

APPENDIX C

POLK COUNTY TRAFFIC IMPACT STUDY METHODOLOGY AND PROCEDURES

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A. *Purpose*

The purpose of a traffic impact study is to identify the potential impacts of new development on the Polk County transportation system and to provide information which will allow a concurrency determination to be made on each impacted segment. The traffic impact study will identify development traffic volumes on each impacted segment, identify those segments on which the adopted Level-of-Service cannot be maintained, include link and intersection analysis, and recommend potential solutions for those segments and intersections on which the adopted Level-of-Service is not being met.

B. *Intent*

The intent of this document is to define the requirements, procedures and methodology for the submission of a traffic impact study in Polk County and to provide an equitable, consistent and systematic means of determining the future impact of proposed developments while maintaining the adopted service levels on all roadways. Nothing contained in this document shall waive any requirement contained elsewhere in the Polk County Land Development Code.

C. *Applicability (Revised 5/20/09 – Ord. 09-023)*

The requirements, procedures and methodology for a traffic impact study contained in this section shall apply to all development approvals in unincorporated Polk County as defined in Section 703 (Site Development Standards) of the Polk County Land Development Code. In all cases, it will be the responsibility of the applicant to demonstrate to the Land Development Division and TPO that a proposed development will not unduly impact the road system.

D. *Types of Traffic Impact Studies (Revised 5/20/09 – Ord. 09-023)*

Small projects shall conform to the following:

1. No traffic impact study will be required for developments generating less than or equal to 50 daily trips. Traffic impacts from these developments will be reviewed and assigned by the Land Development Division.
2. The Land Development Division shall make a determination of adequate public transportation facilities.
3. A determination of adequate public transportation will be made for projects which do not access directly onto any segment identified on the Concurrency Determination Network.

4. If the proposed development accesses directly onto a segment identified on the Concurrency Determination Network, a determination of adequate public transportation facilities will be made for the project as long as the segment's Level-of-Service meets the adopted standard as stipulated in the Polk County Comprehensive Plan Traffic Circulation Element.
5. If the Land Development Division determines that the proposed project accesses a segment on the Concurrency Determination Network which does not meet the adopted standard, backlogged, constrained or otherwise, the Land Development Division will notify the applicant that he may undertake a more detailed evaluation of future roadway operating conditions to demonstrate acceptable operating conditions pursuant to Sections Q (Intersection Analysis) and R (Segment Analysis) of Appendix C, or propose roadway improvements to restore the Level-of-Service to acceptable conditions. If the applicant submits a study which demonstrates acceptable operating conditions, the study shall identify the adjusted capacity of the roadway link.

E. ***Minor Traffic Study (Revised 5/20/09 – Ord. 09-023)***

A Minor Traffic Study shall conform to the following:

1. Developments generating more than 50 and less than or equal to 750 average daily trips will be required to submit a Minor Traffic Study.
2. Four copies of a Minor Traffic Study must be submitted to Polk County Land Development Division.
3. The Minor Traffic Study will include:
 - a. A description and location of the project;
 - b. Each land use category and number of units from the Trip Rate and Percent New Trips Data Table maintained by Polk County;
 - c. An estimate of the number of daily and peak hour trips generated (by direction);
 - d. The Generalized Peak Hour/Peak Direction Planning Capacity at the adopted Level-of-Service standard for the Directly Accessed Segment and percent of capacity consumed by the project traffic;
 - e. The number of net external peak hour trips that will impact each Directly Accessed Segment for both the peak and off-peak directions (e.g., after internal capture and adjacent street capture is considered); and

- f. The analysis of intersections, as necessary and specified by the Land Development Division to ensure acceptable operating conditions at major intersections in the project vicinity.
4. The impact of project traffic on the first directly accessed segment on the Concurrency Determination Network as well as specified intersections, shall be evaluated relative to its adopted Level-of-Service. Additional impacted segments may be added by the TPO when it would be in the best interest of Polk County to do so in order to maintain the adopted Level-of-Service standards. A determination shall be made by the Land Development Division whether or not the road facilities are adequate to maintain adopted service levels upon build-out of the proposed development.
5. If the information submitted pursuant to Section E (Minor Traffic Study) of Appendix C above indicates the Level-of-Service will fall below the adopted standard, then the applicant may undertake a more detailed evaluation of future roadway operating conditions to demonstrate acceptable operating conditions pursuant to Sections Q (Intersection Analysis) and R (Segment Analysis) of Appendix C, or the applicant may propose roadway improvements to restore acceptable conditions.
6. The appeals process for a Minor Traffic Study shall be governed by the procedure set forth in the Concurrency Management Ordinance.

F. *Major Traffic Study (Revised 5/20/09 – Ord. 09-023)*

A Major Traffic Study shall conform to the following:

1. A Major Traffic Study shall be required for all developments generating more than 750 average daily trips.
2. The applicant or his engineer is required to participate in a TPO Pre-application Conference to discuss the traffic study requirements, and report outline as it pertains to his specific development prior to conduct of the study. The setting for this TPO Pre-application Conference shall be established by TPO in consultation with the applicant or his engineer (e.g., in person or through other means of communication).
3. Each Major Traffic Study, to be considered complete, must meet the following submission requirements:
 - a. Four copies of the completed Major Traffic Study must be submitted to the Polk County Land Development Division.
 - b. The format of the Major Traffic Study must follow the outline identified in Section F (Major Traffic Study) of Appendix C.

- c. A Major Traffic Study which indicates total daily traffic greater than 1000 trips must be prepared and submitted by a registered professional engineer whose area of practice is transportation engineering, acting as the designated representative of the owner.
- 4. The TPO shall determine if all required data has been submitted and is sufficient and acceptable. This determination, as well as the determination that additional data is necessary, will be made within ten working days of receipt of the Major Traffic Study. Following this determination, the TPO shall have ten working days to evaluate and determine if roadway capacity is available on each segment as presented in the traffic impact study and prepare a concurrency recommendation.
- 5. Site access for a proposed development shall be consistent with the requirements of Polk County and other jurisdictions, as applicable. The applicant or his engineer is required to provide a diagram depicting site access at the TPO pre-application conference. This diagram shall provide sufficient detail to adequately depict existing and proposed ingress/egress to the site (pavement width, median cuts, opposite driveway cuts and intersecting streets, acceleration/deceleration lanes, and left turn storage).
- 6. Figures and maps are to be used to the maximum extent possible. Further definition and clarification of the items listed in Section F6 of Appendix C below may be found in subsequent sections. In order to simplify staff review, each Major Traffic Study will be required to submit an outline in accordance with the following format:
 - a. Letter of transmittal
 - b. Title page
 - c. Table of contents
 - d. List of Figures
 - e. List of Tables
- 7. A Major Traffic Study shall consists of the following information:
 - a. An introduction which includes description and location of project, current and proposed action , both address and map format, size of the project and summary of methodologies agreed to in the TPO pre-application conference;
 - b. Identification of existing conditions for the peak season/peak hour to include existing traffic volumes and roadway characteristics for all segments within the study area; and

- c. Identification of future conditions for the peak season/peak hour to include background traffic, project traffic, and total traffic for all segments within the study area. In order to accomplish this, the applicant shall include the following:
 - i. Trip generation estimates;
 - ii. Percent new trips and internal capture estimates;
 - iii. Traffic distribution and assignment methodology;
 - iv. Area of influence (determination of road segments to be included on study network, based on criteria detailed in the definition of "Impacted Segment" in Chapter 10;
 - v. Impacted segments traffic volumes (peak and off-peak directions);
 - vi. Intersection analyses, as required;
 - vii. Roadway needs (identification of proposed improvements and cost);
 - viii. Internal site circulation and access needs;
 - ix. Appendix (as applicable to the specific traffic impact study);
 - x. Traffic count data;
 - xi. Trip generation, internal and adjacent street capture worksheets;
 - xii. Trip distribution and assignment worksheets;
 - xiii. Intersection capacity analysis worksheets using the 1994 Highway Capacity Manual: Special Report 209 or latest edition;
 - xiv. Link capacity analyses;
 - xv. Computerized modeling documentation (if performed); and
 - xvi. Other analysis worksheets.

G. *Developments of Regional Impact*

For Developments of Regional Impact or Florida Quality Developments, the analysis required by Polk County for the purposes of determining concurrency and Level-of-Service compliance shall be the methodology agreed on for preparing the application of development approval required by 380.06 (10), Florida Statutes.

H. *TPO Pre-Application Conference*

A TPO pre-application conference shall conform to the following:

1. The purpose of the mandatory TPO pre-application conference for a major traffic study is to provide guidance and direction to the applicant or its engineer concerning the conduct of the study. For a minor traffic study, the applicant or its representative may request a TPO pre-application conference to discuss submission requirements.
2. The applicant shall submit a completed TPO pre-application conference request form, provided by the TPO, which includes a general description of the proposed development and study methodology to the TPO at least five working days prior to the meeting. The requirement for five days advance notice may be waived at the discretion of the TPO.
3. The following topics will be discussed and approval obtained from the TPO at the TPO pre-application conference, as necessary.
 - a. The applicant or his engineer will provide a site access and internal circulation plan, pursuant to Section F (Major Traffic Study) of Appendix C;
 - b. A review of the format of a traffic impact study;
 - c. The Concurrency Determination Network form will be provided to the applicant or his engineer;
 - d. The procedure to determine the project's study network (impacted segment) will be defined;
 - e. The availability and use of County data, including traffic count information;
 - f. The procedures for traffic counts, the location of current traffic count stations, and the identification of possible additional locations;
 - g. The applicability of prior land use credit;
 - h. The source of trip generation for project traffic;
 - i. A selection of origin-destination survey sites for determination of percent new trips factor;
 - j. The traffic distribution and assignment technique;
 - k. The justification of an internal capture factor if different than those presented in Section P (Internal Capture) of Appendix C;

- l. The methodology and approach for intersection analysis; and
 - m. The methodology and approach for segment analysis.
4. Failure by the applicant or his engineer to discuss and obtain written resolution to the above topics may result in disapproval of the traffic impact study or a request for additional information.

I. *Level-of-Service Standards*

Level-of-Service standards shall conform to the following criteria:

- 1. The Level-of-Service standard used for concurrency determination shall be consistent with the Polk County Traffic Circulation Element.
- 2. The Level-of-Service of backloged facilities shall be the Level-of-Service identified, pursuant to Policy 3.204-C1, at the time of their adoption as part of the Traffic Circulation Element of the Polk County Comprehensive Plan. Policy 3.204-C1 shall be applied as the Level-of-Service for deficient facilities.
- 3. When an intersection analysis is required, the performance standard for the road segment shall govern intersection approaches.
- 4. A road segment shall be considered deficient under the following conditions:
 - a. The road segment is determined to operate below the adopted Level-of-Service as defined in Section I (Level-of-Service Standards) of Appendix C.
 - b. An individual signalized intersection is operating at a Level-of-Service "F" and this failing operating condition can only be improved through a major capacity related improvement, i.e., road widening.

J. *Traffic Impact Area*

The following procedure will be used to determine the extent of the road network to be studied.

- 1. Traffic attributable to the development will be assigned on all segments on the Concurrency Determination Network that are impacted to a level equal to or greater than the threshold identified in the definition of "Impacted Segment" in Chapter 10 (Definitions).

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2. The total site traffic, including traffic from existing development on the site, the specific development for which concurrency approval is being requested, and future phases of development for which approval may be requested will be used to determine impacted segments. When determining impacted segments, prior land use credits will not be used to reduce the total site traffic.
3. Only traffic from the specific development for which concurrency approval is being requested will be placed on the impacted segments defined by Section J (Traffic Impact Area) of Appendix C.
4. Additional impacted segments, over and above those required in the definition of "Impacted Segment" in Chapter 10 (Definitions), may be added to the study network when, as determined by the TPO, it would be in the best interest of Polk County to do so in order to maintain the adopted Level-of-Service standards.
5. When a project's impacts are such that no roadways are impacted at the threshold identified in the definition of "Impacted Segment" in Chapter 10 (Definitions), then the impact of the project traffic on the first directly accessed roadway segments at minimum shall be evaluated for ensuring the maintenance of the adopted Level-of-Service standard on those roadways.

K. *County Data (Revised 5/20/09 – Ord. 09-023)*

The Polk County TPO shall maintain and update several types of data. These data are described according to the following:

1. Current traffic count data is not available on a number of the roadways on the Concurrency Determination Network. However, new traffic counts as well as traffic count data from approved traffic impact analyses will be used to update the traffic counts in the concurrency management database on a periodic basis. It will be the responsibility of the applicant or engineer to obtain traffic count data on those links for which data is not currently available, or as specified during the TPO pre-application conference.
2. Polk County shall maintain a trip rate and percent new trips data table for use in traffic impact studies. This table will be updated as necessary with trip rate and percent new trips information from traffic impact studies as approved by the TPO and from information contained in the most current edition of the ITE Trip Generation Manual and other published studies as approved by the TPO.
3. A development size data table will be maintained by Polk County. This table will provide examples of the maximum size of development by land use category for which a minor traffic study is required.

4. A roadway characteristics inventory will be maintained on each segment in the transportation database. The inventory will include road link identification (name of street, state or county road number and termini), existing road and group type, jurisdictional responsibility, performance standard, length, date of traffic count, counted volume, adjusted average daily volume, average peak hour and peak direction volume, vested development volume, existing service volume, future service volume, and the link specific available capacity. This inventory will be updated with new information as approved by the TPO on an annual basis.
5. The Land Development Division shall maintain a file of approved minor traffic studies, major traffic studies and DRI/FQD reports. The County shall provide information and data, when available, in order to prevent duplication of efforts and unnecessary costs. It will be the responsibility of the TPO to approve the use of a prior study.

L. *Procedures for Traffic Counts*

Traffic count procedures shall conform to the following:

1. The Concurrency Management Database will contain an inventory of all current traffic count locations and the most current peak hour traffic count.
2. The TPO will approve all traffic count data required for a major traffic study.
3. The applicant or engineer may use available traffic count information for all impacted segments from the concurrency management database or other sources for a major traffic study. Generally, existing traffic count information may be used when it is less than or equal to one year old. If traffic count information is unavailable on an impacted segment, the applicant or engineer will be required to make a current traffic count according to the procedures identified in Section L (procedure for traffic counts) of Appendix C.
4. The applicant or his engineer will provide segment traffic counts by direction as required by the TPO. The need for directional counts and count duration will be determined at the TPO pre-application conference. The data will include a summary of traffic volumes by direction in 15 minute increments. The a.m., p.m. and other peak hours should be identified as well as the peak hour to daily traffic ratio and peak hour directional split. All data will be subject to review and acceptance by the TPO.
5. If the traffic count provided by an applicant for a particular road segment varies more than 20 percent from historical traffic count data and trends, the TPO can reject the count and request another count be taken.

6. The applicant or his engineer will provide intersection turning movement counts as required by the TPO. The data will include a summary of traffic volumes in 15 minute increments, with a.m., p.m. and other peak hours being identified. Intersection volumes shall be adjusted to peak season for calculating intersection Level-of-Service. All data will be subject to review and acceptance by the TPO.

M. *Trip Generation*

Trip generation rates shall conform to the following:

1. Each traffic impact study will list all land uses, applicable ITE land use code, size and if applicable, number of dwelling units.
2. Allowable sources for trip generation rates for each land use are identified as follows:
 - a. The trip generation rate for the specific land use as identified in the Polk County Trip Rate and Percent New Trips Data Table;
 - b. The trip generation rate from a previously approved Polk County traffic impact study of a similar land use;
 - c. The trip generation equations contained in the most current version of the ITE Trip Generation manual as approved for use by the TPO; and
 - d. A site specific trip generation study of the same type or similar land use approved by the TPO at the TPO pre-application conference. Such site specific study will be conducted at three separate sites. The methodology for this study shall be governed by currently accepted traffic engineering principles and approved by the TPO.
3. A prior land use trip credit will be allowed if it can be demonstrated that the subject property was used for a specific land use for at least one year during the previous three years from the date of application for concurrency. No prior land use credit will be given if the land use has been inactive for three or more years.
 - a. The peak-hour/peak-direction trips associated with the prior use will be calculated based on the trip generation rates identified under Section M (Trip Generation) of Appendix C.
 - b. The net peak-hour/peak-direction project trips associated with the project for which concurrency is being requested will be calculated by subtracting the prior use peak-hour/peak-direction trips from the gross peak-hour/peak-direction trips attributed to the project for which concurrency

is being requested (calculated based on the trip generation rates identified under Section M (Trip Generation) of Appendix C.

N. ***Percent New Trips***

The percent new trips shall conform to the following:

1. The percent new trips factor represents the percent by which the trip rate is multiplied in order to obtain only those new trips that are added to the roadway by new development. Thus, those trips going to new development that would have been on the roadway anyway and are included in the trip rate must be deducted from the total trips.
2. Each traffic impact study will list all land uses, applicable ITE land use code, size, and if applicable, number of dwelling units.
3. Allowable sources for the percent new trips factor for each land use are listed below.
 - a. The percent new trips factor identified in the Polk County Trip Rate and Percent New Trips Data Table.
 - b. Percent new trips factor as derived from published transportation research data, and approved by the TPO.
 - c. A site specific origin/destination survey of an identical or similar land use as approved by the TPO. Copies of the original surveys and maps indicating trip ends will be submitted as part of the study. All data will be subject to review and acceptance by the TPO. This review will be based on currently accepted traffic engineering principles.

O. ***Traffic Distribution and Assignment***

The proposed traffic distribution and assignment technique must be presented by the applicant or engineer at the TPO pre-application conference, and reviewed and approved by the TPO. This review will be based on currently accepted traffic engineering/transportation planning principles.

1. The Polk County Standard Transportation Model (micro-Florida Standard Transportation Model Structure—FSUTMS) shall be used to determine a project's trip distribution and assignment when a project's new trips exceed or are equal to 1,000 daily trips. The TPO may require the use of the Polk County Standard Transportation Model for projects with less than 1,000 new daily trips when it is in the best interest of Polk County.

2. A project marketing study will not be accepted as the basis for a traffic analysis as part of a major traffic study.

P. *Internal Capture*

The internal capture factors shall conform to the following:

1. The use of an internal capture factor will be allowed for certain types and sizes of mixed use developments.
2. The following table identifies the internal capture factors that may be applied to mixed use developments and the corresponding land use percentages.

Table C-1 Internal Capture Factors for Mixed-use Developments

Land Use Combination	Range in Square Feet	Internal Capture Factor
Office/Retail less than 80% each (greater than 20% and land use)	Between 250,000 and 1,000,000	10%
Office/Retail (greater than 20% and less than 80% each land use)	Greater than 1,000,000	15%
Office/Retail/Hotel (greater than 10% and less than 80% each land use)	Between 250,000 and 1,000,000	15%
Office/Retail/Hotel (greater than 10% and less than 80% each land use)	Greater than 1,000,000	20%

3. Requests for use of internal capture factors for other land use combinations and sizes other than those identified above must be submitted along with justification at the TPO pre-application conference. All data will be subject to review and acceptance by the TPO. This review will be based on currently accepted traffic engineering principles.

Q. *Intersection Analysis*

Intersection analysis shall be performed according to the following:

1. The applicant shall be required to perform intersection analyses where the total traffic consumes 80 percent or more of the peak hour capacity of the approach link, or as otherwise specified by the TPO.

2. The procedure for performing an intersection analysis will be based upon the methodology found in the 1994 Highway Capacity Manual: Special Report 209 or latest edition. Any questions, issues or methodology other than that referenced in the above publication must be submitted at the TPO pre-application conference and will be subject to the review and approval of the TPO.
3. For each intersection at which the total traffic results in a Level-of-Service below the acceptable adopted Level-of-Service, the applicant or engineer will identify improvements to the intersection that will restore the intersection to an acceptable Level-of-Service.
4. The applicant or engineer will be required to provide the following information relative to each intersection analysis:
 - a. Printouts and worksheets for all highway capacity analysis performed on the intersections or roadway links;
 - b. Copies of any traffic counts performed or used in the analysis, including the source of count data;
 - c. Documentation of any assumptions used in the analysis including trip generation data, if not already specified for the analysis;
 - d. Turning movement volumes and documentation of methodology used to project existing, prior vested and project traffic; and
 - e. Any other applicable data or information.

R. *Segment Analysis*

Segment analysis shall be performed according to the following:

1. If an impacted segment is operating below the adopted FDOT generalized planning capacity with the inclusion of reserve vested development, a transportation analysis must be performed to determine if the actual roadway segment operating characteristics are such that additional capacity is available.
 - a. The applicant or engineer will submit the methodology and approach of each segment analysis at the TPO pre-application conference. The methodology and approach will be subject to review and approval by the TPO. This review will be based on currently accepted traffic engineering principles.
 - b. The applicable procedures based on the 1994 Highway Capacity Manual: Special Report 209, or latest edition shall be used to determine the existing Level-of-Service and available capacity for each road segment under review.

The existing signal timings shall be used to determine the existing Level-of-Service capacity. Any proposed changes to the signal timings shall be indicated as recommended improvements.

2. A segment capacity analysis may be performed to review signal spacing and timing, as well as signal coordination. Such segment capacity analysis shall be performed in accordance with accepted traffic engineering principles and techniques using such computer programs as the 1994 Highway Capacity Manual: Special Report 209 or latest edition, Transyt-7F, Passer II, or Passer III.
3. A travel time study may be performed to determine the operating speed and corresponding Level-of-Service at which the roadway is operating. All data and analyses from each travel time study must be submitted as part of the report.
4. Any service volume capacity resulting from a segment analysis which results in a higher capacity than the FDOT Generalized Planning Capacity will be subject to the review and approval by the TPO. Once approved, the TPO will enter the new capacity in the Concurrency Management System.