

C-UDO-79
AN ORDINANCE AMENDING THE APPENDIX-EXHIBIT TWO OF
UNIFIED DEVELOPMENT ORDINANCES
TO REFLECT CHANGES TO THE TRAFFIC IMPACT STUDY
STANDARDS

Be it ordained by the Village Council of the Village of Clemmons, North Carolina, that the *Unified Development Ordinances* is hereby amended as follows:

Section 1. Appendix Exhibit 2, Traffic Impact Study Standards is hereby amended as follows:

TRAFFIC IMPACT STUDY STANDARDS

Introduction

In accordance with G.S. 160A- 1 74(a), "a city may by ordinance define, prohibit, regulate, or abate acts, omissions, or conditions, detrimental to the health, safety, or welfare of its citizens and the peace and dignity of the city, and may define and abate nuisances." North Carolina Gen. Stat. 160A- 1 74(a) (hereinafter the General Statutes will be cited as G.S.). The comparable county statute is G.S. 153A-121; which provides counties are not authorized to regulate or control vehicular or pedestrian traffic on a street or highway under the control of the Board of Transportation. However, G.S. 153-A-341 and our local act provide that zoning regulations shall be designed to lessen congestion in the streets and to facilitate the adequate provision of transportation.

These standards are intended to provide the ~~City-County Planning Board~~ Village of Clemmons Council and Planning Board, and all other local elected and appointed boards located within Forsyth County the information necessary to make informed decisions regarding planned development impacts to traffic on their roads.

By adopting these standards the ~~City-County Planning Board~~ Village of Clemmons Council seeks to ensure that:

- a. All decisions regarding traffic impacts due to development are based upon technical study, and
- b. Needed improvements are made in a cost effective and efficient manner.

The ~~City-County Clemmons Planning Department (CCPB), the designated traffic consultant determined by the Village of Clemmons and the Winston-Salem Department of Transportation (WSDOT) and/or the North Carolina Department of Transportation (NCDOT) may review all proposed development plans for traffic impacts and these agencies are considered staff to the Winston-Salem Board of Aldermen, Forsyth County Board of Commissioners, the City-County Planning Board~~ Village Council. The ~~Winston-Salem Department of Transportation (WSDOT) shall be notified and may review any traffic impact studies submitted within the Village of Clemmons, and all other local elected and appointed boards.~~ WSDOT designated traffic consultant in conjunction with the Village of Clemmons Planning Department and Public Works Department and/or the NCDOT still have the ultimate responsibility for resolving questions concerning traffic impact studies.

To facilitate the determination of adequacy of adjoining public transportation facilities these agencies may recommend that a traffic impact study be performed for any proposed commercial, industrial or institutional development, or non-residential single-family subdivision.

It is ~~recommended~~required that before anyone performs a traffic impact study in ~~Forsyth County~~ the Village of Clemmons they contact the WSDOT and/or the NCDOT to determine the traffic concerns of each agency and/or jurisdiction or to request a multi-agency meeting. These standards are intended to

define study limits and analysis procedures acceptable to the WSDOT Village of Clemmons and/or the NCDOT. ~~Any suggestion for additional analyses will be made at the time of initial contact, at the multi-agency meeting or by the mitigation plan (see Sections 20 and 21). All traffic im~~

~~These standards shall meet the Clemmons Transportation Impact Analysis Procedures adopted in 2011. Manual~~ are intended to provide structure for the traffic study preparer, ~~where study recommendations will be determined on a case by case basis.~~ If the traffic impact study submitted does not adhere to the procedure manual established standards, then a revised study may be requested based on suggestions by the WSDOT and/or the NCDOT officials and should be prepared by the applicant for submission.

All traffic impact studies should conform to sound engineering principles and are subject to review by the The Village of Clemmons, the designated Village traffic consultant, WSDOT and/or the NCDOT. ~~Three (3) copies of the study should be submitted to the Planning Department, who will, upon receipt, distribute one copy each to the Winston-Salem Department of Transportation and the appropriate NCDOT Division 9 Engineer. When other jurisdictions and/or agencies are within the study area, additional copies of the study may be requested by that other jurisdiction (see item 4) and/or NCDOT (see item 5).~~

All methods used for analysis other than those mentioned in these standards should be explained, (include references), and their limitations described in an appendix to the traffic impact study. It should also be noted that for planning purposes, the planning department and the public works department in consultation with the WSDOT and/or NCDOT has the final authority over the number and location(s) of driveways for any proposed development. NCDOT/WSDOT, in cooperation with the local planning department, will determine the engineering adequacy of any proposed driveways.

1. A traffic impact study may be requested during the contact and/or multi-agency meeting according to any of the following:
 - a. Any proposed development petitioned special use district rezoning that will increase the approach traffic volumes at intersections or roadways by one hundred fifty (150) or more vehicles in the peak hour.
 - b. Proposed development is in the vicinity of areas previously identified as having levels of service "E" or "F", hazardous locations or other adequacy concerns (as determined by NCDOT, MPO, County, or City of Winston-Salem agencies).
 - c. Where a reduction in safety is expected at intersections or roadways.

A traffic signal warrant study may still be requested by NCDOT or WSDOT even if a traffic impact study is not.

2. In the land planning and development process a study may be recommended, based on the following:

A contact or multi-agency meeting will address the recommendations for and scope of the proposed study. The contact or multi-agency meeting provides a means to discuss the traffic concerns expressed by the developer, reviewing agencies and jurisdictions responsible for traffic operations in the vicinity of the proposed project site.

The traffic impact study may be performed and completed and due to Village of Clemmons Planning Department ~~City-County Planning Board~~ along with a filing for special use district rezoning, and/or nonresidential subdivision.

In those instances where a proposed development or non-residential subdivision project has been approved by the Village of Clemmons Council ~~City-County Planning Board~~ or any other elected board in Forsyth County based on recommendation from an acceptable traffic impact study and that project has not been completed after two (2) years of the date of approval, an updated traffic impact study may be recommended. If changes are made to the pre-approved site plan or non-residential subdivision plan that will require a new approval from the Village of

~~Clemmons Council City-County Planning or other elected or appointed board in Forsyth County then a new and/or updated traffic impact study may be recommended.~~

- ~~3. This recommendation may be waived by the Director of WSDOT and/or the Division Engineer of NCDOT Division 9 upon written request by petitioner providing adequate justification for such waiver. The WSDOT and/or NCDOT shall respond in writing. Both letters shall be submitted with the proposed development petition.~~
4. A Traffic Impact Study can only be performed by a Professional Engineer licensed by the North Carolina Board of Registration for Engineers and Land Surveyors, to practice engineering in North Carolina and with experience in the preparation of traffic impact studies.
5. When performing a Traffic Impact Study in the Village of Clemmons the Transportation Impacy Analysis Procedure Manual shall be followed as approved by Village Council in 2011. ~~Forsyth County consideration should be given to the City-County Planning Board, the Winston-Salem Board of Aldermen, Forsyth County Board of Commissioners and/or other jurisdictions.~~

~~The City-County Planning Board has the authority to review and approve non-residential subdivision plans within their respective jurisdictions. The Winston-Salem Board of Aldermen and the Forsyth County Board of Commissioners have the authority to approve or disapprove of proposed developments within their respective jurisdictions. It is recommended that the contact and/or multi-agency meeting for proposed developments within multiple jurisdictions include a representative from each jurisdiction that is familiar with traffic issues concerning each jurisdiction (see the appendix for elected and appointed Boards meeting times, and locations, and phone numbers for each jurisdiction's contact person).~~

Other government agencies (both state and local) may be requested by the Director of Planning to review any traffic impact study. When reviewing a traffic impact study in this capacity, other government agencies are to be considered as staff subordinate to the staff of the Planning Board recommending the traffic impact study.

6. Considerations should also be given to the NCDOT to eliminate any duplication of study recommendations, arrangements will be made by the Village of Clemmons Planning Department ~~City-County Planning Board~~ to have a representative from the appropriate NCDOT Division 9 office present at the multi-agency meeting (or send their recommendations). This representative should indicate the NCDOT recommendations for a traffic impact study.
7. The following areas of investigation will generally be included in a Traffic Impact Study (The exact parameters may be defined at the contact and/or multi-agency meeting conference.):
 - a. An examination of traffic flows, exclusive of the site being studied, defined as "background traffic";
 - b. An examination of projected traffic flows when site traffic is added, defined as "total traffic";
 - c. A discussion of mitigation measures (if such measures are recommended);
 - d. An examination of projected traffic flows after site is developed and mitigation measures are implemented.
8. Traffic should be examined as follows:
 - a. From data collected by persons or agencies within the defined study area which is no more than two years old at the time of the pre-study conference;
 - b. From traffic counts obtained by the applicant based on the specification established at the pre-study conference (see item 13).
9. The study area should be determined as follows:

As a minimum standard, the study area should include each intersection with a major thoroughfare highway which can be considered as a logical travel path between the site and the

major thoroughfare highway network. Major thoroughfare highways are so designated by the Winston-Salem/Forsyth County Thoroughfare and Clemmons(~~or Transportation~~) Plan.

Additional intersections between the site and the major thoroughfare intersection(s) as well as those intersections that are rationally identified as being impacted by a development should be included in the study area.

10. The design hour should be determined by:
 - a. The period for the proposed development which will generate/attract the highest traffic volumes; and/or
 - b. The period of highest traffic volumes on the traffic facilities within the study area.
11. The forecast year should be determined at the contact or multi-agency meeting according to some or all of following criteria:
 - a. A scheduled phase or the completion of the project (for this and other projects);
 - b. The Winston-Salem/Forsyth County Comprehensive Plan (*Legacy*) and the Clemmons Community Compass;
 - c. Locally adopted Transportation or Thoroughfare plan or capital improvement program schedule, or Transportation Improvement Program;
 - d. Major transportation system changes.

12. The following technical procedures and guidelines should be used:

The Clemmons Transportation Impact Analysis Procedures Manual shall be the basis for technical procedures and guidelines including the following:

Roadways and intersections should be analyzed using the appropriate analysis method as depicted in the latest edition of the Highway Capacity Manual, Transportation Research Board.

Additional analyses may or may not be recommended depending on the traffic concerns expressed at the pre-study conference.

13. The minimum standard for traffic operations is defined in the Clemmons Transportation Impact Analysis Procedure Manual as follows:

~~Level of service "D" is the lowest level of service that should be considered adequate for intersections and roadway approaches to intersections in Winston-Salem and Forsyth County. However, no development should bring a level of service down by more than one level without implementing roadway improvements.~~

14. Background traffic should be determined by:

Background traffic on roads in the study area should be determined by thoroughfare classification, as per the most current locally adopted Winston-Salem/MPO and Clemmons Winston-Salem/Forsyth County Transportation or Thoroughfare Plan document:

- a. By historic and/or projected traffic increase rates on roads classified as being major thoroughfares (arterial or major collectors); and
- b. By developments/trips that have been approved (recorded) on roads classified as minor thoroughfares or streets (minor collectors or local roads).

Existing zoning activity information is available at the Village of Clemmons Planning Department City-County Planning Department, at 336-766-7511 ~~336-727-2548~~. Average Daily Traffic (ADT) information is available from the Winston-Salem Department of Transportation at 336-727-2707 and/or the NCDOT Division 9 Traffic Engineering Office at 336-747-7800 ~~336-634-1375~~.

15. Trip Generation, Distribution and Assignment should be determined by:
 - Trip generation should be determined by using the following:
 - a. The latest edition of the Trip Generation Manual, Institute of Transportation Engineers, (cite land use code and page number); or
 - b. Documented local trip generation rates, (as determined through previous or current studies).
 - Trip distribution should be determined by using the following:
 - a. Gravity model;
 - b. Trip assignment of the traffic demand forecasting model;
 - c. Utilization of demographic data leading to trip purpose and trip tables;
 - d. Current directional distribution only if no future changes to land use and no improvements to transportation facilities are expected until the design year;
 - e. Trips should be assigned to the study area network during the study's design hour.
16. Pass-by Trips should be determined by using either of the following:
 - a. The Institute of Transportation Engineers pass-by trip rates; or
 - b. Documented local pass-by trip rates, (as determined through previous or current studies).
17. Traffic should be apportioned to the proposed project in the following manner:
 - a. First, the projected level of service for the study area is forecast without the proposed project.
 - b. Second, the projected level of service is forecast with the addition of the proposed project.

Then the two forecasts are evaluated to determine whether the traffic projected to be generated by the proposed development will lower the projected Levels of Service (LOS) within the study area as described by the Clemmons Transportation Impact Analysis Procedure Manual ~~to below LOS "D" or one level below the current level of service.~~
18. When a traffic impact study projects that the intersection(s) or roadway(s) in the study area will be adequate then the following occurs:

Once a plan has met the level of service standard, and other recommendations identified in consultation or in the multi-agency meeting no further approval for traffic impact is to be recommended by the Village of Clemmons Planning Department ~~except what is included in the procedure manual City-County Planning Department.~~ However, it is possible that the NCDOT Division Engineer or the Winston-Salem Department of Transportation may still recommend additional analyses and/or improvements.
19. When a traffic impact study projects that the intersection(s) or roadway(s) in the study area will be inadequate then either of the following alternatives may be considered by the City-County Planning:
 - a. The project is deferred or reduced in scope so that the level of service standard is not exceeded, or
 - b. A mitigation plan is included in the requirements of the Procedure Manual and submitted for review by the Clemmons Planning Department, the Public Works Department, NCDOT and the designated Village of the Clemmons traffic consultant. ~~submitted for review by the CCPB, the WSDOT and/or the NCDOT.~~ The mitigation plan together with the recommendations of the departments are presented to the Planning Board and subsequently to the Village of Clemmons Council, ~~appropriate elected board with a recommendation from the City-County Planning Board.~~ The elected body has the authority to either approve or disapprove those projects solely under its jurisdiction.

- c. The improvements recommended in the mitigation plan are the sole responsibility of the developer to implement unless one hundred percent (100%) of construction costs for the projected improvements are in the subject budget year of the seven year Transportation Improvement Program or the local Government's Capital Improvements Program.
 - d. The developer may agree to pay fees to fund the necessary improvements by written agreement with the Village of Clemmons, WSDOT and/or NCDOT.
- 19A. If the existing level of service is inadequate (i.e., "E" or "F"), or the existing plus the background growth (not including the site) causes an inadequate level of service, then the developer will be expected to mitigate only the traffic to be generated by the proposed project.
- 19B. If the proposed development is of significant economic importance it may be recommended that the developer be granted an exception and/or waiver where improvements are scheduled or included in either the NCDOT TIP or locally approved Capital Improvements Program.
20. A mitigation plan is shall be included as required by the Clemmons Transportation Analysis Procedure Manual:
- a. ~~As part of the traffic impact study~~An addition to a traffic impact study, (the recommendation for which is identified by preliminary study results);
 - b. Intended to identify specific causes of lowered levels of service (traffic impacts);
 - c. Recommends improvements that will moderate the effects of projected traffic impacts;
 - d. Recommends transportation demand management options.
- Where legally allowed, examples of possible mitigation plan improvements may include, but are not limited to: construction of new roads, road improvements, traffic signals, ridesharing programs, off-site parking facilities and para-transit, signal timing/phasing changes, channelization modifications, changes in ingress/egress points, reducing the number of entrances, and/or lane widening.
21. Mitigation Plan improvements may be phased and shall be sensitive to the following:
- a. Timing of short-term and long-term network improvements that are already planned, scheduled and/or funded;
 - b. Time schedules of adjacent developments;
 - c. Size and timing of individual phases of development;
 - d. Right-of-way needs and availability of additional right-of-way within appropriate time frames;
 - e. Local priorities for transportation improvements and funding;
 - f. Local priorities for transportation demand management strategies;
 - g. Necessary lead time for additional design and construction;
 - h. That the sum of improvements are proportional to the projected impact.
- Analysis of traffic needs by development phase should provide the information needed to determine the appropriate sequence of improvements.
22. Additional analyses, with references, may be recommended, typical examples with references are as follows:
- Sight Distance Analysis, Improvement Plan for Geometric Conditions, - A Policy on Geometric Design of Highways and Streets, American Association of State Highway Transportation Officials, 1990.
- Signal Warrant Analysis, Traffic Control Plan During Construction - Manual of Uniform Traffic Control Devices, Federal Highway Administration, 1988.

Traffic Signal Progression Analysis - any recognized software application (i.e., PASSER 11 or TRANSYT 7F).

Local Trip Generation Study, Pass-By and Diverted Linked Trip Analysis - ITE Trip Generation Manual, latest edition.

Accident Analysis, Transit Analysis, Pedestrian Analysis, Parking Analysis - Traffic Engineering Handbook, Institute of Transportation Engineers.

Environmental Analysis - For specific treatments contact the local and NCDOT Environmental Agencies.

23. Findings, Conclusions and Recommendations of the traffic impact study shall be the Transportation Impact Analysis Procedure Manual. ~~may be presented and documented in the following manner:~~

~~The following format (as depicted below) is recommended to be used as a guide for the presentation of those items as required in the pre-study conference:~~

~~Chapter I – Executive Summary~~

- ~~A. Development description~~
- ~~B. Pre-study contact/multi-agency meeting work scope, site location and study area (w/map).~~
- ~~C. Principal findings with Level of Service Map~~
- ~~D. Conclusions~~
- ~~E.* Mitigation Plan Summary~~

~~Chapter II – Description of All Proposed Developments in Study Area~~

- ~~A. Off-site approved future developments in the area (w/map).~~
- ~~B. On-site developments & phasing to include build-out year (w/map)~~

~~Chapter III – Existing Conditions~~

- ~~A. Site accessibility~~
- ~~B. Traffic Volumes Map & Level of Service Map~~
- ~~C. Illustration of existing road & intersection lane use configurations~~

~~Chapter IV – Projected Conditions without Proposed Development During Build-out Year~~

- ~~A. Site accessibility~~
- ~~B. Projected Background and Regional Traffic Volumes Map & Level of Service Map~~
- ~~C. Illustration of projected road and intersection lane use configurations~~

~~Chapter V – Projected Conditions with Proposed Development at Projected Completion~~

- ~~A. Site accessibility~~
- ~~B. Projected Traffic Volumes Map & Level of Service Map~~
- ~~C. Illustration of projected road & intersection lane use configurations (if different than Chapter IV, part C).~~

~~Chapter VI* – Mitigation Plan/or Additional Analysis Recommended~~

~~Appendix~~

- ~~A.* Description of analysis method(s).~~

~~B.* Statement of method(s) limitations~~

~~C. Count Data~~

~~D. Software Work Sheets~~

~~*Optional items that are required during the contact/multi-agency meeting or included by the person(s) performing the traffic impact study.~~

24. Level of Service (LOS) Descriptions

LOS A Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent. Turning movements are easily made.

LOS B Upper range of stable operation, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.

LOS C Mid range of stable flow, but is the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream, but not objectionably so. The selection of speed is now affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. Back-ups may develop behind turning vehicles. The general level of comfort and convenience declines noticeably at this level.

LOS D High density, but stable flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level. Delays to vehicles approaching signalized intersections may be substantial peak hours.

LOS E Unacceptable, operations near capacity. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.

LOS F Unacceptable, forced or breakdown flow, representing jammed conditions. The amount of traffic approaching an intersection cannot be accommodated adequately.

Section 2. This ordinance shall be effective upon adoption.

Adopted the ___ day of August, 2018.

John L. Wait, Mayor

Attest:

Lisa Shortt, Village Clerk, NCCMC