



CITY OF HAGERSTOWN, MARYLAND

Traffic Impact Study Guidelines City of Hagerstown, MD

Effective July 1, 2002

TRAFFIC IMPACT STUDY GUIDELINES CITY OF HAGERSTOWN, MARYLAND JUNE 2002

1. INTRODUCTION.

The purpose of these traffic impact study guidelines is to outline the requirements for a traffic study to determine the impact of proposed development on the existing transportation network in the City of Hagerstown, Maryland. The City of Hagerstown reserves the right to waive any of the requirements included in these guidelines or to require additional studies to fully evaluate the potential impact of a proposed development. The City also reserves the right to require an updated traffic impact study when each major phase of a multi-staged development is submitted for preliminary plat approval or site plan approval.

2. STUDY PURPOSE.

The purpose of a traffic study submitted in support of a proposed development is as follows:

- a. To identify the adequacy of the existing transportation network and to identify potential impacts of the proposed land development on the transportation network.
- b. To determine transportation network improvements necessary to mitigate any impacts resulting from the development.

3. APPLICABLE REFERENCES.

The guidelines and standards presented in the latest edition of the following references supplement these Traffic Impact Study Guidelines.

- a. *Traffic Access and Impact Studies for Site Development*, Institute of Transportation Engineers.
- b. *Trip Generation*, Institute of Transportation Engineers.
- c. *Highway Capacity Manual*, Transportation Research Board.
- d. *Manual on Uniform Traffic Control Devices*, Federal Highway Administration.
- e. *Maryland Vehicle Code*, State of Maryland.
- f. *Manual of Transportation Engineering Studies*, Institute of Transportation Engineers.
- g. *A Policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials.
- h. *Transportation and Land Development*, Institute of Transportation Engineers.

4. WHEN A STUDY IS REQUIRED.

A traffic impact study shall be submitted in support of a proposed development which meets the following criteria.

- a. Residential development consisting of 25 or more dwelling units.
- b. Non-residential development which has the potential to generate approximately 100 or more new peak hour trips.
- c. Other – whenever the City of Hagerstown shall determine that the existing transportation network may be inadequate to handle the volume or character of traffic likely to result from the proposed development.

5. WHO SHOULD PREPARE THE STUDY.

The study shall be prepared and sealed by a Professional Engineer registered in the State of Maryland with verifiable experience in traffic engineering sufficient to perform the study and render any opinions and recommendations contained therein.

6. STUDY AREA LIMITS.

The geographic limits of the traffic study will vary depending on the location and size of the proposed development and the conditions prevailing in the surrounding area. The following limits will apply to most studies; however, the intersections to be included in the study shall be approved by the City.

- a. All site access points.
- b. All major intersections (signalized and unsignalized) adjacent to the site.
- c. The first signalized intersection within one-half mile of the site in all directions.

7. STUDY SCOPING MEETING.

It is strongly suggested that, prior to initiating a traffic impact study, a Study Scoping Meeting be scheduled with the City Engineering Staff. The developer, the study preparer, and City Staff, as well as the Maryland State Highway Administration (MSHA) and the Washington County Engineering Department, as applicable, should attend this meeting. The purpose of this Study Scoping Meeting is to make an initial identification of the key elements of the study including, but not limited to, the following:

- a. Study area limits.
- b. Intersections and/or roadway segments to be studied.

- c. Horizon years to be studied (typically the year of completion of each major development phase including the build-out year).
- d. Planned or approved development near the proposed development.
- e. Planned, programmed or funded transportation system improvements in the study area.
- f. Requirements for supplemental studies such as traffic signal warrant studies, queuing analyses, or signal progression analyses.
- g. Assumptions such as traffic distribution, background traffic growth rates, pass-by trip percentage, and trip generation.

Note that the City reserves the right to revise any of the study parameters identified at the Study Scoping Meeting as preliminary results of the study are identified. Furthermore, the identification of any of the abovementioned study elements by the City, the County or MSHA does not relieve the developer from the requirement to fully examine and document all foreseeable traffic impacts associated with a proposed development.

8. SUBMISSION REQUIREMENTS.

Submissions of a Traffic Impact Study shall be made to the City of Hagerstown, Engineering and Inspections Department, Attention City Engineer, City Hall, One East Franklin Street, Hagerstown, Maryland 21740-4817. The submissions shall consist of the following:

- a. Three (3) copies of the draft Traffic Impact Study report(s).
- b. Three (3) copies of the final Traffic Impact Study report including a point-by-point response to all comments on the draft report(s).
- c. Payment of review fees.

9. REPORT CONTENTS.

Unless otherwise discussed at the Study Scoping Meeting, all Traffic Impact Study reports submitted to the City of Hagerstown shall include the following elements.

- a. Report Cover. The report shall include a cover with the name of the development, the name of the developer, the name of the study preparer, the date of submission, and identification of the report as a draft or the final submission.
- b. Table of Contents.
- c. Executive Summary. The report shall contain a one- to two-page executive summary concisely describing the proposed development, the study purpose, conclusions and recommendations.
- d. Technical Report.

i. General Site Description.

- (1) The site description shall include the type, size, and location of the proposed development as well as the current and proposed zoning and construction phasing with completion dates.
- (2) A brief description of other planned or approved land development within the study area shall be provided.
- (3) A location map at a scale of approximately 1 inch = 2000 feet and with a north arrow shall be provided.
- (4) A current proposed site plan shall be provided.
- (5) A brief discussion of the proposed internal circulation pattern, including access and circulation of delivery, service and emergency vehicles, shall be provided.
- (6) A brief discussion of parking for the proposed development shall be provided.

ii. Existing Roadway Characteristics.

- (1) The study area intersections and roadways shall be described in narrative and graphic form.
- (2) This description shall indicate the existing number, use and width of lanes, approach speed limits, intersection traffic control, the distance to the adjacent major intersection(s), and notable roadway deficiencies such as limited sight distance, posted weight limits, or poor pavement condition.

iii. Existing Traffic Conditions. Existing traffic conditions shall be determined for all roadways and key intersections in the study area. This determination shall be made using current traffic volumes and using the methodologies of the most recent edition of the *Highway Capacity Manual*.

(1) Traffic volumes.

- (a) Traffic volumes shall be obtained for the peak hours of the intersections and for the peak hours of the site when these hours do not coincide. For all land

uses, this will require all counts to be taken on a Tuesday, Wednesday or Thursday when school is in session. For commercial land uses, counts shall also be taken on a Saturday. Unless otherwise approved by the City, all traffic counts shall be no more than one year old at the time of the study.

- (b) Existing AM peak hour, PM peak hour, and site peak hour, where applicable, traffic volumes shall be presented graphically.
- (c) Intersection turning movement count summaries shall be provided in an appendix to the report.

(2) Capacity analyses.

- (a) Capacity analyses shall be performed based on existing roadway geometry, traffic control, traffic volumes using existing peak hour factors, and traffic signal timings, where applicable.
- (b) The results of the capacity analyses for each peak hour shall be presented in tabular form. The table shall include the level of service and delay obtained for each intersection movement, as well as the overall intersection level of service and delay, as applicable.

iv. Future Traffic Conditions without the Proposed Development. Future traffic conditions without the proposed development shall be determined for all roadways and key intersections in the study area. This determination shall be made using estimated traffic volumes and using the methodologies of the most recent edition of the *Highway Capacity Manual*.

(1) Traffic volumes.

- (a) Traffic volumes shall be estimated for each horizon year for the peak hours of the intersections and for the peak hours of the site when these hours do not coincide.
- (b) Future traffic volumes shall be estimated using an approved background traffic growth rate (3 percent

per year compounded, unless otherwise specified), by estimating and distributing traffic generated by other planned or approved development in the study area, or a combination of the two methods.

(c) The methodology and assumptions used to estimate future traffic volumes shall be clearly presented in a manner that permits the duplication of the calculations by City Staff.

(d) Future AM peak hour, PM peak hour, and site peak hour, where applicable, traffic volumes shall be presented graphically for each horizon year.

(2) Capacity analyses.

(a) Capacity analyses shall be performed based on existing roadway geometry, existing traffic control, future traffic volumes using existing or assumed peak hour factors, and existing traffic signal timings, where applicable.

(b) If roadway improvements or modifications are committed for implementation, perform capacity analyses reflecting these proposed conditions.

(c) The results of the capacity analyses for each peak hour shall be presented in tabular form. The table shall include the level of service and delay obtained for each intersection movement, as well as the overall intersection level of service and delay, as applicable.

v. Future Traffic Conditions with the Proposed Development.
Future traffic conditions with the proposed development shall be determined for all roadways and key intersections in the study area. This determination shall be made using estimated traffic volumes and using the methodologies of the most recent edition of the *Highway Capacity Manual*.

(1) Traffic volumes.

(a) Site-generated traffic volumes shall be estimated for each horizon year for the peak hours of the

intersections and for the peak hours of the site when these hours do not coincide.

- (b) Future traffic volumes shall be estimated using an approved methodology. Typically, the methodology of the most recent edition of the Institute of Transportation Engineers' *Trip Generation* will be acceptable. However, for specific or unusual development types, other means of determining the appropriate estimate of site-generated traffic may be required. This may include collection of local trip generation data at sites exhibiting characteristics similar to the development being studied.
- (c) For commercial development only, reasonable, documentable assumptions regarding pass-by traffic will be accepted. Pass-by trip assumptions are subject to approval by the City, and where possible, these assumptions should be reviewed at the Study Scoping Meeting.
- (d) Estimates of site-generated traffic volumes shall include an estimate of truck volumes for each peak hour.
- (e) Site-generated traffic volumes shall be distributed throughout the transportation network and assigned to specific intersection turning movements.
- (f) The methodology and assumptions used to estimate, assign and distribute future traffic volumes shall be clearly presented in a manner that permits the duplication of the calculations by City Staff.
- (g) Site-generated AM peak hour, PM peak hour, and site peak hour, where applicable, traffic volumes shall be presented graphically for each horizon year.
- (h) Total future AM peak hour, PM peak hour, and site peak hour, where applicable, traffic volumes, combining future traffic volumes without the proposed development and the site-generated traffic volumes, shall be presented graphically for each horizon year.

- (l) For each peak hour condition for each horizon year at each study intersection, the percentage increase in traffic volumes attributable to the proposed development shall be presented graphically.

(2) Capacity analyses.

- (a) Capacity analyses shall be performed based on existing roadway geometry, existing traffic control, future traffic volumes using existing or assumed peak hour factors, and existing traffic signal timings, where applicable.
 - (b) If roadway improvements or modifications are committed for implementation, perform capacity analyses reflecting these proposed conditions.
 - (c) The results of the capacity analyses for each peak hour shall be presented in tabular form. The table shall include the level of service and delay obtained for each intersection movement, as well as the overall intersection level of service and delay, as applicable.
- vi. Recommended improvements. In the event that the analyses indicate unsatisfactory levels of service will occur on study area roadways, a description of proposed improvements to remedy deficiencies shall be prepared. Note that traffic signal timing or phasing adjustments shall be considered appropriate improvement recommendations if the following requirements are satisfied.
- (1) Definition of satisfactory levels of service. A roadway segment or an intersection, including all movements within the intersection, must operate at Level of Service (LOS) D or better to be considered operating at an acceptable level of service.
 - (a) If a roadway segment or an intersection, including any of its movements, is found to operate at LOS D or better without the proposed development in any horizon year and the roadway segment or intersection, including any of its movements, is

projected to operate at LOS E or F with the proposed development, measures to mitigate the impact of the proposed development to LOS D or better must be implemented by the developer.

(b) If a roadway segment or an intersection, including any of its movements, is found to operate at LOS E or F without the proposed development in any horizon year and the operation of the roadway segment or intersection, including any of its movements, is projected to worsen with the proposed development, measures to mitigate the impact of the proposed development to levels without the development or better must be implemented by the developer.

(2) Proposed recommended improvements. The location, nature and extent of proposed improvements shall be described. This description shall include preliminary cost estimates, sources of funding, and a suggested schedule for implementation.

(3) Capacity analysis results shall be presented to demonstrate the effectiveness of proposed improvements.

vii. Conclusions. The conclusions of the study, including a summary of the recommended improvements, shall be presented.

viii. Appendices. All base data, calculations and computer output relevant to the study shall be presented in appendices. As appropriate, the supplement studies discussed below shall be included in the appendices.

10. SUPPLEMENTAL STUDIES.

The City may determine the need for supplemental studies, including, but not limited to, the following. This determination may be identified at the Study Scoping Meeting or it may be identified as preliminary results of the study are identified. The source of applicable criteria is listed in parentheses for each study. Note that the City reserves the right to approve the methodologies used for all elements of the study.

- a. Traffic signal warrant studies (MUTCD).
- b. Queuing analyses (TRB (HCM), ITE and applicable software).
- c. Accident analyses (ITE).

- d. Traffic signal progression analyses (ITE and applicable software).
- e. Intersection sight distance studies (AASHTO).
- f. Intersection or entrance lighting evaluation (MSHA).
- g. Signing and pavement marking evaluation and preliminary design (MUTCD and MSHA).
- h. Pedestrian studies (ITE).
- i. Pavement evaluation (AASHTO and others).
- j. Classification studies (ITE)
- k. Speed studies (ITE)
- l. Arterial analyses (TRB (HCM)).

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