

ARTICLE 8

TRAFFIC IMPACT STUDY

SECTION 801. PURPOSE.

It is recognized in East Pennsboro Township that land development activities often create varying levels of vehicular traffic and impacts to public roads and streets. It is the intent of this Article to outline the engineering data and related information necessary for studying traffic impacts from development. The purpose of this Article is to establish guidelines for: (1) identifying the adequacy of the existing transportation network and potential impacts of the proposed land development and (2) determining roadway improvements necessary to mitigate any impacts resulting from the development.

SECTION 802. APPLICABILITY.

- A. A transportation impact study, the total cost of which shall be borne by the developer, shall be submitted with land developments which meet the following criteria.
 - 1. Residential: twenty-five (25) or more dwelling units.
 - 2. Non-residential: fifty (50) or more new peak hour trips.
 - 3. Other: Whenever the Planning Commission or Board of Commissioners shall find that there are reasonable grounds to believe that the existing transportation network may be inadequate to handle the volume or character of traffic likely to result from the proposed land development.
 - 4. All studies will be reviewed by the Township's Traffic Engineer.

SECTION 803. PREPARATION OF THE TRAFFIC IMPACT STUDY.

The study shall be prepared by a professional engineer registered in the Commonwealth of Pennsylvania with sufficient prior traffic study experience to qualify the engineer to perform the study and render any opinions and recommendations set forth therein.

SECTION 804. STUDY AREA BOUNDARIES.

The traffic impact study area boundaries shall be determined in accordance with the publications referenced in Section 805 and through discussion with the Township Planning Commission and Township Engineer. A pre-study conference between the applicant's Traffic Engineer and the Township Engineer is encouraged.

SECTION 805. CONTENTS.

- A. The study shall be prepared in accordance with the Institute of Transportation Engineer's (ITE) Recommended Practice "Traffic Access and Impact Studies for Site Development", current edition and PennDOT Publications 201 and 282, current edition and shall include the following components:
 - 1. General Site Description

The site description shall include the size, location, existing and proposed land uses, current zoning, construction phasing, and

completion date of the proposed land development. A brief description of other major existing and proposed land developments within the study area shall be provided.

2. Transportation Facilities Description.

A description of the transportation facilities will be included in the Traffic Impact Study which shall address the following aspects:

- a. Proposed Internal Transportation System. Describe the proposed vehicular, bicycle and pedestrian circulation, ingress and egress locations, existing or proposed internal roadways including the widths of cartways and rights of way, parking conditions, traffic channelizations and any other traffic control conditions and devices within the site of the land development;
- b. External Transportation System. Describe the entire external roadway system within the study area for the proposed land development including major intersections, traffic control devices and conditions, parking conditions, widths of cartways and rights-of-way, and vehicular, bicycle and pedestrian circulation. Key intersections in the study area shall be identified and described. All planned or programmed public and/or private highway improvements, including proposed roadway construction and traffic signalization, shall be noted. Any proposed roadway improvements resulting from surrounding developments shall also be recorded.

3. Existing Traffic Conditions

Existing traffic conditions shall be determined for all roadways and intersections in the study area. Existing traffic volumes for average daily traffic (ADT), peak highway hour(s) traffic, and peak development-generated hour(s) traffic shall be collected. Manual traffic counts at key intersections in the study area shall be conducted, encompassing the peak highway and development-generated hour(s). A volume capacity analysis based upon existing volumes shall be performed during the peak-highway hour(s) and the peak development-generated hour(s) for all roadways and key intersections in the study area using the methodologies presented in the current edition of the Transportation Research Board's "Highway Capacity Manual." Levels of service shall be determined for all roadways and key intersections. Traffic signal warrant analyses shall be conducted for all unsignalized intersections in accordance with PennDOT Publication 201. Gap studies and queue length analysis shall also be completed for the key intersections. The analysis of the existing road network will be based on the current geometric conditions and traffic conditions.

4. Future Trip Projections.

- a. Estimation of vehicular trips to result from the proposed development shall be completed for the average daily, peak highway hour(s) and peak development-generated hour(s). Vehicular trip generation rates to be used for this calculation shall be based on ITE's Trip Generation Manual, current edition,

and/or data collected from sites with similar trip generation characteristics. Also, provide an estimate of anticipated truck volumes. These development generated traffic volumes shall be provided for the in-bound and out-bound traffic movements, and the reference source(s) and methodology followed shall be documented. AH turning movements shall be calculated. These anticipated traffic volumes shall be distributed to the study area and assigned to the existing roadways, and key intersections throughout the study area.

- b. Provide a detailed distribution and assignment of any pass-by trips. Document all assumptions used in the distribution and assignment phase in a manner which permits the duplication of these calculations. Pedestrian volumes shall also be calculated, if applicable. If school crossings are to be used, pedestrian volumes shall be assigned to each crossing. Any characteristics of the site that will cause particular trip generation problems shall be noted.
- c. Background growth and projected traffic from adjacent land development shall be included in the projection of future traffic.

5 Transportation Impacts.

- a. The study area roadway network is to be analyzed for safety and capacity sufficiency for future network and control conditions both with and without the proposed development. For each of these conditions, the following analyses shall be completed.
 - (1) Mainline ADT volumes and turning movement volumes for all key intersections within the study area will be determined. In addition, the AM peak hour, PM peak hour and the proposed development peak hour will be determined.
 - (2) The effectiveness of the traffic signal control at all key intersections will be evaluated for each approach in terms of vehicle stops and delays.
 - (3) Gap studies will be conducted at the proposed site access points to evaluate the need for signal control, turn prohibitions or additional site access points to reduce the left turn volume from the site driveway(s).
 - (4) Queue length studies will be completed to evaluate the potential for a backup of traffic from controlled intersections which could impact other intersections including access points to the proposed development.
 - (5) An analysis of the volume and capacity of the network and all key intersections will be conducted utilizing the most current "Highway Capacity Manual" procedures. Levels of service will be determined and documented.
- b. The analysis of the future conditions without the proposed

development will document the adequacy of the study area network to accommodate the traffic in the design year(s) without the proposed development. This analysis must include a full consideration of all committed roadway improvements to the study area network when determining the expected levels of service.

- c. The analysis of the future conditions with the proposed development will document the impacts created as a result of the development.

6. **Conclusions and Recommended Improvements.**

Levels of service for all roadway segments and key intersections shall be presented in tabular and/or graphic form. All roadway segments and/or key intersections showing a level of service of "D" or below for roadway segments, signalized intersections, and unsignalized intersections shall be considered deficient, and specific recommendations for the elimination of these deficiencies shall be listed. This listing of recommended improvements shall include, but not be limited to, the following elements: internal circulation design, site access location and design, external roadway and intersection design and improvements, traffic signal installation and operation, and transit design improvements. All physical roadway improvements shall be shown on the preliminary and final plan. Existing and/or future improvements in transportation service shall also be addressed. For each recommended improvement, provide a schematic drawing of existing and proposed conditions as well as a narrative description of the improvement, including the cost and funding method of the improvement, and the implementation schedule for the improvement.

SECTION 806. FINAL REPORT.

A final report must be prepared to document the results of the traffic impact study and the recommended improvements to accommodate the projected traffic due to the proposed development. Provide an executive summary which provides a concise description of the study area, results of the traffic analyses, and any recommended improvements. The presentation of data and analyses conclusion should be presented on either schematic diagrams of the study area, or through the use of charts and/or tables. All sources of data and methodologies which were used in the study (including computer programs) must be properly referenced and documented. Any modifications to the referenced procedures must be properly documented to enable a review of the appropriateness of the modification. All computer output and calculations will be provided in an appendix in the final report.