Sumter City-County Planning Commission

November 28, 2012

OA-12-11 and OA-12-12, Traffic Impact Studies (TIS) (City/County)

I. THE REQUEST

Applicant: Planning Staff

Request: Request to amend A*rticle 7, Section 7.d.10 Traffic Studies for Major Subdivision and/or Site Plan*

II. BACKGROUND

Through the previous adoption of Traffic Impact Study requirements, City and County Councils have supported our local authority to review development related impacts to the local transportation network and require mitigation measures when necessary.

Section 7.d.10 (Traffic Study for Major Subdivision and /or Site Plans) of City Zoning Ordinance and County Zoning Ordinance sets forth the conditions that would trigger an applicant to submit a Traffic Impact Study (TIS). When an applicant seeks approval for development, the development project site would certainly generate a number of vehicle trips when the project is built. The magnitude of the impact by the vehicle trips generated depends upon the use and size of the development site. While development of land for productive use is good for the local economy and community, the additional traffic generated can cause harmful impacts such as accidents and traffic congestion around and within established neighborhoods and commercial corridors. Therefore, we must safeguard future and established development from any adverse impacts caused by additional vehicle trips on the transportation network.

A survey of past TIS reports submitted before 2008 reveals that most of the TIS reports were prepared either substandard of traffic engineering practice or lack of sufficient information on the assessment of traffic impact. In addition, these reports were permitted to be submitted after the land use decision was made.

This Ordinance Amendment is intended to bring the local TIS requirements into alignment with SCDOT Standards in order to prevent a potential developer from having to complete two separate and different TIS Studies for the same project. In 2008, SCDOT updated a Manual known as the Access and Roadside Management Standards (ARMS) requiring the land developer to submit a traffic impact study (TIS) when a development site adjacent to a State or Federal roadway is projected to generate 100 or more **vehicle trips** (Chapter 6 of ARMS). In past years, the Zoning Administrator has instructed applicants to

use the ARMS as a guide when preparing a TIS. Since then, SCDOT District Engineering has become actively involved in reviewing TIS, particularly when the project site is abutting a state road corridor.

The Transportation Staff believes that the content of TIS reports will substantially improve on the assessment of traffic impact by incorporating the SCDOT ARMS guidelines as a part of the City and County Zoning Ordinance.

III. ZONING ORDINANCE SUBCOMMITTEE – SEPTEMBER 6, 2012

The Zoning Ordinance Subcommittee recommended adding language that will allow the Zoning Administrator to waive the requirement for submission of a TIS in certain instances where a project meets threshold requirements but actual submission of the study may not be necessary due to existing street network conditions, adjacent development and/or existing encroachments.

In addition, the Committee recommended addressing the comments submitted by Ed Sawyer, SC DOT District Transportation Engineer, as appropriate to bring the proposed Ordinance into compliance with SC DOT standards/practice. The attached proposed amendment addresses SCDOT Comments as received by planning staff. The proposed amendment in Attachment #1 is supported by SCDOT.

IV. PROPOSED ORDINANCE AMENDMENT

See Attachment #1

V. STAFF RECOMMENDATION

Staff recommends approval of this request.

VI. PLANNING COMMISSION – NOVEMBER 28, 2012

The Sumter City – County Planning Commission at its meeting on Wednesday, November 28, 2012, voted to send this request back to the Planning Commission's Ordinance Subcommittee for further research and review.

VII. ORDINANCE SUBCOMMITTEE -

ATTACHMENT 1

Amend Article 7.d.10 to reflect the following (note that changes are in **Boldface** type):

7.d.10. Traffic Study for development applications:

a. ~~Major subdivision and site plans can substantially impact environmental features, surrounding land uses, traffic conditions and facilities, and public utilities.~~

~~A threshold is hereby established for major subdivisions and site plans that will trigger a detailed traffic study as defined in the following:~~

~~1. Any project that generates a need for 100 or more off-street parking spaces as determined in Article Eight, Section J;~~

~~2. A truck or bus terminal, including service facilities designed principally for such uses;~~

~~3. Any project with two (2) or more principal uses or buildings and one hundred thousand square feet (100,000 sq. ft.) of gross floor area.~~

Consistent with SCDOT ARMS Chapter 6 (Traffic Impact Studies), any development that generates more than 100 vehicle trips requires a submission of a Traffic Impact Study (TIS). Vehicle trip is defined as a trip to either exit or enter into the development site and is counted as one (1) trip. In addition, certain land use categories that would generate at least 100 peak hour trips are required to submit a TIS in accordance with Table 1 below:

TABLE 1: GUIDELINES FOR DETERMINING THE NEED FOR AN IMPACT STUDY

Land Use	100 Peak Hour Trips*
Single Family Home	90 units
Apartments	150 units
Condominiums/Townhouses	190 units
Mobile Home Park	170 units
Shopping Center – Gross Leasable Area (GLA)	6,000 sq. ft.
Fast Food Restaurant With Drive-in – Gross Floor Area (GFA)	3,000 sq. ft.
Gas Station with Convenience Store	7 fueling positions
Banks w/drive-in (GFA)	2,000 sq. ft.
General Office	67,000 sq. ft.
Medical/Dental Office	29,000 sq. ft.
Research & Development	71,000 sq. ft.
Light Industrial / Warehousing (GFA)	185,000 sq. ft.
Manufacturing Plant (GFA)	144,000 sq. ft.

***Rates/Equations used to calculate above thresholds are for the P.M. Peak hour of the adjacent street.**

b. ***The Zoning Administrator may waive a Traffic Impact Study (or elements thereof) stated in subsection "a" above on a case by case basis when the applicant shows that the proposed development's impact on adjacent roads and intersections will be minimal and insignificant, or will be no greater than those projected by a traffic impact analysis prepared and submitted within the past two years for the same site under the same similar background conditions. The Zoning Administrator must document the reasons for the waiver.***

c. ***If a TIS is required, a hard copy must be filed together with any other paper work that may be required when a development application is submitted. An electronic copy may be filed only by the permission of the Zoning Administrator. The TIS must be prepared and signed by a person with a Professional Engineer (PE) license issued by the State of South Carolina.***

d. ***The Zoning Administrator should be contacted before preparing the TIS to discuss the requirements and determine the scope of the study. The following information is required to be contained in TIS:***

1. ***Study Area – Description of the study area including surrounding land uses and expected development in the vicinity that would influence future traffic conditions. The study area shall include the intersections immediately adjacent to the development and those identified by the Zoning Administrator. These intersections may include those not immediately adjacent to the development if significant site traffic could be expected to impact the intersection. If intersections impacted by the development are within a coordinated traffic signal system, then the entire system shall be analyzed. If the signal system is very large, a portion of the system may be analyzed if approved by the Zoning Administrator. A study area site map showing the site location is required.***

2. ***Proposed Land Use – Description of the current and proposed land use including characteristics such as the number and type of dwelling units, gross and leasable floor area, number of employees, accompanied with a complete project site plan (with buildings identified as to proposed use). A schedule for construction of the development and proposed development stages should also be included.***

3. ***Existing Conditions – Description of existing traffic conditions including existing peak-hour traffic volumes adjacent to the site and levels of service for intersections in the vicinity which are expected to be impacted. Existing traffic signal timings should be used. In general, AM and PM peak hour counts should be used, but on occasion other peak periods may need to be counted to determine the effects of school or special event traffic. In some cases, pedestrian counts will be required. Data should be adjusted for daily and seasonal variations. Existing counts may be used if taken within 12 months of the submittal of the TIS. In most cases, counts should be taken when school is in session unless otherwise determined by the Zoning Administrator. Other information that may be required as determined by the Zoning Administrator may include, but is not limited to, crash data, stopping sight distances, and 50^{th} and 85^{th} percentile speeds.***

4. ***Future Background Growth – Estimate of future background traffic growth. If the planned completion date for the project or the last phase of the project is beyond 1 year of the study, an estimate of background traffic growth for the adjacent street network shall be made and included in the analysis. In general, the growth factor will be determined from local or statewide data. Also included, is the state, local, or private transportation improvement projects in the project study area that will be underway in the build-out year and traffic that is generated by other proposed developments in the study area.***

5. ***Estimate of trip generation – The site forecasted trips should be based on the most recent edition of the ITE Trip Generation Manual. A table should be provided in the report outlining the categories and quantities of land uses, with the corresponding trip generation rates or equations, and the resulting number of trips. The reason for using the rate or equation should be documented. For large developments that will have multiple phases, the table should be divided based on the trip generation for each phase. Any reductions due to internal trip capture and pass-by trips, transit use, and transportation demand management should be justified and documented. All trip generation and trip reduction calculations and supporting documentation shall be included in the report appendix.***

6. ***Trip Distribution and Traffic Assignment – The distribution (inbound versus outbound, left turn versus right turn) of the estimated trip generation to the adjacent street network and nearby intersections shall be included in the report and the basis should be explained. The distribution percentages with the corresponding volumes should be provided in a graphical format.***

7. ***Analysis and Estimate of Impact – A capacity analysis should be performed at each of the study intersections and access intersection locations (signalized and unsignalized) in the vicinity of the development. Intersection analysis shall include LOS determination for all approaches and movements. The levels of service will be based on the procedures in the latest edition of Transportation Research Board's Highway Capacity Manual. Coordination analysis will be required for the signal systems or portion of the signal systems analyzed.***

8. ***Access Management Standards – The report shall include a map and description of the proposed access including any sight distance limitations, adjacent driveways and intersections, and a demonstration that the number of driveways proposed is the fewest necessary and that they provide safe and efficient traffic operations.***

9. ***Traffic signalization – If a traffic signal is being proposed, a signal warrant analysis shall be included in the study. The approval of a traffic signal on projected volumes may be deferred until volumes meet warrants given in the MUTCD. The developer should make any lane improvements during construction so that if in the horizon year a signal is warranted, one may be installed with little impact to the intersection.***

10. ***Mitigation and alternatives - The traffic impact study should include proposed improvements or access management techniques that will mitigate falling in the***

levels of service below C which is considered as acceptable operating speed in urban conditions.

In areas where baseline, or existing, levels of service are at or below Level of Service C, the baseline level of service shall be maintained or improved after development. If the baseline Level of Service is F and the location is in a congested area, the Zoning Administrator shall determine any required mitigation. The baseline level of service shall include all committed (funded) road improvements and all non-site traffic, but exclude the traffic to be generated by the new development.

The Zoning Administrator and/or the Planning Commission will be responsible for final determination of mitigation improvements required to be constructed by the applicant, in conjunction with SCDOT Staff, as appropriate.

e. ***The following checklist is used by the Planning Department in the review process and can aid in the preparation of TIS. This checklist shows the minimum requirements for a traffic impact study to be complete and does not certify or guarantee adequacy or approval. The Zoning Administrator may require additional requirements during the review process, or during the initial meeting with the developer.***

Traffic Impact Study Technical Completeness Checklist

Analyst Requirements

☐ Yes ☐ No South Carolina PE Stamp and Signature

☐ Yes ☐ No **Introduction and Executive Summary**

Existing Conditions

☐ Yes ☐ No Study Area Descriptions and Roadway Classifications
☐ Yes ☐ No Analysis Period Correct (AM, Mid-day, PM and/or Saturday)
☐ Yes ☐ No Existing Traffic Operations (LOS, Volumes, Speed Limits, Crash Data, Etc.)
☐ Yes ☐ No Other projected transportation improvements in the study area

Impacts

☐ Yes ☐ No Trip Generation Summary (ITE Trip Generation Manual, latest edition)
☐ Yes ☐ No Trip Distribution and traffic assignment (assumptions justified)
☐ Yes ☐ No LOS Analysis: Background traffic growth and site build out
(Identify existing and background LOS deficiencies)
☐ Yes ☐ No Analysis of Sight Distance at Access Points

Mitigation

☐ Yes ☐ No Identify need for Turn Lanes, Capacity and Storage Length
☐ Yes ☐ No Identify need for Signalization
☐ Yes ☐ No Identify Measures to Mitigate LOS deficiencies

Figures

☐ Yes	☐ No	Vicinity Map
☐ Yes	☐ No	Site Plan and Proposed Land Use
☐ Yes	☐ No	Existing Peak Hour volumes (counts conducted within the last 12 months)
☐ Yes	☐ No	Projected Background Peak Hour Volumes
☐ Yes	☐ No	Trip Distribution % Including Added Project Peak Hour Volumes
☐ Yes	☐ No	Project Build-Out Volumes
☐ Yes	☐ No	Existing and Recommended Lane Configurations
☐ Yes	☐ No	Intersection LOS (existing, background, build, mitigated) (Figure or Table or Both)

Tables

☐ Yes	☐ No	Trip Generation
☐ Yes	☐ No	Intersection LOS (existing, background, build, mitigated) (Figure or Table or both)

Other

☐ Yes	☐ No	Technical Appendix (e.g. HCM and Synchro Analysis Reports, Trip Generation and Trip Reduction Calculations, Signal Warrant Analysis, and etc.)
☐ Yes	☐ No	Copies of any Reference Material

f. The internal design criteria for projects defined in **7.d.5. and 7.d.6** shall observe the following:

1. Streets, drives, parking, and service areas shall be for safe and convenient access for service and emergency vehicles. Streets shall be laid out to not encourage outside traffic to traverse the development or create unnecessary fragmentation of the project into small blocks. In general, the project shall be consistent with uses and shape of the site and convenience and safety of occupants and persons frequenting the project.

2. Vehicular access to collector and arterial streets or portions of streets from off-street parking and service areas shall be so combined, limited, located, designed, and controlled as to channel traffic to and from such areas conveniently, safely, and in a manner that minimize traffic friction and promotes free flow of traffic or streets without excessive interruption.

g. The external criteria for projects defined in **7.d.5. and 7.d.6.** shall observe the following:

1. Principal vehicular access points shall be designed to encourage smooth traffic flow with controlled turning movement and minimize hazards to vehicular or pedestrian traffic. Merging and turning lanes and/or traffic dividers shall be required where existing or anticipated heavy flows indicate need.

2. Such project(s) shall not be permitted access to a local street, but may border or front on such a street.

3. Pedestrian access, where provided, shall be by safe and convenient routes. Where there are crossings or pedestrian ways on vehicular routes at edges of the project, such crossings shall be safely located, marked, and controlled; and where such ways

are exposed to substantial automotive traffic, safeguards including fencing may be required to prevent crossings except at designated points.

4. **Driveway design must follow the AASHTO (A Policy on Geometric Design of Highways and Streets, Greenbook 2004) guidelines:**

   Driveways are, in effect, intersections and should be designed consistent with their intended use. Ideally, driveways should not be located within the functional area of a roadway intersection or in the influence area of an adjacent driveway. The functional area extends both upstream and downstream from the physical intersection area and includes the longitudinal limits of auxiliary lanes.

   Chapter 3 (Driveways) of SCDOT ARMS shall be used as the guidelines for designing driveways for access.

h. To measure the relative impact of major subdivisions or site plans on the road network adjacent to such projects, the service levels of the affected streets shall be investigated.

1. The level of service for streets and roads is defined (according to the 1985 Highway Capacity Manual) in terms of vehicular delay. Delay is a measure of driver time. Varied and complex factors contributing to delay include intersection geometry, frequency of curb cuts, traffic volumes, signalization and cycle length, etc. **The quantitative measurements (delays in seconds per vehicle) are defined in the chapters of signalized intersections (Chapter 16) and of unsignalized intersections (Chapter 17).**

2. The various levels of service are classified A through F, depending on the delay factor and the traffic conditions as follows:

LEVEL OF SERVICE A
* Free flow conditions
*Low volumes
*Little or no delays
*Uninterrupted flow
*No restriction on maneuverability
*Drivers maintain desired speed

LEVEL OF SERVICE B
*Stable flow conditions
*Operating speeds beginning to be restricted

LEVEL OF SERVICE C
* Stable flow but speed and maneuverability restricted by higher traffic volumes
*Satisfactory operating speed for urban conditions
*Some delays at signals

LEVEL OF SERVICE D
*High density, but stable flow
* Restricted speeds
* Noticeable delays at signals
* Little freedom to maneuver

LEVEL OF SERVICE E
*Low, but relatively uniform operating speeds
*Volumes at or near capacity
*Approaching unacceptable delays at signals

LEVEL OF SERVICE F
*Forced flow conditions
*Stop and go operation

*Volumes below capacity may be zero
*Average vehicle delay at signals is greater than one minute

~~3. Service levels by road classification shall have a target goal to be maintained as much as possible for any major subdivision or site plan.~~

~~ROAD CLASSIFICATION~~	~~SERVICE LEVEL DESIGNATIONS~~
~~Local Street~~	~~A~~
~~Collector Street~~	~~C~~
~~Arterial Street~~	~~C~~
~~Expressway~~	~~C~~

~~ADT = Average Daily Traffic (trips)~~

~~i. Calculations: The calculation to determine the impact on service level designations shall be made by a qualified traffic engineer representing the applicant. All data, including the recommendations of the engineer, shall be made available to the Zoning Administrator, who in turn may request review, comments and verification from the South Carolina Department of Highway and Public Transportation, regional transportation officials and traffic engineers. Their suggestions and recommendations shall be reviewed with the applicant by the Zoning Administrator for possible incorporation in the final plan, where appropriate to reduce the impact of the project~~.

i. Application of Standards: All proposed major subdivisions or Site Plans shall be evaluated by the Zoning Administrator on the basis of their internal and external relationships, particularly as they impact surrounding street service levels. Where data calculations indicate that a proposed project will create a lower **than** level of service **C** ~~than designated by subsection 7.d.5.e.3.~~ for streets and roads in the City of Sumter or Sumter County said projects shall be mitigated to the satisfaction of the Zoning Administrator, or referred to the Planning Commission for review. ***Mitigation may also be required when a project impacts the transportation network through a level of service reduction, even if it does not create a lower than level of service C.***

j. Review by the Sumter City-County Planning Commission when referred to the Planning Commission, the Commission may consult the South Carolina Department of Highways and Public Transportation, and other local and regional agencies involved in matters of transportation. ***No section of this regulation is meant to overrule or supersede SC DOT required mitigation when State requirements are more stringent than the local authority.***

The review of the Commission may result in: required modifications to the proposed use; required modifications to the internal and/or external roadnet serving and impacted by the proposed use; a ~~variance to the standards contained in subsection 7.d.5.e.3.~~ mitigation ***may be*** required ***through additional right-of-way; signalization; on-site improvements;*** off-site improvements; limiting frontage and access; or denial, stating the reasons for denial.