SUMTER COUNTY PUBLIC WORKS DEPARTMENT

TRAFFIC IMPACT ANALYSIS (TIA) GUIDELINES

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Approved by: Deborah L. Snyder

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Table of Contents

PURPOSE AND APPLICABILITY

The purpose of the Traffic Impact Analysis (TIA) is to identify the potential traffic impacts of new development on the transportation system and to develop mitigation strategies to offset those impacts according to the methodologies and provisions as described herein. These guidelines apply to all new development within Sumter County, including its municipalities, submitting building and site plans for review. The TIA requirement applies to previously approved developments that are over five-years-old, changing land uses within the site plan, or extending the build-out date from a previously approved TIA. Unless otherwise required by the County Administrator or designee, a TIA, as it relates to a substandard roadway section, shall not be required for any single development generating less than 50 average daily trips, as per the *Trip Generation Manual,* 11th edition, as published by the Institute of Transportation Engineers (ITE). The following thresholds will determine the level of study that will need to be performed depending on the number of trips a development produces:

1. Applicants proposing developments that generate 50 but less than or equal to 1,000 average daily trips (ADT), according to the ITE *Trip Generation Manual,* current edition, must perform a Minor TIA.

2. A Major TIA shall be required for all proposed developments generating more than 1,000 ADT, as per the ITE *Trip Generation Manual,* current edition.

For purposes of this section, a "single development" shall include any development, parcel of land, lot, and tract, and contiguous or nearby developments, parcels, lots, or tracts that are:

1. Developed by the same or a related development or landowner;

2. Developed as part of the same zoning plan, preliminary plan, preliminary site plan, plat, or other unified or common plan of development.

These guidelines are in addition to the requirements of the access management regulations. In the event of any conflict between these guidelines and such regulations, the more stringent requirements shall apply.

METHODOLOGY STATEMENT

Before conducting a Major TIA, a methodology statement shall be prepared by the applicant, the applicant's representative, or the applicant's engineer/consultant and submitted for review and approval by the County. Before conducting a Minor TIA, the applicant, the applicant's representative, or the applicant's engineer/consultant shall seek confirmation from County staff on the need for a methodology statement. The purpose of the methodology statement is to establish agreed-upon methodologies and assumptions before the start of the TIA. A methodology statement shall be prepared using the guidelines provided in the following paragraphs. The methodology statement will be first reviewed by County staff, if necessary, through a methodology meeting with the applicant and or the applicant's consultant. The applicant's consultant will then revise the statement based upon agreed-upon methodologies. The applicant shall ensure the consultant does not prepare a TIA without a methodology statement approved by the appropriate County representative.

CERTIFICATION BY THE PROFESSIONAL ENGINEER

A certification page shall be provided in the TIA, which must include the professional engineer's signature, seal, current registration number in the State of Florida, and a statement that the professional engineer is trained in traffic engineering and was responsible for and in charge of the TIA preparation.

IMPACTED ROADWAYS/INTERSECTIONS

1. The roadway, which abuts the development, shall be analyzed for Level of Service (LOS) as per the *Sumter County Unified Comprehensive Plan'*s Adopted Levels of Service Standards for all three TIA types as defined in the "PURPOSE AND APPLICABILITY" section of these guidelines.

2. Major intersections (all signalized intersections and/or unsignalized intersections of major roadways) that are part of the impacted roadways, major intersections that are within 1,320 feet of the site access, and all site-access intersections are considered impacted.

3. Roadway segments outside of abutting roadway in which the projected and distributed traffic is greater than three percent of the Generalized Peak Hour Two-Way Maximum Service Volume or more than 70 peak hour two-way trips. The use of the Florida Department of Transportation's (FDOT's) Generalized LOS Tables is permitted.

The only difference between a Minor TIA and a Major TIA is that in a Minor TIA, item 3. above does not apply unless otherwise directed by County staff.

ANALYSES SCENARIOS

1. The existing scenario is defined as the analysis of existing traffic on the existing plus committed (E + C) roadway network. The E + C network is defined as all the existing roads, plus all the improvements that are funded for construction within the first three years of the local government's or the FDOT's adopted Transportation Improvement Programs.

2. The future scenario is defined as the analysis of background traffic (existing traffic grown to the build-out year) plus the project's traffic on the E + C network.

3. The base scenario is defined as the analysis of the background traffic on the E + C network. (This scenario will not be required if no mitigation is required as the result of the future scenario analysis.)

4. Future scenario with mitigation is defined as the analysis of background traffic, plus project traffic on the E + C network with the inclusion of any improvements that are required for mitigation of the planned development. (This scenario will not be required if no mitigation is required as the result of the future scenario analysis.)

GENERAL ANALYSIS REQUIREMENTS AND SOFTWARE

1. LOS and turn-lane length analysis (in accordance with the County's access management standards) are required for all site-access intersections and the first major impacted intersection from the site-access driveways not exceeding one mile along the major road.

2. Road analysis sections shall be developed based on acceptable engineering/planning practices. The operating LOS will be evaluated based on the entire "ANALYSIS SCENARIOS" Section of these guidelines.

3. All analyses shall be performed for conditions during the AM and PM peak hours unless otherwise required by the County Administrator or designee. Other time periods may be requested in conjunction with the methodology or first TIA review.

4. Use of the analysis software is allowed per the following:
    a. The latest version of *Highway Capacity Software* (HCS) is the preferred software for analyzing the delay and the LOS at unsignalized intersections.
    b. For all signalized intersections, the latest version of Synchro software should be utilized, unless otherwise approved by County staff.
    c. An electronic copy of the analysis files shall be provided.
    d. Other analysis software may be used if requested by the applicant and approved by the County.
    e. The input data to the software shall be field verified and provided in the report, including, but not limited to:
        i. Geometry, including lane widths and turn-lane lengths.
        ii. Heavy vehicle factor or two percent if data is not available.
        iii. Directional factor (D Factor)
        iv. Peak-hour factor (PHF)
        v. Existing signal timing and phasing (can be obtained from the County). The existing signal timing, including its maximum and minimum settings, shall not be changed. Any timing change outside of the minimum and maximum setting may be presented to the County for approval as part of the mitigation strategy.
        vi. Segment lengths.
    f. For road segment analysis, the use of the FDOT's Generalized LOS Tables is the preferred method, and the following information shall be provided in a separate table.
        i. Class of roadway (interrupted or uninterrupted)
        ii. County, City, or State maintained.
        iii. Area type.
        iv. Signal density.
        v. Class of roadway (interrupted or uninterrupted)
        vi. LOS standard.
    g. Other parameters that govern the roadway/intersection capacity analysis shall be based on the parameters described in the latest version of the *Highway Capacity Manual,* as published by the Transportation Research Board (TRB).

ANALYSIS FORMAT

The general TIA format shall follow the outline below unless approved otherwise by County staff:

1. Letter of transmittal;

2. Title page;

3. Table of contents to include, sections, list of figures, list of tables, and list of appendices;

4. Provide page numbers for the entire report, including the appendices;

5. Introduction which includes description and location of the proposed development, current and proposed zoning (if applicable), size of the project, notes or minutes from the pre-application conference and summary of the agreed-upon methodologies;

6. Description of the existing LOS conditions for the peak hour which includes existing traffic volumes and roadway characteristics for all segments within the study area;

7. Description of future conditions for the peak hour, which includes the following information:
    a. Background traffic growth and future traffic shall be based on the following:
        i. The calculation of background traffic will be done using growth rates as based on historical trends in Sumter County for the respective roadways as agreed to in the methodology.
        ii. The analysis will be documented and provided to the County in an electronic format or other formats as approved by the County.
        iii. Traffic analyses shall be reviewed for reasonableness and consistency with the agreed-upon methodology by the applicant before submittal.
    b. Trip generation estimate from ITE's *Trip Generation Manual*, current edition, or alternative method approved or provided by County staff;
    c. Percent new trips and internal capture estimates;
    d. Traffic distribution and assignment methodology;
    e. Area of influence (determination of road segments to be included in the study network);
    f. Impacted segments traffic volumes (peak and off-peak directions);
    g. All analyses shall evaluate conditions during the PM peak hour. Other time periods or AM analysis may be requested in conjunction with the first sufficiency review;
    h. Intersection analysis (required when the approach links are operating at 90% or more of the Level of Service C Peak Hour Two-Way Generalized Maximum Service Volume) or more than 70 peak hour two-way trips; and
    i. Roadway analysis (required if the total traffic on an impacted roadway segment consumes 90 percent or more of the Level of Service C Peak Hour Generalized Capacity or if the project traffic consumes equal to or greater than 3 percent of the LOS "C" Peak Hour Two-Way Generalized Maximum Service Volume or more than 70 peak hour two-way trips;

8. Summary of all recommended necessary improvements to mitigate the development's adverse capacity impacts to the roadway network. (All developments adversely impacting the roadway network shall include at least one recommended capacity improvement.);

9. Internal site circulation and access needs;

10. P.E. certification page

11. An appendix which includes:
    a. Traffic count data;
    b. Trip generation with internal and pass-by capture worksheets;
    c. Trip distribution and assignment worksheets;
    d. Intersection capacity analysis worksheets;

e. Link capacity analysis worksheets;
f. Computerized modeling documentation; and
g. Any other relevant analysis worksheets.

ANALYSIS SUBMITTAL

The following files shall be submitted electronically unless specified otherwise by County staff:

1. Report Content
   a. Complete TIA Report in pdf format
   b. Complete TIA Report in an editable text format
   c. Study area (map)
   d. Description of proposed land uses
   e. Site location relative to surrounding roadway network (map)
   f. Proposed build-out schedule
2. Model Forecasts
   a. Alternatives (Label all alternative model forecasts)
3. Worksheets
   a. Trip generation (Excel file or *ITE TripGen* Web-based App)
   b. Trip distribution and assignment (Excel file)
4. Raw Data
   a. Count data
   b. Turning movement count data
   c. Signal timing data
   d. Signal warrant data, if applicable
   e. Summary tables
5. Level of Service Data
   a. *Highway Capacity Software* (HCS) files
   b. Synchro files
   c. Other data

TRIP GENERATION

The trips from/to the site shall be estimated using the latest ITE *Trip Generation Manual* or other rates as requested and approved by the County.

INTERNAL CAPTURE

Internal capture is allowed per ITE acceptable methodologies. However, in no case will an internal capture rate of more than **20%** of applicable land use codes be acceptable, unless the County approves a higher internal-capture percentage based on valid documentation.

PASS-BY CAPTURE

A pass-by factor may reduce the trip generation of the project to account for the project traffic that is already traveling on the adjacent roadway. The total pass-by trips shall not exceed **20%** of the applicable trips generated. Pass-by estimation shall be based on ITE methodologies or other methodologies that may be approved by Sumter County. In the analysis of the site-access intersections with major roads, the pass-by trips shall be included and separately identified.

DISTRIBUTION/ASSIGNMENT

The latest, adopted, Sumter County Standard Model (Lake-Sumter Metropolitan Planning Organization (MPO) Model) is acceptable in determining the trip distribution percentages and trip assignments. The results of the model will be reviewed by County staff for reasonableness to ensure the existing and future travel patterns are correctly simulated. Manual trip distribution and assignment may also be acceptable as long as it is reviewed and approved by County staff at the pre-application conference, is listed in the approved methodology, and logically replicates the existing and future travel patterns.

TRAFFIC COUNTS

All counts shall be conducted based on acceptable engineering standards. Raw turning movement counts (TMCs), and daily counts (minimum 24-hours maximum of 48 hours) shall be provided for all the intersections and road segments that are being analyzed. The raw counts shall be factored based on the FDOT's peak-season adjustment factors for specific roadways or the general Sumter County peak season factors. Before approval of the methodology statement, other peak-season adjustment factors or adjustment methodologies that may result in different peak-season adjustment factors may be requested at the discretion of the County. Traffic counts at appropriate locations shall be provided for segment analysis using the FDOT procedures. The segment traffic counts at mid-blocks shall be checked against TMCs at near intersections. In general, the mid-block counts and TMCs shall not be significantly different unless the difference can logically be explained. Approved FDOT or County-maintained counts may be used if they are less than one year old in the high growth areas. New counts will be requested if there are recent improvements to the transportation system that may cause significant traffic diversions. Counts more than one-year-old will not be accepted unless otherwise approved by County staff. The counts should be performed mid-week (Tuesday through Thursday) but no earlier than noon on Mondays and no later than noon on Fridays unless County staff recommends other times.

BACKGROUND TRAFFIC GROWTH/FUTURE TRAFFIC

A growth factor shall increase the existing traffic counts up to the project's build-out date (shall be reasonably specified) to account for increases in existing traffic due to other approved developments. The estimation of the background traffic-growth rate and background traffic shall be based on the following:

1. Historical growth rates using historical data shall be used. County staff may allow alternative methods for developing background growth, including:
    a. The growth/future traffic on committed roads that do not currently exist shall be based on the latest adopted model.

b. If the County model is used, the traffic growth rate for existing roads shall be based on the growth rate as determined by comparing the most recent, validated year, model volume to the future model volume. The future model volume is determined by applying the project's build-out year, socioeconomic data to the committed network. The build-out year, socioeconomic data may be obtained by interpolating between the MPO's or the County's adopted validated model year and the adopted interim or future year, socioeconomic data.

c. The socioeconomic data of the model shall reasonably represent, if appropriate, the recently approved developments in the vicinity of the project as approved by the County during the methodology process.

d. Under no circumstances is a negative growth rate allowed. Minimum, annual growth rates in all cases shall be one-percent unless otherwise approved by the County.

e. The assumed growth rate for each impacted roadway segment shall be presented in a table.

LOS STANDARDS

The LOS standards for all major road segments shall be consistent with the letter standards per the FDOT's latest *Quality/Level of Service (Q/LOS) Handbook* and the latest version of the adopted *Sumter County Unified Comprehensive Plan*. No growth multiplier or adjusted service capacities shall be allowed.

ALTERNATIVE MODES OF TRANSPORTATION:

Evaluation of alternate modes of transportation such as golf carts, bicycles, sidewalks for pedestrians, etc. must be included, and such professional conclusions or recommendations must rest upon accepted methodology and/or studies.

INVENTORY OF THE EXISTING AND FUTURE CONDITIONS

At a minimum, the following additional information shall be provided:

1. Build-out date of the project (must be a reasonable date based on the size of the project, but not less than two years from the date the TIA is submitted).

2. The geometry, speed limit, and the LOS standard of all the existing roadways and intersections and committed intersection and roadway improvement projects within and near the study area.

3. Existing vehicle counts and classifications.

4. Graphic presentation of the project's proposed access locations, types, and internal roads with connections to the County's vision/build-out or long-range plan of roadways. The graphic shall also cover the area beyond the boundary of the project to include all the external, major roadways and existing or future, access points, and types of developments surrounding the project.

5. Pavement marking plans/concept plans of roadways that provide direct access to the project and have completed or are undergoing design or route study phase, if available.

6. Graphic presentation of the project, traffic-percent distribution, and total background and project traffic assignments.

7. Inventory of existing or committed, traffic-control devices.

PHASED DEVELOPMENTS

The trip generation estimate shall consider the total traffic generation of the accumulative development (including traffic from previously developed or approved phases) for purposes of study network identification.

For purposes of evaluating mitigation needs, only the impacts of the traffic above and beyond the traffic from the previously developed uses or prior approved phases (where mitigation is already accomplished following the TIA guidelines) need to be mitigated.

SUBSTANDARD ROADS

Sumter County acknowledges that some County/City maintained local roadways (of lesser classification than arterial or collector) were not originally constructed nor designed to standards that will accommodate substantially increased traffic volumes generated from a planned development(s) (i.e., residential subdivisions, commercial, industrial, etc.). In studying the impact of new planned developments on the local roadway infrastructure, the following must be evaluated by a P.E. to determine if the local roadway can accommodate the future traffic:

1. Pavement width/condition
2. Typical Section
3. Available right-of-way
4. Shoulders
5. Side slopes
6. Drainage
7. Signing and pavement markings
8. Traffic signalization, if applicable
9. Side slopes
10. Clear zone, etc.

The P.E. must present the improvements necessary to assure that the physical conditions of the roadway meet standards detailed in the latest edition of FDOT's *Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways* (a.k.a. *The Florida Greenbook*.)

The minimum pavement design structural numbers (S.N.) to be utilized for this analysis are as follows:

1. Local Roadways SN = 2.75;
2. Subdivision Collector SN = 3.00;
3. Collector SN = 3.00;
4. Arterial SN = 4.00.

Improvements deemed necessary to bring the County/City maintained roadway(s) to the appropriate minimum conditions will not be the responsibility of the developer, unless capacity improvements are identified withinin the substandard section.

DEVIATION FROM GUIDELINES

Except where the preceding guidelines specifically allow for deviation or variance by the County or the Land Development Code, the previous guidelines may only be varied in accordance with approval by the County Administrator or his designee.

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REFERENCES

These guidelines are written in accordance with the following:

1. The Institute of Transporation Engineers (ITE) *Trip Generation Manual*, Tenth Edition, September 2017

2. Sumter County, Florida, *Unified Comprehensive Plan Sumter County, City of Center Hill, City of Coleman, City of Webster*, August 2018

3. The Florida Department of Transportation (FDOT) *Quality/Level of Service Handbook*, 2013

4. Transportation Research Board, *Highway Capacity Manual*, Sixth Edition

5. American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, (a.k.a. *AASHTO Greenbook*) Sixth Edition, 2011

6. FDOT's *Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways*, (a.k.a. *Florida's Greenbook*), 2016

7. Federal Highway Administration (FHWA), *Manual of Uniform Traffic Control Devices (MUTCD),* 2009 Edition updated May 2012

8. Sumter County, Florida, *Sumter County Engineering Manual,* December 2015