

ARTICLE VII

TRAFFIC IMPACT STUDIES

SECTION 701

Purpose. Whenever a proposed development will generate one hundred (100) new vehicle trips in the peak direction (inbound or outbound) during the peak traffic hour of the development, the applicant shall perform a traffic impact study. Based on this study, certain improvements may be identified to provide safe and efficient access to the development.

In addition, a traffic impact study shall be prepared whenever either one of the following conditions exist within the impact study area:

- A. Current traffic problems exist in the local area, such as a high-accident location, confusing intersection or a congested intersection which directly affects access to the development.
- B. The ability of the existing street system to handle increased traffic, or the feasibility of improving the street system to handle increased traffic, is limited.

SECTION 702

Traffic Impact Study.

702.01

Area of Traffic Impact Study. The traffic impact study area shall be based on the characteristics of the surrounding area. The intersections to be included in the study shall be adjacent to the subject tract or have direct impact upon the access to the development. The intersections shall be established by the Board of Supervisors.

702.02

Preparation by Transportation Engineer Required. Traffic impact studies shall be prepared under the supervision of qualified and experienced transportation engineers with specific training in traffic and transportation engineering and at least two (2) years of experience related to preparing traffic studies for existing or proposed developments.

702.03

Horizon Year. The traffic forecasts shall be prepared for the horizon year.

702.04

Non-Site Traffic Estimates. Estimates of non-site traffic shall be made, and will consist of through traffic and traffic generated by all other developments within the study area for which preliminary or final plans have been approved. Non-site traffic may be estimated using any one of the following three methods: "Build-up" technique, area transportation plan data or modeled volumes, and trends or growth rates.

- 702.05 Trip Generation Rates Required.** The traffic impact study report shall include a table showing the categories and quantities of land uses, with the corresponding trip generation rates or equations (with justification for selection of one or the other) and resulting number of trips. The trip generation rates used must be either from the latest edition of Trip Generation by ITE, or from a local study of corresponding land uses and quantities. All sources must be referenced in the study.
- 702.06 Consideration of Pass-By Trips.** If pass-by trips or shared trips are a major consideration for the land use in question, studies and interviews at similar land uses must be conducted or referenced.
- 702.07 Rate Sums.** Any significant difference between the sums of single-use rates and proposed mixed-use estimates must be justified in the study report.
- 702.08 Explanations Required.** The reasoning and data used in developing a trip generation rate for special or unusual generators must be justified and explained in the study report.
- 702.09 Definition of Influence Area.** Prior to trip distribution of site-generated trips, an influence area must be defined which contains eighty percent (80%) or more of the trip ends that will be attracted to the development. A market study can be used to establish the limits of an influence area, if available. If no market study is available, an influence area should be estimated based on a reasonable documented estimate. The influence area can also be based on a reasonable maximum convenient travel time to the development, or delineating area boundaries based on locations of competing developments.
- Other methods such as using trip data from an existing development with similar characteristics or using an existing origin-destination survey of trips within the area can be used in place of the influence area to delineate the boundaries of the impact.
- 702.10 Estimates of Trip Distribution Required.** Trip distribution can be estimated using any one of the following three methods:
- A. Analogy
 - B. Trip distribution model
 - C. Surrogate data

Whichever method is used, trip distribution must be estimated and analyzed for the horizon year. A multi-use development may require more than one distribution and coinciding assignment for each phase (for

example, residential and retail phases on the same site). Consideration must also be given to whether inbound and outbound trips will have similar distributions.

702.11

Trip Assignments. Assignments must be made considering logical routings, available street capacities, left turns at critical intersections, and projected (and perceived) minimum travel times. In addition, multiple paths should often be assigned between origins and destinations to achieve realistic estimates rather than assigning all of the trips to the route with the shortest travel time. The assignments must be carried through the external site access points and in large developments producing five hundred (500) or more additional peak direction trips to or from the development during the peak hour of the development, through the internal vehicular circulation system. When the development has more than one vehicular access, logical routing and possibly multiple paths should be used to obtain realistic driveway volumes. The assignment should reflect conditions at the time of the analysis. Assignments can be accomplished either manually or with applicable computer models.

If a thorough analysis is required to account for pass-by trips, the following procedure should be used:

- A. Determine the percentage of pass-by trips in the total trips generated.
- B. Estimate a trip distribution for the pass-by trips.
- C. Perform two separate trip assignments, based on the new and pass-by trip distributions.
- D. Combine the pass-by and new trip assignment.

Upon completion of the initial development traffic assignment, the results should be reviewed to see if the volumes appear logical given characteristics of the street system and trip distribution. Adjustments should be made if the initial results do not appear to be logical or reasonable.

702.12

Total Traffic Impacts. Traffic estimates for any development with current traffic activity must reflect not only new traffic associated with the redevelopment, but also the trips subtracted from the traffic stream because of the removal of a land use. The traffic impact report should clearly depict the total traffic estimate and its components.

702.13 Capacity Analysis. Capacity analysis must be performed at each of the major street and development access intersection locations (signalized and unsignalized) within the study area. In addition, analyses must be completed for street segments deemed sensitive to traffic from the development within the study area. These may include such segments as weaving sections, ramps, internal vehicular circulation patterns, parking facility access points, and reservoirs for vehicles queuing off-site and on-site. Other locations may be deemed appropriate depending on the situation.

The recommended level of service analysis procedures detailed in the most recent edition of the Highway Capacity Manual must be followed. The overall level of service ratings A, B, C and D are considered to be acceptable for signalized intersections (levels C or better are considered desirable); level of service E or F is considered to be unacceptable.

The operational analyses in the Highway Capacity Manual should be used for analyzing existing conditions, traffic impacts, access requirements, or other future conditions for which traffic, geometric and control parameters can be established.

702.14 Required Levels of Service. The recommendations of the traffic impact study shall provide safe and efficient movement of traffic to and from and within and past the proposed development, while minimizing the impact to non-site trips. The current levels of service must be maintained if they are C or D, not allowed to deteriorate to worse than C if they are currently A or B, and improved to D if they are E or F.

702.15 Documentation Required. A traffic impact study report shall be prepared to document the purpose, procedures, findings, conclusions and recommendations of the study.

A. The documentation for a traffic impact study shall include, at a minimum:

- (1) Study purpose and objectives.
- (2) Description of the development and study area.
- (3) Existing conditions in the area of the development.
- (4) Recorded or approved nearby development.
- (5) Trip generation, trip distribution and modal split.
- (6) Projected future traffic volumes.
- (7) An assessment of the change in street system operating conditions resulting from the development traffic.
- (8) Recommendations for development site access and transportation improvements needed to maintain traffic

flow to, from, within and past the development site at an acceptable and safe level of service.

- B. The analysis shall be presented in a straight forward and logical sequence. It shall lead the reader step-by-step through the various stages of the process and resulting conclusions and recommendations.
- C. The recommendations shall specify the time period within which the improvements should be made (particularly if the improvements are associated with various phases of the development construction) and any monitoring of operating conditions and improvements that may be required.
- D. Data shall be presented in tables, graphs, maps and diagrams wherever possible for clarity and ease of review.
- E. An executive summary of one or two pages shall be provided, concisely summarizing the purpose, conclusions and recommendations.
- F. The report documentation outlined above provides a framework for traffic impact study reports. Some studies will be easily documented using this outline. However, the specific issues to be addressed, local study requirements and the study results may warrant additional sections.

SECTION 703

Improvements.

- 703.01 Responsibility for Improvements.** The applicant shall be responsible for the improvements required to provide safe and convenient ingress and egress to the development site.
- 703.02 Coordination with Municipal Requirements.** The applicant shall be responsible for other improvements as may be required by any municipal impact fee ordinance consistent with provisions of the Municipalities Planning Code.