ORDINANCE NO. 2007-49

BE IT ORDAINED by the Board of Commissioners of the City of Dothan, Alabama, as follows:

Section 1. That Chapter 98, Traffic and Vehicles, of the Code of Ordinances is hereby amended by adding Article IX, Traffic Impact Studies (TIS) as follows:

CHAPTER 98 - Traffic and Vehicles

ARTICLE IX. Traffic Impact Studies (TIS).

Sec. 98-400. In General.

In order for the City of Dothan to operate and maintain the roadway network as safely and efficiently as possible, it is necessary to evaluate the impact of development-generated traffic. Such impact can be identified by conducting a Traffic Impact Study (TIS). The objectives of this section are two-fold:

1. To establish the conditions that determine the need for a TIS.
2. To establish the minimum requirements for a TIS in terms of study area, study horizon and study contents.

Sec. 98-401. Determining the need for a TIS.

A TIS prepared by a registered Professional Engineer is required for any subdivision or commercial development which generates 100 or more gross trips during the morning or afternoon peak hour of the generator. Table 1 shows the thresholds that would trigger the need for a TIS for some of the most common uses. For uses not included in the table, the number of trips generated shall be calculated using the latest edition of *Trip Generation*, from the Institute of Transportation Engineers.

Table 1. Thresholds for requiring Traffic Impact Studies

ITE Code	Land Use	Unit	PEAK HR TRIP/UNIT	THRESHOLD
RESIDENTIAL				
210	Single Family	DU	1.02	100 DU
230	Condominium/Townhomes	DU	0.54	185 DU
220	Apartments	DU	0.67	150 DU
240	Mobile Home	DU	0.58	175 DU
416	RV Park	SPACE	0.48	210 SPACES
250	Retirement Community	DU	0.34	295 DU
COMMERCIAL AND INDUSTRIAL				
911	Walk-in Bank	1,000 SF	42.02	2,500 SF
912	Drive-in Bank	1,000 SF	51.23	2,000 SF
820	Shopping Center	1,000 SF	4.97	21,000 SF
850	Supermarket (Grocery Store)	1,000 SF	12.25	8,000 SF
851	24-Hour Convenience Store	1,000 SF	65.24	1,500 SF
861	Discount Club	1,000 SF	6.46	16,000 SF
890	Furniture Store	1,000 SF	0.92	109,000 SF
812	Lumber Store	1,000 SF	8.38	12,000 SF
816	Hardware/Paint Store	1,000 SF	11.18	9,000 SF
841	New Car Sales	1,000 SF	2.97	34,000 SF
840	Vehicle Repair (Automobile Care Center	1,000 SF	4.01	25,000 SF
844	Gas Station	PUMP	16.18	7 PUMPS
430	Golf Course	HOLES	4.59	22 HOLES
492	Racquet Club	COURT	4.66	22 COURTS
493	Health Club	1,000 SF	4.30	24,000 SF
831	Quality Restaurant	1,000 SF	10.82	10,000 SF

832	Sit Down High Turnover Restaurant	1,000 SF	19.38	5,000 SF
834	Fast Food (with drive-thru)	1,000 SF	72.74	1,500 SF
110	General Light Industrial	1,000 SF	1.08	93,000 SF
120	General Heavy Industrial	1,000 SF	0.68	147,000 SF
130	Industrial Park	1,000 SF	0.92	109,000 SF
150	Warehousing	1,000 SF	0.61	164,000 SF
OFFICES				
710	General Office Building	1,000 SF	1.56	65,000 SF
750	Office Park	1,000 SF	1.74	58,000 SF
770	Business Parks	1,000 SF	1.43	70,000 SF
760	Research & Development Center	1,000 SF	1.24	81,000 SF
730	Government Office	1,000 SF	11.03	10,000 SF
720	Medical-Dental Office Buildings	1,000 SF	4.36	23,000 SF
INSTITUTIONAL				
520	Elementary School	STUDENTS	0.30	335 STUDENTS
522	Middle/Junior High School	STUDENTS	0.46	220 STUDENTS
530	High School	STUDENTS	0.46	220 STUDENTS
565	Day Care Center	STUDENTS	0.86	120 STUDENTS
560	Church	1,000 SF	9.49	11,000 SF

DU: Dwelling Units SF: Square Feet Gross Floor/Leasable Area

Example: Medical office building, 15,000 SF
Peak hour trip rate: 4.36 trips/1,000 SF
Trip Generation: 15,000 SF x (4.36 trips / 1,000 SF) = 65 trips in the peak hour

A TIS can also be required by the City of Dothan even if the proposed development generates less than 100 trips in the peak hour, if there are any current traffic concerns in the local area (such as an offset intersection, or high accident rates), or if there are other traffic specific problems that may be aggravated by the proposed development.

Sec. 98-402. Categories for TIS.

Based on the size and phasing of the proposed development, the following categories of TIS have been established:

a) CATEGORY I. Small developments which generate 100 or more peak hour trips but less than 500 trips during the morning or afternoon peak hour.
b) CATEGORY II. Moderate size developments which generate 500 or more peak hour trips but less than 1,000 trips during the morning or afternoon peak hour.
c) CATEGORY III. Large single-phase developments which generate 1,000 or more trips during the morning or afternoon peak hour.
d) CATEGORY IV. Large multi-phase developments which generate 1,000 or more trips during the morning or afternoon peak hour.

Sec. 98-403. Scope

The level of detail needed for a TIS depends on the size of the development and its phasing. However, every TIS must address elements such as the study area, the study horizon, data collection requirements, capacity analysis, among others. Those elements are discussed here.

a) STUDY AREA. The minimum study area shall be determined by project type and size in accordance with the criteria in Table 2. The study area for the proposed development shall include traffic signal controlled intersections, site access drives and major unsignalized intersections to ensure their operation and level of service are adequately assessed. Unsignalized intersections where at least one of the intersecting streets is a collector or arterial are considered major unsignalized intersections. The extent of the study area may be either enlarged or decreased depending on special conditions as determined by the City Traffic Engineer.

b) STUDY HORIZON. The study horizon years shall be determined by project type and size in accordance with the criteria in Table 2.

Table 2. Summary of design attributes by functional class

Study Category	Development/Subdivision Characteristics	Study Horizons (a)	Minimum Study Area (b)
I	Small development 100-499 peak hour trips	1. Opening year	1. Site access drives 2. All signalized intersections and/or major unsignalized intersections within ¼ mile
II	Moderate development 500-999 peak hour trips	1. Opening year 2. 5 years after opening	1. Site access drives 2. All signalized intersections and/or major unsignalized intersections within ½ mile
III	Large single-phase development ≥1000 peak hour trips	1. Opening year 2. 5 years after opening 3. 20 years after opening	1. Site access drives 2. All signalized intersections and/or major unsignalized intersections within 1 mile
IV	Large multi-phase development ≥1000 peak hour trips	1. Opening year of each phase 2. 5 years after built-out 3. 20 years after build-out	1. Site access drives 2. All signalized intersections and/or major unsignalized intersections within 1 mile

a. Assume full occupancy and built-out for single phase developments
b. An enlarged study area may be required

c) ANALYSIS TIME PERIOD. Both the morning and afternoon weekday peak hours need to be analyzed. If the proposed project is expected to generate no trips or a very low number of trips during either the morning or evening peak period the requirement to analyze such period may be waived by the City Traffic Engineer. If the peak traffic hour in the study area occurs during a time period other than the normal peak travel periods, these peak hours must also be analyzed.

d) DATA COLLECTION REQUIREMENTS. All data is to be collected in accordance with the latest edition of the *ITE Manual of Transportation Engineering Studies* or as directed by the City Traffic Engineer, if not specifically covered in the ITE Manual.

Turning movement counts shall be obtained for all existing cross-street intersections to be analyzed during the morning and afternoon peak periods. Available turning movement counts may be extrapolated at a maximum of three years with concurrence of the City Traffic Engineer.

The current and projected daily traffic volumes shall be presented in the report. Available daily count data may be obtained from the City of Dothan Traffic Engineering Division and extrapolated a maximum of three years with the concurrence of the City Traffic Engineer. Where daily count data are not available, mechanical counts may be required at the City Traffic Engineer's discretion.

Roadway geometric information shall be obtained for all streets in the study area. This includes: roadway width, number of lanes, turning lanes, vertical grade, location of nearby driveways, and lane configuration at intersections. The

location and type of traffic controls shall also be identified. If appropriate, traffic volumes should be adjusted to account for seasonal variations. The use of seasonal adjustment factors should be approved by the City Traffic Engineer.

e) TRIP GENERATION. The latest edition of ITE's *Trip Generation* shall be used for selecting trip generation rates. The guidelines contained in *Trip Generation* shall be used to determine whether the average trip generation rate or equation should be used. Other rates may be used with the approval of the City Traffic Engineer in cases where *Trip Generation* does not include trip rates for a specific land use category, or includes only limited data, or where local trip rates have been shown to differ from the ITE rates.

f) TRIP DISTRIBUTION AND ASSIGNMENT. Projected trips shall be distributed and added to the projected non-site traffic on the roadway network. The projected traffic volume must be shown for all roadways internal to the subdivision and for all other roadways within the study area. The specific assumptions and data sources used in deriving trip distribution and assignment shall be documented in the study.

g) CAPACITY ANALYSIS. Level of Service (LOS) shall be computed for signalized and major unsignalized intersections as identified in Table 1, in accordance with the latest edition of the *Highway Capacity Manual*. For rural highways where the signalized intersections are more than 1 mile apart, the level of service on the highway shall be estimated in accordance with the latest edition of the *Highway Capacity Manual*.

While the use of the operational methodologies presented in the *Highway Capacity Manual* is always desirable, analyses using the planning method are acceptable for dimensioning of new facilities.

h) TRAFFIC SIGNAL NEEDS. An analysis of traffic signal needs shall be conducted for all arterial/arterial, arterial/major collector and major collector/major collector intersections within the study area for the opening year. Signal need evaluations must determine if an intersection meets the signal warrants included in the latest edition of *the Manual on Uniform Traffic Control Devices (MUTCD)*. If the warrants are not met for the opening year, they should be evaluated 5 years after opening for categories II, III and IV Traffic Impact Studies.

i) ACCIDENT ANALYSIS. An analysis of three-year accident data within the study area shall be conducted to determine if the level of safety (in terms of accident rates and severity index) needs improvement due to the addition of site traffic.

j) QUEUING ANALYSIS. A queuing analysis shall be conducted for all turn lanes under stop or signal control within the study area to ensure that the expected queues can be accommodated in the storage length provided. Although there are several methods for estimating queue length, the following equations may be used.:
For signalized intersections (for every cycle):

$$\textit{Queue length (ft)} = 2 \cdot (25\ \textit{ft/veh}) \cdot (\textit{Volume [veh/hr]/Cycles per hour})$$

For unsignalized intersections (for a 2 minute period):

$$\textit{Queue length (ft)} = (25\ \textit{ft/veh}) \cdot (\textit{Volume [veh/hr]/30})$$

k) IMPORTANT ANALYSIS. The roadways and intersections within the study area shall be analyzed with and without the proposed development to identify only projected impacts in regard to level of service and safety.

The minimum design requirements for all intersections and roadway segments shall be LOS D with no intersection through lane movement falling below LOS D and no intersection turning movement falling below LOS E. If the TIS shows that the impact of a development will bring the LOS below these thresholds during the study horizon, mitigation alternatives to improve the LOS to at least those

thresholds must be analyzed as part of the study. Common mitigation alternatives include capacity improvements, travel demand management and provision of alternative modes.

If the performance of the existing intersection or roadway is already below those thresholds (e.g. below LOS D for through movements) the study must find alternatives to at least maintain the existing performance. The TIS must also evaluate the need for turning lanes on all major unsignalized intersections using the criteria presented in the Auxiliary Lanes Section.

l) ALTERNATIVE MODES. In cases where pedestrian, transit, bicycle, or golf cart activity should be expected, the TIS must identify any conflict points between vehicles and any other mode. In those cases the study must also make recommendations to facilitate the operation of alternative modes and ensure the safety of their users, especially at the interface with the vehicular network. Recommendations related to alternate modes should be in harmony with the goals of the plans, especially in relation to the planning, design, construction and maintenance of bicycle and pedestrian facilities. Particular attention should be paid to:
   - Ensuring connectivity of pedestrian and bicycle systems.
   - Providing safe non-motorized access to school for school children.

m) RESPONSIBILITY. The traffic impact study shall describe the location, nature and extent of all transportation improvements required to achieve the required post development levels of service within the study area. The responsibility for implementation of the post development mitigation measures shall rest entirely with the applicant.

Sec. 98-404. Sample table of contents for TIS.
The following table of contents can be used as a template for most Traffic Impact Studies. The table of contents may be modified to better fit the needs of the particular study, but the TIS should at least address the points presented in the Auxiliary Lanes Section.

1. INTRODUCTION AND SUMMARY

   a. Purpose of report and study objectives
   b. Executive Summary
      - Site location and study area
      - Development description
      - Principal findings
      - Conclusions/Recommendations

2. PROPOSED DEVELOPMENT (Site and Nearby)

   a. Site location
   b. Land use and intensity
   c. Site plan (must be legible)
      - Access geometrics
   d. Development phasing and timing

3. STUDY AREA CONDITIONS

   a. Study area
      - Area of significant traffic impact
      - Influence area
   b. Land use
      - Existing land use
      - Anticipated future development
   c. Site accessibility
      - Existing and future area roadway system
      - Site circulation

4. ANALYSIS OF EXISTING CONDITIONS

    a. Physical characteristics
        - Roadway characteristics
        - Traffic control devices
        - Transit service
        - Pedestrian/bicycle facilities
        - Existing transportation demand management
    b. Traffic volumes
        - Daily, morning and afternoon peak period, and others as required
    c. Level of service
        - Morning peak hour, afternoon peak hour, and others as required
    d. Safety related deficiencies
    e. Data sources

5. PROJECTED TRAFFIC

    a. Site traffic forecasting (each horizon year)
        - Trip generation
        - Mode split (if applicable)
        - Pass-by traffic (if applicable)
        - Trip distribution
        - Trip assignment
    b. Non-site traffic forecasting (each horizon year)
        - Projections of non-site traffic
    c. Total traffic (each horizon year)

6. TRAFFIC AND IMPROVEMENT ANALYSIS

    a. Site access
    b. Level of service analysis
        - Without project including programmed improvements (each horizon year)
        - With project including programmed improvements (each horizon year)
    c. Roadway improvements
        - Improvements by ALDOT or others to accommodate non-site traffic
        - Additional alternative improvements to accommodate site traffic
    d. Traffic safety
        - Sight distance
        - Acceleration/deceleration lanes, auxiliary lanes
        - Adequacy of location and design of driveway access
    e. Alternative modes considerations
        - Vehicle/pedestrian conflict points
        - Vehicle/bicycle conflict points
        - Vehicle/Golf Cart
    f. Traffic control needs
    g. Traffic signal needs (base plus 5-year horizon)
    h. Transportation demand management

7. CONCLUSIONS

8. RECOMMENDATIONS

    a. Roadway improvements
        - Phasing
    b. Site access
    c. Internal site circulation
    d. Transportation demand management actions (if appropriate)
    e. Other

9. APPENDICES

a. Traffic counts
b. Capacity analyses worksheets
c. Traffic signal needs studies
d. Queuing Analysis
e. Accident data summaries

10. FIGURES AND TABLES

a. Site location
b. Site plan
c. Existing transportation system
d. Existing daily volumes
e. Existing peak hour turning volumes
f. Future transportation system
g. Estimated site traffic generation (daily and peak period)
h. Directional distribution of site traffic (daily and peak period)
i. Site traffic (peak period)
j. Non-site traffic (peak period)
k. Total future traffic (daily and peak period)
l. Projected levels of service
m. Recommended improvements

Sec. 98-405 – 98-450. Reserved.

Section 2. After publication as required by law, this ordinance shall become effective immediately.

PASSED, ADOPTED AND APPROVED on February 6, 2007.

Mayor

ATTEST:

Pam McCoy

City Clerk

I hereby certify that the above Ordinance was published in THE DOTHAN EAGLE, a newspaper of general circulation and published in the City of Dothan, Alabama on February 11, 2007.

Pam McCoy
Pam McCoy, City Clerk

Associate Commissioner

Associate Commissioner

Associate Commissioner

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BOARD OF CITY COMMISSIONERS