increase of 0.05), the increase in V/C

would not be acceptable under this methodology; this increase exceeds the allowable change in V/C of 0.025 at a final V/C of 1.10.

(2) For V/C_{BCPM} ratios of 0.60 or less, any increase in V/C as a result of the rezoning would be acceptable.

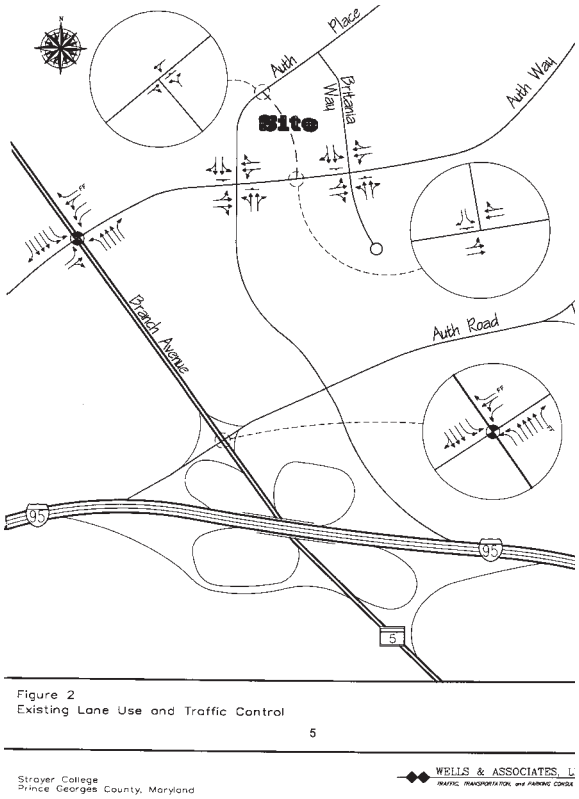
(3) For V/C_{BCPM} ratios greater than 1.20, no increase in V/C as a result of the rezoning would be acceptable (as rounded to the nearest hundredth).

In circumstances where the traffic impact of a proposed rezoning results in an unacceptable condition on the study area transportation network, transportation amendments to the adopted and approved master plan or the General Plan may be considered by the Planning Board and/or the District Council as a part of the application. This is provided that such improvements are agreed to as a condition of the approval of the rezoning by the responsible road agency, and that such improvements are participated in or funded by the applicant.

e. Preliminary Plans of Subdivision

The Subdivision Ordinance (Section 24-124) requires that the Planning Board determine that roads that will serve a proposed subdivision will be adequate before approving a submitted preliminary plan. To make this finding, a traffic study is usually required of the applicant if the proposed subdivision will produce 50 or more trips during any peak hour. The study must forecast future traffic volumes for the roads and streets within a study area that has been defined with TPS staff consultation. Such projections must consider traffic that would be generated by development of properties that are considered to be in the pipeline.

A listing of all properties considered in projecting future traffic volumes, along with a map of their locations, must be included in all traffic studies submitted. This information can be obtained in the Planning Department's offices in Upper Marlboro (see Section 4). Growth in through



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traffic should be projected using the methods described in Section 4.

Transportation improvements that should be used for traffic studies as part of the required test for adequacy must have 100 percent of the construction funds programmed in either the adopted county CIP or the current state CTP. Roadway improvements participated in or funded by the subdivider will also be considered, provided such improvements are agreed to as a condition of approval. Bonded improvements have the same status as CIP or CTP improvements when the following criteria are met:

1. The bonding is sufficient to cover 100 percent of the construction cost of the improvement assumed in the traffic analysis.
2. The construction permit has been approved by SHA or DPW&T.

3. A construction schedule (for the improvements to be built within the next six years) has been included in the permit package.

In order to include a bonded improvement in a traffic analysis, the applicant must demonstrate that the above criteria have been met.

6 Trip Generation

The traffic study should always include a breakdown of the development proposed. A complete summary of gross square footage by land use category should be provided for all nonresidential land uses. A summary of the number and type of dwelling units proposed should be provided for residential land uses. This information will facilitate the application of appropriate trip generation rates.

Figure 4 provides trip generation rates for various zoning classifications and land uses. These rates were developed by studies of existing land uses in Prince George's County and should be used in all traffic studies, except where it can be demonstrated by acceptable field data that a more appropriate rate is applicable.

Trip generation rates for land uses not cited in these guidelines should be estimated using the most recent edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. Trip generation rates for any uses not cited in the guidelines or the ITE manual should be researched for validity and are subject to review and revision if deemed necessary by TPS staff. Where supporting data are insufficient to validate use of the proposed rates within the study area, the rates approved by the TPS staff shall be used.

Should the applicant decide to collect trip generation data, the applicant's trip generation report should include the following:

1. Specific time period for data collection (i.e., dates and times)
2. Specific location of measurement stations
3. Measurement techniques (visual, mechanical)
4. Specific description of the site(s) chosen (to include size of development, land uses, occupancy and number of employees at work on the day of data collection, if relevant)
5. Description of pertinent site characteristics (e.g., number of employees, square footage, ownership, availability of transit and parking)

Figure 4 provides both AM and PM peak-hour rates, by direction; it is expected that both time periods will be analyzed unless the transportation staff has agreed otherwise. For mixed-use proposals, the appropriate trip generation rate shall be documented for each type of land use in the proposal.

The trip generation rate estimate developed should reflect the potential of the proposed land use(s) to produce or attract vehicular trips. The estimates developed in the traffic study are useful in determining access requirements. Analyzing the impact of the proposed land use(s) on the roadway network may necessitate considering other factors, such as diversion from the existing stream of traffic. For example, much of the traffic to and from a community shopping center may actually be newly generated trips; the remainder is intercepted from traffic already on the roadway (referred to as “pass-by” trips). Pass-by trips shall be calculated using the procedure in the latest edition of the ITE manual. For an office building, however, virtually all of the traffic is newly generated with few or no trips diverted from the traffic already on the highways.

For nonresidential development, staff findings will be based on the type and amount of each type of land use specified in the traffic study. When recommending approval of the subject development, the TPS staff will include a condition that caps the development at the amount and type specified in the traffic study or other development generating no more than the equivalent number of vehicle trips in any peak hour. Similar findings and conditions would also apply to multifamily residential development.

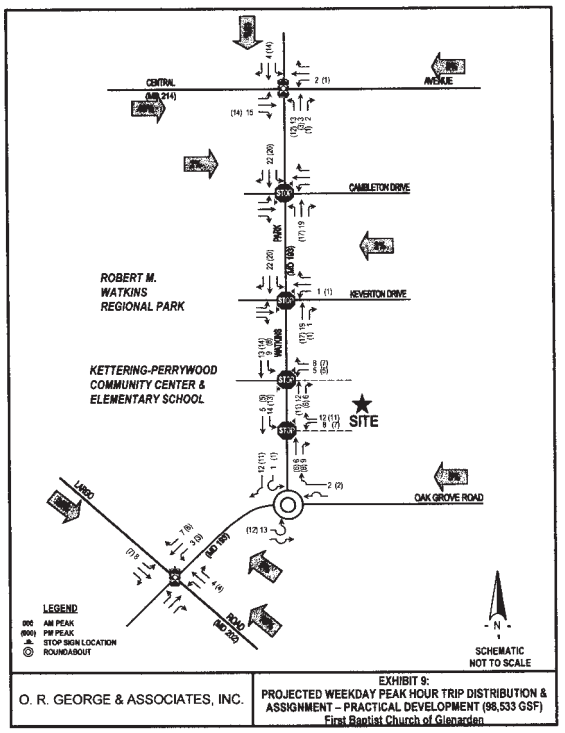

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Figure 4
Trip Generaton Rates

Zoning Categories	Density	Trip Generation Residential/Hotel: Trips Per Dwelling Unit (DU); Office/Commercial/Industrial: Trips Per 1,000 Square Feet Gross Floor Area (GFA)						
		AM Peak Hour			PM Peak Hour			Daily[i]
		In	Out	Total	In	Out	Total	Total
Single Family Housing								
R-O-S	0.05 DU/acre	0.15	0.60	0.75	0.59	0.31	0.90	9.00
O-S	0.20 DU/acre							
R-A	0.50 DU/acre							
R-E	1.00 DU/acre							
R-R	1.85 DU/acre							
R-80	3.40 DU/acre							
R-55	4.60 DU/acre							
CDZ/Mixed use	Based on application							
Townhouse[ii]								
R-T	8.00 DU/acre	0.14	0.56	0.70	0.52	0.28	0.80	8.00
R-30 & R-30C	9.00 DU/acre							
R-18 & R-18C	9.00 DU/acre							
CDZ/Mixed use	Based on application							

Zoning Categories	Density	Trip Generation Residential/Hotel: Trips Per Dwelling Unit (DU); Office/Commercial/Industrial: Trips Per 1,000 Square Feet Gross Floor Area (GFA)						
		AM Peak Hour			PM Peak Hour			Daily[i]
		In	Out	Total	In	Out	Total	Total
Apartments (garden and mid-rise)								
R-18 (garden)	12.00 DU/acre	0.10	0.42	0.52	0.39	0.21	0.60	6.50
R-18 (mid)	20.00 DU/acre							
R-18C (garden)	14.00 DU/acre							
R-18C (mid)	20.00 DU/acre							
R-20	11.00 DU/acre							
R-30	10.00 DU/acre							
R-30C	12.00 DU/acre							
CDZ/Mixed use	Based on application							
Apartments (high-rise)								
R-H	48.40 DU/acre	0.06	0.24	0.30	0.26	0.14	0.40	4.00
R-10 & R10A	48.00 DU/acre							
CDZ/Mixed use	Based on application							
Office (General)								
I-1, I-2	0.4 Floor Area Ratio	1.80	0.20	2.00	0.35	1.50	1.85	14.00-20.00
C-O, C-A,	0.4 Floor Area Ratio							
C-M, C-S-C	0.4 Floor Area Ratio							
CDZ/Mixed use	Based on application							
Office (Medical/Professional)								
C-O, C-S-C,	0.4 Floor Area Ratio	2.30	0.55	2.85	1.20	2.60	3.80	40.00
C-A, C-M	0.4 Floor Area Ratio							
CDZ/Mixed use	Based on application							

Zoning Categories	Density	Trip Generation Residential/Hotel: Trips Per Dwelling Unit (DU); Office/Commercial/Industrial: Trips Per 1,000 Square Feet Gross Floor Area (GFA)						
		AM Peak Hour			PM Peak Hour			Daily[i]
		In	Out	Total	In	Out	Total	Total
Commercial (Miscellaneous)[iv]								
C-M	0.3 Floor Area Ratio	Use AM rates in ITE *Trip Generation Manual*			0.75	0.75	1.50	15.00
Shopping Center (less than 100,000 square feet)[iv]								
C-S-C CDZ/Mixed use	0.25 Floor Area Ratio Based on application	Unless AM use is restricted, use AM rates in ITE *Trip Generation Manual*			6.00	6.00	12.00	110
Shopping Center (100,000 – 400,000 square feet)[iv]								
C-S-C CDZ/Mixed use	0.25 Floor Area Ratio Based on application	Unless AM use is restricted, use AM rates in ITE *Trip Generation Manual*			3.20	3.20	6.40	70
Shopping Center (more than 400,000 square feet)[iv]								
C-S-C CDZ/Mixed use	0.25 Floor Area Rati Based on application	Unless AM use is restricted, use AM rates in ITE *Trip Generation Manual*			1.50	1.50	3.00	40
Warehouse								
I-1, I-4	0.3 Floor Area Ratio	0.32	0.08	0.40	0.08	0.32	0.40	3.10

Zoning Categories	Density	Trip Generation Residential/Hotel: Trips Per Dwelling Unit (DU); Office/Commercial/Industrial: Trips Per 1,000 Square Feet Gross Floor Area (GFA)						
		AM Peak Hour			PM Peak Hour			Daily[i]
		In	Out	Total	In	Out	Total	Total
Light Service Industrial/Flex Office								
I-1, I-4	0.3 Floor Area Ratio	0.69	0.17	0.86	0.17	0.69	0.86	4.80
Heavy Industrial/Flex Office[v]								
I-2, I-4	0.3 Floor Area Ratio	0.80	0.20	1.00	0.20	0.80	1.00	5.90
Industrial Park/Flex Office[v]								
I-3	0.3 Floor Area Ratio	0.55	0.18	0.73	0.20	0.55	0.75	8.00
Hotel/Motel								
I-1, I-2,	Based on application	0.35	0.30	0.65	0.45	0.35	0.80	10.00
C-M, C-S-C	Based on application							
CDZ/Mixed use	Based on application							

I Total trip data is provided for information only, and is not to be used to determine peak hour or peak period adequacy.

ii Townhouse rate should also be used for zoning categories R-35 (8.3 DU/acre) and R-20 (11 DU/acre, triple attached).

iii If use is known, should utilize ITE trip generation manual for AM, PM and daily rates.

iv A percentage of projected traffic for shopping centers may be assumed to be already on the highway; up to 60 percent for less than 100,000 square feet; 50 percent for 100,000 to 400,000 square feet; and 40 percent for more than 400,000 square feet. However, exit/entrance driveway turning volumes should reflect 100 percent of projected volumes.

v Flex office is assumed to be a combination of general office and warehouse space, and the components of flex office uses will be checked at site plan or building permit for compliance with past analyses.

7 Trip Distribution

Existing and projected traffic volumes entering and leaving the study area should be assigned to the roadway network by time of day. The existing traffic distribution, by principal direction of travel, may be used as a guide for determining the new distribution when the proposed development is of limited scope and major alteration of the roadway system is not planned. It is suggested that the most recently published Census of Travel also be considered during the distribution of trips. Depending on the scale of the proposed development, planned roadway improvements and existing traffic conditions, it may be desirable to use regional trip tables for the distribution of trips. Regional trip tables are available from the Metropolitan Washington Council of Governments, and a summary of these regional trip tables is available from TPS staff. TPS staff will advise the applicant and/or consultant upon request as to which method should be utilized.

Should the applicant or consultant find it appropriate to use a different technique, the distribution of trips associated with the proposed development must be justified by the relative location of other generators. For mixed-use developments, it may also be necessary to distribute residential, shopping and employment trips separately based on surrounding residential, retail and commercial development.

8 Modal Split

During this stage of the analysis, the use or potential use of transit service or trip reduction strategies may be addressed. Transit availability as determined in the inventory stage may now be used to assess the potential for future transit use.

It should be recognized that the trip generation rates presented in Figure 4 were based on surveys of sites in Prince George's County where public transit service may have been available. Any projected increases in transit ridership should be based on planned changes in the availability of service, cited references or empiric data. It should further be realized that transit use varies for differing trip purposes (work trips, shopping trips, etc.) and should be applied as a percentage reduction of total trips.

Assumptions regarding future travel to the site with the use of trip reduction strategies must be based on regional or local survey data, the proximity of various other land uses, and the trip reduction strategies to be implemented by the applicant or under the authority of a Transportation Demand Management District pursuant to Subtitle 20A of the County Code (Appendix A). Local data may be collected and utilized if the collection method is agreed to by TPS staff prior to conducting such surveys.

9 Trip Assignment

After reducing generated trips by applicable modal split, projected traffic volumes should be assigned to the roadway network within the study area using the distribution factors previously developed.

10 Network Evaluation

The ability of the roadway network to accommodate projected traffic volumes generated by the proposed development must be assessed utilizing various techniques to measure capacity. Roadway capacities must then be defined over a range of operating conditions utilizing the level-of-service (LOS) concept. A description of this concept is included in the *Highway Capacity Manual*. The techniques selected to measure capacity and determine corresponding levels of service should depend on the nature of the study area and the facilities under study.

In areas where the flow of traffic is controlled by signals, the planning analysis method from the *Highway Capacity Manual*, Chapter 9, as modified herein, should be used to measure the level of service at major signalized intersections in the study area. Planning analysis, or critical lane volume analysis, of intersections is a broad evaluation of the capacity of an intersection that determines the LOS for a given set of demand volumes and geometrics. The advantage of the technique is that it is simple and easy to use.

Procedure for Critical Lane Volume Analysis (Signalized Intersections)

a. Input Information

   (1) Geometrics–number of lanes on each approach and turning movements assigned to each lane.

   (2) Volumes–total vehicles per hour (vph), as determined over the applicable peak period, for each movement of each approach.

   The procedure does not consider the details of lane width, parking conditions or other features, nor does it consider the number of trucks and buses in the traffic stream.

b. Critical lane volume analysis identified critical movements by individual lanes; thus, volume must be assigned by lane.

   (1) Where exclusive turning lanes are present, all turns are assigned to the appropriate turning lane.

(2) When two or more lanes are present on an approach, volume is distributed among the available lanes as follows:

Number of Approach Lanes	Lane Use Factor
1	1.0
2	0.55
3	0.37
4	0.29

(3) When permitted left turns are included in shared lanes, vehicles are assigned to available lanes such that the number of vehicles using each lanes is equal. All right-turning and through vehicles have a passenger car equivalent (PCE) of 1.00, while permitted left turns have the following PCE values:

Opposing Through and Right-Turn Volume (vph)	Passenger Car Equivalent (PCE)
0 to 199	1.1
200 to 599	2.0
600 to 799	3.0
800 to 999	4.0
1,000 and over	5.0

It should be noted that all left turns must be assigned to the leftmost lane.

(4) When trucks, through buses and local buses are included in the traffic volumes, the volumes must be adjusted to reflect their impact on intersection capacity. The adjustment factors to be used are as follows:

Vehicle Type	Passenger Car Equivalent (PCE)
Passenger car or motorcycle	1.0
Truck or through bus	2.0
Local bus	5.0

c. Because signal design is not known in the planning analysis, combinations of critical lane volumes are identified by considering conflicting movements. For a north-south street, critical conflicts are the northbound left-turn movement with the southbound through movement and the southbound left-turn movement with the northbound through movement. The critical volume for the north-south street is the largest sum among:

> Northbound single-lane left-turn volume + the maximum single-lane volume for the southbound through + right-turn movement.
>
> Southbound single-lane left-turn volume + the maximum single-lane volume for the northbound through + right-turn movement.

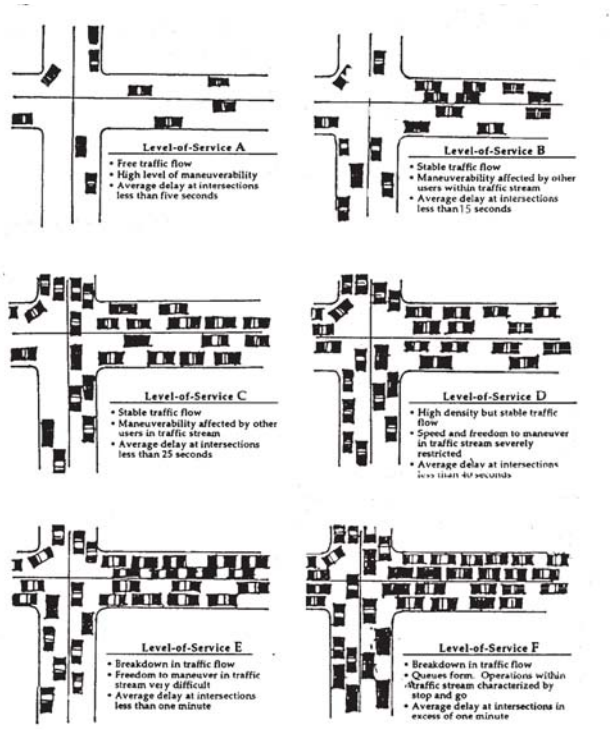
Similarly, the critical volume for the east-west street is the greatest sum among:

> Eastbound single-lane left-turn volume + the maximum single-lane volume for the westbound through + right-turn movement.
>
> Westbound single-lane left-turn volume + the maximum single-lane volume for the eastbound through + right-turn movement.

The total critical lane volume for the intersection is the sum of the critical volumes for the north-south and east-west streets. The critical volume for the intersection is then compared to the criteria in Figure 5.

In those cases when it is known that an existing intersection is controlled by a three- or four-phased signal, it should be assumed that such

Figure 5 Policy Standards and Technical Criteria				
Site Location	**LOS Standards**	**Threshold Values**		**Exceptions**
		CLV (intersections)	**V/C (links)**	
Tiers				
Developed	E	1,600	1.00	Planning Board may allow developments to mitigate per 24-124(a)(6) and CR-29-1994.
Developing	D	1,450	0.80	Planning Board may allow developments to mitigate per 24-124(a)(6) and CR-29-1994.
Rural	C	1,300	0.65	Planning Board may allow developments to mitigate per 24-124(a)(6) and CR-29-1994.
Metropolitan and Regional Centers				
	E	1,600	1.00	Based on Tier
Community Centers, Corridors and Revitalization Overlays				
	Based on Tier	Based on Tier	Based on Tier	Based on Tier



phasing will continue to be used in the future. The critical lane analytical procedure should be modified to reflect the presence of the additional phases.

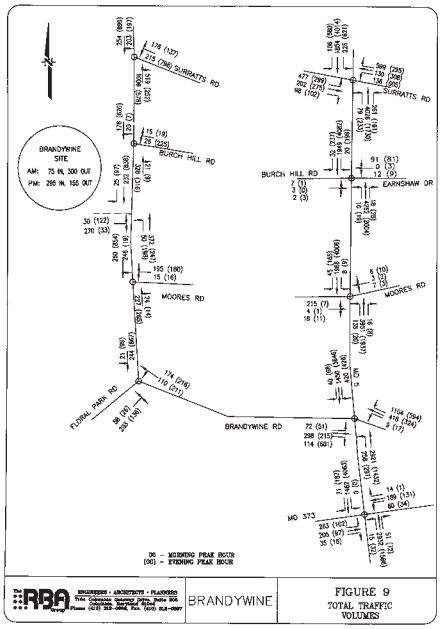
There are cases when the analysis indicates that an improved LOS could be achieved by changing the phasing of an existing signal or restriping the approach to an intersection. **The approval of the appropriate operating agency must be obtained by the applicant before such a change will be considered in any staff recommendation.**

In areas served by freeways, techniques for estimating the capacity of basic freeway segments, weaving sections, merge points and diverge points should be utilized. These techniques are found in Chapters 3, 4 and 5 of the *Highway Capacity Manual*.

Traffic volumes on the roadway links (segments) in the study area should generally be analyzed when requested by TPS staff and when the distance between traffic signals is two miles or greater. In such cases the procedures outlined in Chapters 7 and 8 of the *Highway Capacity Manual*, cited earlier, should be utilized. The LOS criteria for roadway links (segments) are identified in Figure 5. When the distance between signals is less than two miles, critical lane analysis should be used to analyze the intersections in the study area, as they generally will control the flow of traffic.

The appropriateness of analyzing links or elements of freeway sections should be considered during the preapplication meeting. Any such analyses that will be performed should be noted in the Scoping Agreement.

In areas where a significant portion of the traffic from the proposed development must utilize an unsignalized intersection, the procedures recommended in Chapter 10 of the *Highway Capacity Manual* for analyzing such intersections should be employed. Turning movements having an average vehicle delay exceeding 50 seconds indicate unacceptable operating conditions within the unsignalized intersection. When average vehicle delay for a turning movement exceeds 50 seconds, additional studies should be conducted to determine potential means to correct the deficiency. The type of study deemed appropriate should be determined in consultation with TPS staff. If a traffic signal warrant study is deemed appropriate, the warrant study must be conducted in accordance with the requirements of SHA and/or the county DPW&T and submitted with the traffic impact study. The study must be submitted to SHA and/or DPW&T for their concurrence with the recommendations of the study. When an intersection is proposed to be signalized in the traffic study, the intersection should be analyzed under the critical lane volume procedure to ensure that further physical improvements to the intersection beyond the signalization are not needed to achieve adequacy.



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Four-way stop controlled intersections are a special type of unsignalized intersection, and they should also be analyzed using Chapter 10 of the *Highway Capacity Manual*. Once again, if average vehicle delay for any turning movement exceeds 50 seconds, additional studies will be needed to determine a means to correct the deficiency.

For freeways, multilane highways and two-lane highways, the level of service should be determined according to the procedures in the *Highway Capacity Manual*.

Prince George's County's standards for acceptable LOS on roadways have been set in the 2002 General Plan, approved by the County Council in 2002. These LOS standards vary geographically within the policy Tiers, Centers and Corridors identified in the General Plan. Figure 5 summarizes the LOS standards contained in the General Plan. Questions about the location of a specific site within a policy Tier, Center or Corridor, or about the applicable standards for that Tier, Center or Corridor, should be referred to

TPS staff. The applicable standards will be identified in the Scoping Agreement.

The methodologies for analyzing the transportation network described above are considered to be best suited to the needs of the Planning Board in the application of county policy. Any departure from these methods should be discussed with TPS staff during the scoping process prior to its application in a traffic study.

In circumstances where a traffic study identifies a deficiency within the study area, the applicant may choose to recommend an action that would result in adequate operations per the LOS standards in Figure 5. Such actions can consist of physical improvements, which add capacity to the transportation system or programmatic initiatives that would result in trip reduction.

Physical improvements might include roadway widening, intersection geometric improvements, or signalization improvements. Such improvements recommended by the applicant will be considered, provided responsibility for carrying out such actions is clearly identified. The design and construction of any recommended improvement must receive the concurrence of the appropriate state, county, municipal or other appropriate public agency. The design policies and standards of the agency shall apply to any applicants who propose to construct the improvements under permit to the agency. These standards may include provision of sidewalks, trails, and bike lanes adjacent to the roadway or intersection improvements and maintained within the agency's right-of-way or easements.

Programmatic initiatives, or trip reduction programs, should be tied to the staging of the proposed development so that their potential for success can be evaluated. For example, the applicant may suggest that the traffic impact of a proposed 1,000,000-square-foot office development can be reduced by 20 percent by implementing a carpooling program. Thus, a simple staging plan might involve approval of only 50 percent of the development (500,000 square feet) with the implementation of the carpool program. The program would then be monitored to determine if the proposed 20 percent reduction in vehicular traffic has occurred. Only when the goal of 20 percent trip reduction is met would approval for the construction of the remainder of the development be granted.

The staging program should be developed so that no more development is included in the first stage than can be accommodated by the existing and programmed transportation system. However, if the trip reduction programs accomplish more than anticipated, provisions for accelerating future phases of development may be considered. Provision should be made for trip monitoring techniques that can be validated by TPS staff; this will usually be accomplished by establishing a Transportation Demand Management District. Procedures for establishing such a district are contained in CB-61-1993 (Subtitle 20A), which is included as Appendix A of these guidelines.

The projected potential of physical improvements or trip reduction actions to reduce anticipated traffic impacts will be evaluated as part of the review of submitted traffic studies. Applicants are encouraged to discuss potential actions with TPS staff prior to submittal. The traffic study should recommend improvements only after potential traffic impacts of the proposed development (without considering physical improvements or trip reduction actions) have been determined.

11 Transportation Facilities Mitigation Plans

Section 24-124(a)(6) of the County Code authorizes the Planning Board to consider traffic mitigation procedures, identified in Transportation Facilities Mitigation Plans, or TFMPs, to allow development to proceed in certain areas experiencing unacceptable transportation service levels. However, the development could occur only if transportation improvements are made which would result in an improvement in traffic operations beyond what would have been expected if the development had not occurred.

Mitigation is a process developed by the Prince George's County Council by which developments in certain areas of the county are allowed to provide roadway improvements (or funding for transportation improvements) that would improve traffic operations at nearby intersections. Mitigation represents a departure from the remainder of these guidelines in that these improvements need not achieve the level-of-service criteria in the Prince George's County General Plan on the affected links or at the affected interchanges or intersections. These mitigation procedures would allow development to proceed in certain areas experiencing unacceptable transportation service levels; however, the development could occur only if transportation improvements are made which would result in an improvement in traffic operations beyond what would have been expected if the development had not occurred.

Under CR-29-1994, the Planning Board may consider the use of mitigation procedures in the following circumstances:

a. The development is located within designated revitalization areas where the county wants to encourage new development or redevelopment, as approved by the District Council pursuant to CB-116-1993.

b. The development impacts roads inside the Beltway which are built to the full master plan recommendation or which cannot be improved due to physical or environmental constraints (in which case mitigation applies only to the facilities cited pursuant to this criterion).

c. The development impacts the following major regional road facilities which have a significant proportion of external traffic (in which case mitigation applies only to the facilities cited in this criterion): (a) MD 210 from Charles County to I-95; (b) MD 5 from Charles County to I-95; (c) MD 4 from Anne Arundel County to I-95; (d) US 301 from US 50 (I-595) to MD 5; and (e) MD 3 from Anne Arundel County to US 50.

d. The development is located within one mile of a Metrorail or MARC station that is existing, under construction, funded for construction, or has an approved Environmental Impact Statement and is actively in Development and Evaluation by the Maryland Department of Transportation. The one-mile distance shall be measured from the actual station.

e. The development is located in an area in which public water and sewer is currently available, which meets all adequate public facilities findings (except those for transportation) with existing facilities or facilities having 100 percent construction funding in the county or state programs, and which is within one-half mile of a bus stop having 15-minute headways or better and load factors of 100 percent or less.

Sites must meet at least one of the above geographic criteria to be considered for the use of mitigation procedures. Proposals for sites that partially meet the geographic criteria listed above are not eligible for mitigation.

When staff receives a Scoping Agreement that includes mitigation within a municipality, the municipality will be notified.

Before preparing a TFMP, the applicant shall prepare a traffic impact analysis (TIA) for a study area as otherwise provided under these guidelines. All significant transportation facilities shall be analyzed in accordance with procedures contained in these guidelines or the *Highway Capacity Manual* (Special Report 209), as appropriate. Where (a) there is one or more critical intersections or roadway links within the study area where the resulting critical lane volume or volume to capacity ratio under total projected traffic is greater than that allowed for the level-of-service threshold values shown in Figure 5, and (b) the development proposal is in an area that is eligible for the use of mitigation procedures, the applicant may include a TFMP with the TIA to support the application for Preliminary Plan of Subdivision. **The TFMP is a proffer of the applicant and will not be prepared by the staff unless the proposed development generates fewer than 50 additional peak-hour trips and the TFMP is specifically requested by the applicant at the Subdivision Review Committee meeting following receipt of the application by staff. However, the failure of the applicant to request the TFMP at Subdivision Review will preclude its preparation by staff for the Technical Staff Report unless a 70-day waiver is requested and granted.**

If either of the following instances occur and the development proposal is in an area that is eligible for the use of mitigation procedures, the applicant shall include a TFMP with the TIA to support the application for Preliminary Plan of Subdivision:

a. There are one or more critical intersections within the study area where total traffic is at least 25 percent greater than Level-of-Service D (critical lane volume of 1,813), or along roadway links where the total traffic condition produces a volume-to-capacity ratio at least 25 percent greater than Level-of-Service D (volume-to-capacity ratio of 1.0). The applicant's TFMP shall recommend improvements which will (1) eliminate at least 100 percent of the development-generated critical lane volume at the critical intersections, thereby resulting in a critical lane volume no greater than 1,813; or (2) eliminate at least 100 percent of the incremental change in the volume-to-capacity ratio (the difference between the volume-to-capacity ratio under background traffic and the volume-to-capacity ratio under total traffic) along the critical roadway links, thereby reducing the volume-to-capacity ratio to no more than 1.0.

b. There are one or more critical intersections within the study area where the total traffic exceeds Level-of-Service D by 25 percent or less at intersections or along roadway links. The applicant's TFMP shall recommend improvements which will (1) eliminate at least 150 percent of the development- generated critical lane volume at the critical intersections or reduce the critical lane volume to 1,450; or (2) eliminate at least 150 percent of the incremental change in the volume-to-capacity ratio (the difference between the volume-to-capacity ratio under background traffic and the volume-to- capacity ratio under total traffic) along the critical roadway links or reduce the volume-to-capacity ratio to 0.8.

The TIA shall include the analysis of all facilities within the study area indicating the projected level of service with and without the recommendations contained in the TFMP. The TFMP shall cite the specific geographic criterion(a) that determine the applicability of the use of mitigation procedures, and verify that the following conditions exist for all facilities which are mitigation candidates within the study area:

a. Adequate roadways, intersections and/or interchanges are not available to provide an adequate level of service for traffic generated by the proposed subdivision, and these facilities do not have 100 percent of the required construction funding identified in the current Prince George's County Adopted Capital Improvement Program (CIP) or the current Maryland Department of Transportation Consolidated Transportation Program (CTP).

b. Total traffic in the study area (including traffic generated by the proposed Preliminary Plan of Subdivision) will result in the peak-hour level of service at major intersections, interchanges and on roadways located within the study area worse than the level-of-service standard shown in Figure 5.

c. Transportation facility improvements or trip reduction programs funded in whole or in part (if in part, other commitments must be made) by others cannot eliminate the identified inadequacy.

d. The source, timing and commitment of the funding to implement the identified improvements, programs and/or other methods of mitigation are consistent with adopted plans, policies and programs of M-NCPPC, Prince George's County DPW&T, Maryland SHA and other transportation agencies.

Upon acceptance of a traffic study that includes a TFMP, the TPS staff will circulate the study for review and comment to Maryland SHA, Prince George's County DPW&T, and other appropriate agencies. If the TFMP includes improvements to facilities within one mile of a municipality, the TPS staff will circulate the study for review and comment to that municipality. The length of the review period will be thirty (30) days from the date of circulation. In its cover memorandum requesting agency (or municipality) comment, the TPS staff shall indicate that the traffic study includes a proposed TFMP, and shall request specific comments concerning the proposed TFMP. If the applicant recommends a geometric improvement strategy as part of the TFMP, the proposed geometric improvements must be in accordance with the standards or requirements established by the appropriate operating agency (i.e., Prince George's County DPW&T, Maryland SHA, a municipality, or others).

The TFMP and the comments received from the appropriate operating agencies (or municipalities) must be included in the TPS staff report and will form the basis of the staff findings and recommendations to the Prince George's County Planning Board. The Planning Board may require that the applicant (or the applicant's heirs, successors, and/or assignees) shall be responsible for the full cost of any roadway improvements or trip reduction programs necessary to alleviate any inadequacy as defined in the guidelines. An affirmative vote of the Planning Board members in attendance shall be required if the TFMP is opposed by the municipality within which the facility is located.

Alternative mitigation strategies are allowed for development proposals generating fewer than 25 additional peak-hour trips, **if requested by the applicant at the Subdivision Review Committee meeting following receipt of the application by staff. Again, failure of the applicant to request the TFMP at Subdivision Review will preclude its preparation by staff for the Technical Staff Report unless a 70-day waiver is requested and granted**. Such development proposals must meet each of the following criteria:

a. Traffic levels of service from existing development on the established study area's significant transportation facilities is at Level-of-Service D or better.

b. Traffic levels of service on significant transportation facilities in the established study area are at Level-of-Service E or better after considering background traffic + traffic generated by the proposed subdivision.

When these criteria are met, the TPS staff will prepare a TFMP for the significant transportation facility(ies) for which the TFMP criteria are under consideration. The TFMP shall include (a) a projection of total traffic (existing + background + site-generated traffic) for significant transportation facilities; (b) an identification of those geometric improvement strategies which are necessary to alleviate any inadequacy in accordance with the guidelines; (c) an estimate of the construction costs of those strategies; and (d) a methodology to determine the applicant's pro rata share of the construction costs of those strategies.

This TFMP shall be circulated for review and comment to Maryland SHA, Prince George's County DPW&T, other appropriate agencies and the applicant. If the TFMP includes improvements to facilities within one mile of a municipality, the TPS staff will circulate the study for review and comment to that municipality. The length of the review period will be thirty (30) days from the date of circulation. The operating agencies (or municipalities) which review the TFMP may provide comments indicating that the proposed geometric improvements are in accordance with the standards or requirements established by those agencies. The TFMP and those comments received from the operating agencies (or municipalities) must be included in the TPS staff report and will form the basis of the staff recommendation to the Prince George's County Planning Board. The Planning Board may require that the applicant (or the applicant's heirs, successors, and/or assignees) shall be responsible for the pro rata cost determined by the TPS staff of the improvements necessary to alleviate any inadequacy in accordance with the guidelines. An affirmative vote of the Planning Board members in attendance shall be required if the TFMP is opposed by the municipality within which the facility is located.

12 The Surplus Capacity Reimbursement Procedure for Road Clubs

Section 24-124 of the Prince George's County Code allows for a developer, in certain cases, to be partially reimbursed by other developers for constructing roadway improvements that create surplus capacity on the roadway network. This section of the guidelines establishes the criteria that the TPS staff would use to identify potential Surplus Capacity Reimbursement (SCR) improvements. It also describes the procedure that will be used by the Planning Board to determine a development proposal's appropriate pro rata share contribution for an SCR improvement.

The TPS staff shall use the following criteria to determine whether a transportation improvement that would be placed as a condition on a development proposal in association with a finding of adequate public facilities should also be considered by the Planning Board as an SCR improvement:

a. The transportation improvement is needed to satisfy a finding of adequate public facilities and does not include any access-related or frontage-related improvements required by Maryland SHA, any improvements required by Prince George's County DPW&T in accordance with Subtitle 23 (Road Ordinance) of the Prince George's County Code, or any improvements required by a municipality.

b. The total estimated cost to complete the transportation improvement is greater than $500,000, as determined at the time of approval of the Preliminary Plan of Subdivision.

c. The transportation improvement is identified in the Prince George's County Adopted CIP or the current Maryland Department of Transportation CTP with an amount greater than zero percent (0%) but less than one hundred percent (100%) of the total cost to complete the improvement.

d. The improvement, once completed and in place, must create "substantial surplus capacity" beyond that required by the applicant to satisfy a finding of adequate public facilities. This substantial surplus capacity can be used by future developers to make a finding of adequate public facilities for their subdivisions. For the purpose of this procedure, surplus capacity under total traffic with the transportation improvement shall be considered "substantial" if the improvement results in Level-of-Service B or better during both AM and PM peak hours, as determined in accordance with analysis procedures in these guidelines.

If a transportation improvement meets all of the above criteria, the applicant shall provide the following information and data for review by the Planning Board for the possible establishment of an SCR improvement in association with the Planning Board's consideration of approval of the applicant's development proposal.

a. Engineering and construction plans for the transportation improvement sufficient to provide detailed cost estimates for completion, including right-of-way acquisition, utility relocation, design and construction costs.

b. An executed agreement with Prince George's County DPW&T and, when appropriate, Maryland SHA or municipality, certifying total estimated cost.

Upon review and approval of the submitted data, the Planning Board may adopt a resolution establishing the SCR improvement, provided the applicant demonstrates that the necessary permits for construction of the potential SCR improvement have been issued by the appropriate public agency.

Once an SCR improvement is established by the Planning Board, the Planning Board may

require future subdivisions to participate in the SCR provided that:

a. The identified SCR improvement is located within the study area defined in accordance with the guidelines by the TPS staff.

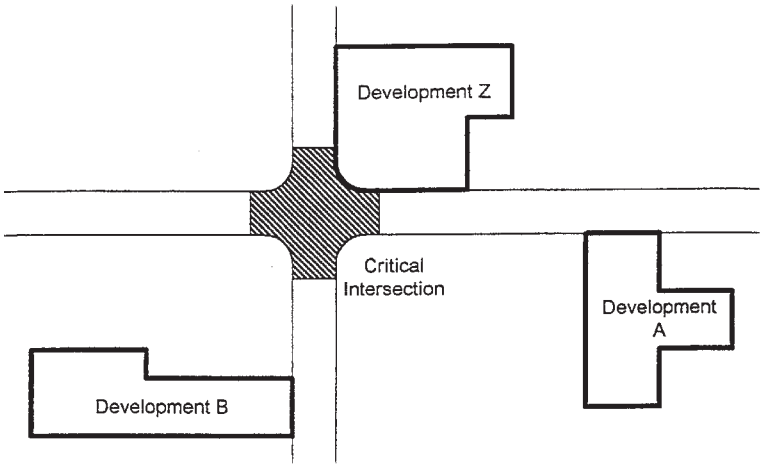
b. At least five percent or more of the AM or PM peak-hour traffic generated by each of the future developments is assigned to the SCR improvement.

If an applicant's participation in SCR is appropriate, the calculation of the amount of the applicant's participation shall be based on the proportion of the applicant's share of the surplus capacity used to the total surplus capacity created. Thus, the cost of creating surplus capacity will be allocated to future subdivisions that need this surplus capacity to satisfy a finding of adequate public facilities.

Once the Planning Board determines that the surplus capacity associated with an SCR improvement has been exhausted, the Planning Board shall adopt a resolution of SCR closure. Additional participation in an SCR improvement by subsequent parties will not be allowed once SCR closure is adopted. Instead, a finding of adequate public facilities, in accordance with Section 24-124 of the Prince George's County Code, will be required for these future development proposals, and roadway improvements above and beyond the SCR improvement may be made a condition of that finding.

The following examples of the application of the SCR procedure are presented here to demonstrate (a) the calculation of the portion of the SCR cost which qualifies for reimbursement by others, and (b) the determination of the pro rata share contribution from future parties who would need the established SCR improvement to satisfy a finding of adequate public facilities. Examples are presented for an intersection improvement and for an improvement to a roadway link.

Figure 6
Schematic of Developments A, B and Z in SCRP Process (Intersection Analysis)



Intersection Improvement Scenario:

During its review of Development Z (the initial subdivider), the TPS staff determines that an intersection within the study area has a peak-hour inadequacy. As a result, the Planning Board approves Development Z with a condition that all approaches to the inadequate intersection must be widened to provide additional travel lanes and turning lanes. This improvement is identified in the Prince George's County Adopted CIP with less than 100 percent funding. In order to satisfy the Planning Board's condition, Development Z agrees to pay the remainder of the funds necessary to construct the required improvements to the intersection.

Further investigation by Development Z reveals that the improvement would create substantial surplus capacity that future applicants could use to make a finding of adequate public facilities. As a result, the Planning Board adopts a resolution identifying this improvement as an SCR improvement. The following illustrates the procedure used in determining Development Z's pro rata share of the SCR improvement to an intersection, and the pro rata shares of two other developments, Development A and Development B (see Figure 6).

Existing Roadway & Traffic Conditions:	The intersection is a four-way intersection with one approach lane in each direction.
	Existing Critical Lane Volume (CLV) = 1,550
	Base CLV = 1,680 (Base traffic is defined as existing plus background traffic at the time that the application for Development Z is submitted)
	Intersection LOS Under Base Traffic = LOS F

Traffic Conditions With SCR Improvement:	The intersection is improved with additional approach lanes and turning lanes.
	Base CLV with Improvement = 1,210 (LOS C)
	Maximum Acceptable CLV = 1,450 (LOS D)
	Available Surplus Capacity Created by this Improvement = 1,450 - 1,210 = 240 CLV units
	CIP Funding for this Improvement = $1,300,000
	Estimated Cost of this Improvement = $2,400,000
Development Z Impact:	Base CLV with Improvement = 1,210 (LOS C)
	CLV with Improvement and with Development Z = 1,268
	Development Z Impact = 1,268 - 1,210 = 58 CLV units
	Frontage/Access-Related cost required of Development Z by DPW&T = $150,000
Development A Impact:	Base CLV with Improvement = 1,210 (LOS C)
	CLV with Improvement and with Development A = 1,231
	Development A Impact = 1,231 - 1,210 = 21 CLV units
	Frontage/Access-Related cost required of Development A by DPW&T = $0
Development B Impact:	Base CLV with Improvement = 1,210 (LOS C)
	CLV with Improvement and with Development B = 1,293
	Development B Impact = 1,293 - 1,210 = 83 CLV units
	Frontage/Access-Related cost required of Development B by DPW&T = $0

Step 1: Available surplus capacity with improvements constructed:

Maximum Acceptable CLV	-	Base CLV with Improvement	=	Beginning Surplus Capacity
1,450	-	1,210	=	240 CLV units

Step 2: Costs associated with creating the surplus capacity:

Total Cost	-	CIP Funds	-	Frontage-Related Costs	=	Allocable Cost
$2,400,000	-	$1,300,000	-	$150,000	=	$950,000

Step 3: Development Z pro rata share of the allocable cost:

Allocable Cost	X	(Development Z Impact / Beginning Surplus Capacity)	= Development Z Share
$950,000	X	(58 / 240)	= Development Z Share
$950,000	X	0.2417	= $229,615

Beginning Surplus Capacity	-	Development Z Impact	=	Current Surplus Capacity
240	-	58	=	182
Current Surplus Capacity			=	New Available Surplus Capacity

Step 4: Calculation of cost paid by Development Z that qualifies for reimbursement by others:

Allocable Cost	-	Development Z Share	=	Eligible SCR Cost
$950,000	-	$229,615	=	$720,385

Step 5: Calculation of pro rata participation in SCR improvement for Development A:

NOTE: At the time that Development A is submitted for review, the TPS staff determines that Available Surplus Capacity at the intersection is still 182 CLV units. Since the 21 CLV units required by Development A at the SCR intersection is less than the Available Surplus Capacity of 182 CLV units, pro rata participation in the SCR improvement is an appropriate condition of approval for the subdivision. There has been no construction cost inflation since the SCR improvement was established.

Allocable Cost	X	(Development A Impact	/ Beginning Surplus Capacity)	= Development A Share
$950,000	X		(21/ 240)	= Development A Share
$950,000	X		0.0875	= $83,125

Available Surplus Capacity	-	Development A Impact	=	Current Surplus Capacity
182	-	2	=	161
Current Surplus Capacity			=	New Available Surplus Capacity

Therefore, prior to the approval of any building permit in Development A, the applicant for Development A shall pay $83,125 to the applicant for Development Z as an SCR payment.

Step 6: Calculation of pro rata participation in SCR improvement for Development B:

NOTE: At the time that Development B is submitted for review, the TPS staff determines that Available Surplus Capacity at the intersection has dropped to 83 CLV units. Since the 83 CLV units required by Development B at the SCR intersection equals the Available Surplus Capacity of 83 CLV units, pro rata participation in the SCR improvement is an appropriate condition of approval for the subdivision. There has been no construction cost inflation since the SCR improvement was established.

Allocable Cost	X	(Development B Impact	/ Beginning Surplus Capacity)	= Development B Share
$950,000	X		(83 / 240)	= Development B Share
$950,000	X		0.3458	= $328,510

Available Surplus Capacity	-	Development B Impact	=	Current Surplus Capacity
83	-	83	=	0

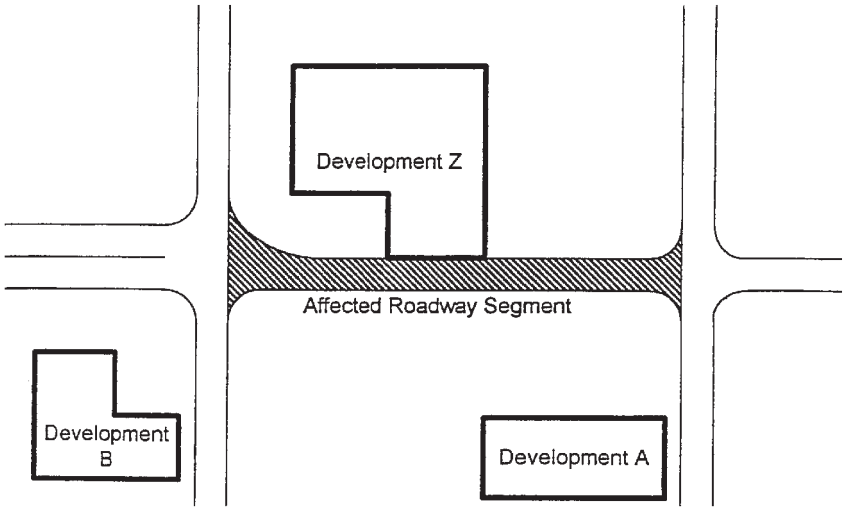
Therefore, prior to the approval of any building permit in Development B, the applicant for Development B shall pay $328,510 to the applicant for Development Z as an SCR payment. If Development B had a greater impact than the Available Surplus Capacity, further improvements beyond those constructed as a part of the SCR improvement would be required at the intersection.

Step 7: SCR Closure:

At the time that Development B was approved, the TPS staff determined that no surplus capacity was available at the intersection receiving the SCR improvement. Therefore, the staff would recommend that the Planning Board close the SCR improvement by resolution. Development Z would be entitled to no further reimbursement of the SCR improvement by other developers or from the county.

Of the $720,385 paid by Development Z to create surplus capacity, Development Z was reimbursed $83,125 by Development A and $328,510 by Development B, for a total reimbursement of $411,635. The balance of $308,750 would remain unreimbursed after SCR closure.

Schematic of Developments A, B and SCRP Process (Link Analysis)
Figure 7



Link Improvement Scenario:

Link Improvement Scenario: During its review of Development Z (the initial subdivider), the TPS staff determines that a two-lane county road within the study area has a peak hour inadequacy. As a result, the Planning Board approves Development Z with a condition that the inadequate roadway must be widened to a four-lane divided facility. This improvement is identified in the Prince George's County adopted CIP with less than 100 percent funding. In order to satisfy the Planning Board's condition, Development Z agrees to pay the remainder of the funds necessary to construct the required improvement.

Further investigation by Development Z reveals that the improvement would create substantial surplus capacity which future applicants could use to make a findings of adequate public facilities. As a result, the Planning Board adopts a resolution identifying this improvement as an SCR improvement. The following illustrates the procedure used in determining Development Z's pro rata share of the SCR improvement to an intersection, and the pro rata shares of two other developments, Development A and Development B (see Figure 7). Results have been rounded for simplicity.

Existing Roadway & Traffic Conditions:	The link is a 2-lane undivided roadway.
	Link Service Volume = 800 vph (peak hour, peak direction)
	Base traffic on link = 1,400 vph (peak hour, peak direction) Base traffic is defined as existing plus background traffic at the time that the application for Development Z is submitted
	Link LOS Under Base Traffic: V/C = 1,400/800 = 1.75 or LOS F

Traffic Conditions With SCR Improvement:	The intersection is improved to a 4-lane divided highway.
	Link Service Volume = 3,600 vph (peak hour, peak direction)
	CIP Funding for this Improvement = $200,000
	Estimated Cost of this Improvement = $2,700,000
Development Potential:	Development Z Impact = 400 vph (peak hour, peak direction)
	Development A Impact = 1,200 vph (peak hour, peak direction)
	Development B Impact = 350 vph (peak hour, peak direction)
	Frontage cost required of Development Z by DPW&T along this road = $300,000

Step 1: Available surplus capacity with improvements constructed:

Link Service Volume	-	Base Traffic on Link	=	Beginning Surplus Capacity
3,600	-	1,400	=	2,200 vph

Step 2: Costs associated with creating the surplus capacity:

Total Cost	-	CIP Funds	-	Frontage-Related Costs	=	Allocable Cost
$2,700,000	-	$200,000	-	$300,000	=	$2,200,000

Step 3: Development Z pro rata share of the allocable cost:

Available Surplus Capacity = Beginning Surplus Capacity

Allocable Cost	X	(Development Z Impact / Beginning Surplus Capacity)	= Development Z Share
$2,200,000	X	(400/2,200)	= $400,000

Available Surplus Capacity	-	Development Z Impact	=	Current Surplus Capacity
2,200 vph	-	400 vph	=	1,800 vph

Step 4: Calculation of cost paid by Development Z that qualifies for reimbursement by others:

Allocable Cost	-	Development Z Share	=	Eligible SCR Cost
$2,200,000	-	$400,000	=	$1,800,000

Step 5: Calculation of pro rata participation in SCR improvement for Development A:

NOTE: At the time that Development A is submitted for review, the TPS staff determines that Available Surplus Capacity is still 1,800 vph along the SCR improvement. Since the 1,200 vph required by Development A along the SCR improvement is less than the Available Surplus Capacity of 1,800 vph, pro rata participation in the SCR improvement is an appropriate condition of approval for the subdivision. There has been no construction cost inflation since the SCR improvement was established.

Allocable Cost	X	(Development A Impact / Beginning Surplus Capacity)	= Development A Share
$2,200,000	X	(1,200 vph / 2,200 vph)	= $1,200,000

Available Surplus Capacity	- Development A Impact	= Current Surplus Capacity
1,800 vph	- 1,200 vph	= 600 vph

Therefore, prior to the approval of any building permit in Development A, the applicant for Development A shall pay $1,200,000 to the applicant for Development Z as an SCR payment.

Step 6: Calculation of pro rata participation in SCR improvement for Development B:

NOTE: At the time that Development B is submitted for review, the TPS staff determines that Available Surplus Capacity has dropped to 350 vph along the SCR improvement since Development A was reviewed. Since the 350 vph required by Development B along the SCR improvement equals the Available Surplus Capacity of 350 vph, pro rata participation in the SCR improvement is an appropriate condition of approval for the subdivision. Construction costs have increased 10 percent due to inflation since the SCR improvement was established.

Allocable Cost	X	(Development B Impact	/ Beginning Surplus Capacity)	= Development B Share
$2,200,000	X	(350 vph	/ 2,200 vph)	= $350,000

Available Surplus Capacity	-	Development B Impact	=	Current Surplus Capacity
350 vph	-	350 vph	=	0

Therefore, prior to the approval of any building permit, the applicant for Development B shall pay $350,000 to the applicant for Development Z as an SCR payment.

Step 7: SCR Closure:

At the time that Development B was approved, the TPS staff determined that no surplus capacity was available at the intersection receiving the SCR improvement. Therefore, the staff would recommend that the Planning Board close the SCR improvement by resolution. Development Z would be entitled to no further reimbursement of the SCR improvement by other developers or from the county.

Of the $1,800,000 paid by Development Z to create surplus capacity, Development Z was reimbursed $1,200,000 by Development A and $350,000 by Development B, for a total reimbursement of $1,550,000. The balance of $250,000 would remain unreimbursed after SCR closure.

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