# Guidelines for
# Traffic Impact Analysis

## Town of Chapel Hill, North Carolina

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# Town of Chapel Hill
# Guidelines for Traffic Impact Analysis

## I. INTRODUCTION

This document contains guidelines and requirements for conducting traffic impact analyses (TIA) for new developments within the planning jurisdiction of the Town of Chapel Hill, North Carolina. These guidelines will help assure that consistent and proper traffic planning and engineering practices are applied when land use actions are being considered within the Town. These guidelines provide a standard process, set of assumptions, set of analytical techniques, and presentation format to be used in the preparation of traffic impact analyses

## II. REQUIREMENTS FOR TRAFFIC IMPACT ANALYSIS

The Town of Chapel Hill considers the traffic impacts of proposed new development during its review process. Therefore, the preparation of a traffic impact analysis is typically required to quantify impacts of the proposed development and to identify facility improvements needed to maintain acceptable level of service standards. Under the following circumstances, a traffic impact analysis is typically required:

A. Submittal of a development proposal requesting a change in zoning.

B. Submittal of an application for a major subdivision, special use permit, or site plan review. Typically, a full traffic impact analysis as detailed herein is required for all these development requests. The requirement to prepare a full traffic impact analysis may be waived by the Town Manager only if <u>all</u> of the following conditions are met:

- Daily trip generation is less than 500 (or, for a change to an existing property that does not requiring rezoning, difference in daily trip generation is less than 500); and
- No more than 250 vehicles per day (or, for a change to an existing property that does not requiring rezoning, no more than 250 vehicles per day in difference) access an existing collector or local road; and
- The total traffic, including background traffic and additional traffic from proposed new site or redeveloped property does not exceed an average of 150 vehicles per day on any unpaved road; and
- The applicant submits a written request for a Traffic Impact Analysis waiver with appropriate supporting documentation including pedestrian/bicycle analysis, if applicable; and
- The Town Manager concurs with the request.

C. When elapsed time or circumstances of the original analysis fall within the parameters presented in the following table, the applicant shall prepare an updated or amended analysis with documentation according to the following specific requirements.

D. Long Term Analysis may also be waived by the Town Manager based on the size and type of the development.

| | | Changes to the Original Proposed Development | |
|---|---|---|---|
| | Original Report Is | Access Changed* or Trip Generation Increased by > 15% | Access Not Changed and Trip Generation Increased by < 15% |
| 1. | Less than 2 Years Old | Letter Amendment Required: Identify and discuss only items that changed. | Letter Documenting Change (No other reports required) |
| 2. | Greater than 2 Years Old or Study Prepared Prior to TIA Guidelines Approval | New Study | Letter Amendment Required:<br>1. New local ground counts.<br>2. New Trip Generation<br>3. New LOS Analysis<br>4. Meet all current requirements of this TIA Guideline |

* Changed access includes proposed new access or refinement of general access locations not specifically addressed in original proposed development.

## III. RESPONSIBILITIES FOR TRAFFIC IMPACT ANALYSIS

The responsibility for assessing the traffic impacts associated with a proposed development rests with the applicant, with the Town Manager serving in a review/approval capacity. The assessment of impacts shall be provided in the form of a Traffic Impact Analysis, as specified herein, and prepared under the supervision of a "licensed" transportation planner/engineer. For the purpose of these guidelines, the word "applicant" shall mean the developer and/or his or her designated agent responsible for preparing the Traffic Impact Analysis.

## IV. TRAFFIC IMPACT STUDY OVERVIEW: REQUIREMENTS, MEETINGS, AND WAIVERS

If a Traffic Impact Analysis is required, the information described in Section VI must be submitted to the Town of Chapel Hill.

A pre-application meeting with Town Planning Department staff for Rezoning, Master Plan, Subdivision, Site Plan and Special Use Permit application requests is strongly encouraged. This meeting should include discussion of the requirements for a Traffic Impact Analysis, and the applicant should provide a copy of any previous TIA prepared for the site and a site sketch plan showing the site location and access point(s) in relation to adjacent properties, and estimates of average daily traffic and peak hour traffic expected to be generated by the site development.

Request for waivers per Section II must be submitted in writing and accompanied by appropriate supporting information. The Town Manager will make a determination on such requests within 14 days of submittal of a completed application for a waiver.

If the applicant requires clarification of the guidelines or is preparing a large, complex and/or phased project, a separate meeting with Town Engineering Department staff is encouraged to specifically discuss Traffic Impact Analysis requirements and strategies.

## V. PLANNING HORIZONS AND ROADWAY NETWORK ASSUMPTIONS

Each Traffic Impact Analysis shall present an analysis of the traffic conditions without and with the proposed project at two planning year horizons: short term and long term.

The intent of the short term planning horizon is to investigate the early impact of the proposed project on the existing roadway network. The short term horizon year is defined as one year after full occupancy of the development or development phase. If the project is proposed to occur over multiple phases, the analysis shall include an evaluation of the estimating conditions one year after full occupancy of the each phase development.

The intent of the long term planning horizon is to evaluate implications of the proposed project on the future planned transportation system. The long term planning horizon is based on the current Durham/Chapel Hill/ Carrboro Metropolitan Planning Organization Planning Model. The current horizon year is 2025, which changes each year to reflect a 25-year period.

The baseline surface transportation network (without the proposed project improvements) assumed for the short term planning horizon shall reflect existing facilities plus any approved improvements by the Town, State, and/or other developments within the study area. All future Town, State, and MPO surface transportation facilities proposed within the study area should be included in the baseline assumptions for the long term planning horizon network analysis.

The Town of Chapel Hill minimum acceptable standard for transportation facilities is Level of Service (LOS) D. Each planning horizon analysis shall identify the required improvements needed to maintain LOS D at a minimum for all affected facilities; or to improve the LOS of all affected facilities to acceptable Town of Chapel Hill standards. The analyses shall:

- identify what improvements are necessary to reach established standards and what portion of those improvements are necessary as a result of the development; and
- what improvements are needed to offset project impacts; and
- what (if any) changes to the adopted Thoroughfare Plan are proposed.

The transportation network diagram shall identify the on-site roadways, site-adjacent improvements, and the potential off-site improvements required and proposed by the development.

## VI. TRAFFIC IMPACT REPORT REQUIREMENTS AND FORMAT

The information contained in this section is required in all traffic impact analyses submitted to the Town of Chapel Hill. All of the required data and information must be clearly identified in the appropriate sections of the report. Text contained in the required chapters shall be comprehensive and complete, yet brief and to the point. All maps required in individual sections shall be placed in the Summary as well.

The Traffic Impact Analysis report shall be typed and bound. It shall contain a table of contents, lists of figures and tables, and indicate any map pockets contained within. Additional copies of the TIS may be required by the Town, depending on circumstances. The following outline shall be used for all Traffic Impact Analysis reports submitted to the Town of Chapel Hill:

## A. Summary

The Summary shall be provided as a condensed, stand-alone document. Use the "Summary of Traffic Impact" sheets included in Section VII to these guidelines. Maps and tables required or provided in individual sections of the report shall be placed in the Summary in the order described and provided in the text of the report. Individual sections of the report may be referenced only as necessary to document a source of information.

## B. Introduction

### 1. Project Overview

This section shall state why a traffic analysis is required for the proposed development, and shall describe the approval request. The overview section shall also contain a discussion of the horizon years.

### 2. Site Location and Study Area Boundaries

Provide a vicinity map that shows the site, the study area, and the surrounding surface transportation network. Include a brief description of the location of the site within the Town's planning jurisdiction.

The limits of the study area shall be based on the size and extent of the proposed development, and an understanding of existing and future land use and traffic conditions at and around the site. The reasons the study area was selected shall be described in the traffic study in sufficient detail that the reviewer and decision-maker can understand the reasoning.

At the **minimum**, the study area shall contain:

- adjacent streets,
- nearest arterial/arterial intersection(s),
- site driveways, sidewalks, and bicycle lanes
- internal roads,
- all signalized or potentially future signalized intersections, either current or future years, where:
  - the project contributes a 10 percent impact (during either the a.m. or p.m. peak hour) to any approach leg of the intersection where the intersection is operating at level of service C or better, or
  - the project contributes a 5 percent impact (during either the a.m. or p.m. peak hour) to any approach leg of the intersection where the intersection is operating at level of service D or worse.
- All intersection and roadway segments on the NCDOT Highway Safety Improvement Program where the project contributes a 5 percent impact,
- pedestrian and bike facilities within ½ mile walk or bicycle ride to/from the site, and identification of any attractions (existing or approved) within the above pedestrian and bicycle limits. The suggested speeds for pedestrians and bicycles are 4 mph and 10 mph respectively.

### 3. Description of Site

Provide a brief description of the site. This shall include, as a minimum, a description of its size, general terrain features, existing zoning and use, (and proposed zoning and use, if applicable).

Provide a map showing build out conditions of the development site including the following:

- street system
- roadway classifications
- number of travel lanes
- street widths and lane widths, if applicable
- existing and proposed ROW dimensions
- existing and proposed multi-use driveways and site access points (with turning movements)
- exiting and proposed sidewalks and bike lanes.

Similar information for adjacent property shall be provided as well, if available, on the same map. The data presented in this report shall be identical in every respect to the site plan submitted for development approval.

For situations where a site plan does not exist, a prototypical site roadway and access system should be assumed for purposes of the study. Subsequent update will be necessary when a site plan becomes available.

**4. Existing and Proposed Uses in Vicinity of Site**

The applicant shall identify existing and anticipated land uses in the general vicinity of the site in order to understand other influences to area traffic patterns. A list of the applicable development approvals shall be included. (This information shall be obtained from the Town's records.) Specific attention shall be paid to property adjacent to the site and any undeveloped land in the study area. A map shall be prepared for the project vicinity that graphically depicts the location of approved or proposed developments. Developments within the project study area but in other jurisdictions shall also be identified and documented on the map.

**5. Existing and Committed Surface Transportation Network**

The applicant shall prepare a map showing the planned surface transportation network for the short term and long term planning horizons. Committed/funded improvements by the Town and previously approved developments shall be identified for the short and long term horizon years.

The long-term improvements shall be those documented in the Town's Thoroughfare Plan and any other long-term improvements adopted through the MPO and/or included in the State Transportation Improvement Program.

The improvements of other local jurisdictions, agencies, and developments within the study area shall be identified, including the nature of the improvements, their extent and implementation schedule, and the responsible party.

## C. Existing Traffic Conditions

The applicant shall provide a description of the existing traffic conditions within the study area. A map shall be prepared, which presents a.m. and p.m. peak hour and daily traffic volumes. These volumes shall be no more than two years old and less if the development is in a high growth area. The source of existing traffic volume information shall be explicitly stated (Town counts, new counts by applicant, County counts, etc.) Summaries of current traffic counts shall be included in the appendix. A map of the existing roadway network shall be prepared that presents lane geometrics, traffic control, existing access, speed limits, and any other notable features.

Existing a.m. and p.m. peak hour intersection levels of service shall be determined for the intersections within the study area based on procedures described in the latest edition of the Highway Capacity Manual. The existing arterials shall also be analyzed based on a daily volume/capacity ratio analysis where the threshold capacities are defined by arterial designation per the following table. Volume/capacity ratios that exceed 1.00 shall be identified. It should be noted that these are general thresholds for planning purposes only, and a supplementary peak hour analysis shall be considered. These daily volume/capacity ratios shall be recorded on the existing volume map.

Roadway links shall be analyzed. Acceptable maximum traffic volumes allowed for the specific class of roadways are per the following table:

| Facility Type | Lanes | Threshold Capacity |
|---|---|---|
| Local Residential | 2 | 1,500 (ADT) |
| Local Non-Residential | 2 | 2,500 (ADT) |
| Collector (no residential access) | 2 | 7,000 (ADT) |
| Minor Arterial | 2 | 550 each way (Peak Hour) |
| Major Arterial | 4 | 1,600 each way (Peak Hour) |
| Major Arterial | 6 | 2,400 each way (Peak Hour) |

## D. Future Traffic Conditions Without Proposed Development

Long term a.m. and p.m. peak hour planning horizon traffic forecasts shall be based on the most recent regional model traffic forecasts. Long-term peak hour estimates shall be provided in sufficient detail to understand the recommended forecasts. Requests for forecasts shall comply with current regional model protocol. It should be noted that the regional model forecasts are based on future year population and employment projections that reflect a regional perspective on growth and development. The applicant and consultant shall investigate those land use assumptions as they apply to their development study area and make forecast adjustments as necessary.

The applicant shall develop a short and long term planning horizon traffic forecast. The short term planning horizon is one year after full occupancy. The short term planning horizon traffic forecast shall be the sum of existing traffic volumes plus cumulative development traffic plus ambient growth. The short term planning horizon traffic forecasts shall also include cumulative development traffic from other jurisdictions within the study area. The short term planning horizon year ambient growth rate traffic forecasts shall be based on:

a. proportion between existing traffic volumes and buildout regional model forecasts;
b. extrapolation from historical traffic counts (from NCDOT data) to current counts; and/or

c. planning analysis that considers trends in the area's circulation system through either a proportion or extrapolation estimate.
d. bicycle and pedestrian analysis, if applicable

Whatever method is used to develop the annual growth rate for determining ambient traffic, it is important that the method be documented with sufficient detail to replicate the findings.

The map of the committed and funded improvements (for each planning horizon) as required in section VI.B.5 shall be used as a base for determining short term and long term planning horizon levels of service. The applicant may identify improvements that would mitigate unacceptable levels of service under the traffic conditions without the proposed development. In addition to needed improvements, it is also important to identify when such improvements are needed. The time that improvements are necessary could be defined by when a traffic threshold is reached, or by year.

## E. Proposed Project Traffic

Development traffic shall be analyzed based on the traditional trip generation, distribution, and assignment process described as follows:

### 1. Trip Generation

The applicant shall complete the "Traffic Generation Summary Sheet" (Table 1), listing each type of land use within the site at build-out, the size involved, the average trip generation rates used (total daily traffic and a.m./p.m. peaks), and the resultant total trips generated. Build-out land uses and generation shall be for both the short term and long term planning horizons. If, however, the land use action is of a type that build-out in the short-term is not feasible due to the size of development, interim phases, such as 2-year increments, shall be developed.

Trip generation shall be calculated from the latest data contained within the Institute of Transportation Engineers' Trip Generation report or other industry publications such as the ITE Journal. Data limitations, data age, choice of peak hour or adjacent street traffic, choice of independent variable and choice of average rate versus statistical significant modification shall be presented and discussed. In the event that data is not available for a proposed land use, the applicant must conduct a local trip generation study following procedures prescribed in the ITE Trip Generation manual and provide sufficient justification for the proposed generation rate. This rate must be acceptable to the Town Manager.

For shopping centers, trip generation shall be based on both the shopping center trip generation algorithms and the application of trip generation rates to individual land uses. The greater of the two methods shall be used in the analysis.

### 2. Adjustments to Trip Generation Rates

After first generating trips at full ITE rates, trip-making reduction factors may be used. These factors fall into two categories: those that reassign some portion of generated trips to the background stream of traffic, and those that "remove" or "move" generated trips. In all cases, the underlying assumptions of the ITE Trip Generation rates must be recognized and considered before any reductions are claimed.

The first category of adjustments is when trips to the proposed development currently exist as part of the background traffic stream, referred to as a passby trip. Passby percentages identified in the ITE Trip Generation manual or other industry publications may be used.

This traffic must continue to be assigned to site driveways and access points, but is not additive to the background stream of traffic. A technical appendix that illustrates the rediversion of passby trips is recommended.

The second category of adjustments is for internal site trips, transit use, and TDM (transportation demand management) actions. In general, reductions are not recommended. However, if reductions are claimed, analytic support to show how the figures were derived must be provided. Optimistic assumptions regarding transit use and TDM actions will not be acceptable unless accompanied by specific implementation proposals that will become a condition of approval. Such implementation proposals must have a reasonable expectation of realization within a 5-year period after project initiation.

**3. Trip Generation Budget**

Major concern has been raised when the traffic study identifies a trip generation rate that is less that what ultimately is experienced once the development is built and occupied. Because entitlement has been granted, the impacts of the traffic from underestimating the trip generation is experienced by the community and modifications or improvements, if possible, become the burden of the public. It is recognized that the trip generation process is ultimately dependent on a number of market and social factors; however, it is imperative that the traffic impact study be sufficiently conservative to account for full impact of the proposed development.

To assure the public and the Town that the traffic impact analysis adequately addresses the full impact of the development, any discounted trip generation might be conditioned as a maximum trip budget. If a future traffic impact is experienced that was not identified in the traffic study and it is determined that this impact resulted from the development's trip generation exceeding the maximum trip budget, the Town might require the development to either: 1) require that subsequent phases of development be reduced for multi-phase developments, 2) require the development to reduce the project traffic volumes to the amount estimated in the traffic study, or 3) provide for additional mitigations.

**4. Trip Distribution**

Trip distribution may be based on the MPO regional modeling, market analysis, existing traffic flows, applied census data, and professional judgement. Regardless of the estimates, the procedures and logic for estimating the trip distributions must be well documented. The trip distribution patterns must be presented for each phase if changes in roadway network, access or land use are proposed. The distribution percentages shall be noted on the Summary of Traffic Impacts sheet.

**5. Project Trip Assignment**

This section shall present the forecast the traffic assignment based on the development's trip generation estimates and project trip distribution. The traffic forecasts shall be graphically presented and include: a.m. peak hour, p.m. peak hour, and total daily site-generated traffic. If trip generation is different for the short term and long term planning horizons, both shall be shown on separate graphics. "Passby" traffic shall be included at driveways and access points.

## F. Future Traffic Forecasts With the Proposed Development

The applicant shall present a graphical summary of the short term and long term horizon year traffic plus the proposed development traffic for the a.m. peak hour, p.m. peak hour, and daily conditions. These volumes shall include turn movements at the key intersections. The base map for this exhibit shall reflect the respective transportation network by planning horizons.

## G. Project Impacts

The key elements of the development impact analysis include:

1. Generalized peak hour and/or daily link level of service analysis
2. Access analysis to include accident analysis (corridor strip accident analysis)
3. Intersection Analysis (signal warrant, phasing analysis to include the intersection accident analysis, and progression analysis)
4. A peak hour intersection level of service
5. Turn lane storage requirements
6. Sight distance considerations
7. Appropriateness of acceleration or deceleration lanes
8. Pedestrian and bicycle considerations
9. Public Transportation analysis

The requirements for these nine evaluations are as follows:

**1. Generalized Peak Hour and/or Daily Link Level of Service Analysis**
Using the peak hour directional volumes and daily traffic volumes forecast and service thresholds, a general evaluation shall be made of the arterial street system for the short term and long-term horizon years. Incremental differences attributable to the land use action shall be identified. A map showing generalized levels of service shall be presented for each design year.

**2. Access Analysis**
The design, number, and location of access points to collector and arterial roadways must be fully analyzed. The number of access points shall be kept to a minimum and be designed to be consistent with the type of roadway facility. Access analysis shall include a strip accident, intersection accident analysis and bicycle/pedestrian analysis.

**3. Intersection Analysis (Signal Warrant Analysis, Phasing Analysis, Intersection Accident Analysis and Progression Analysis)**
The appropriateness of the development's access locations and type must be established. For full-access locations, a signal warrant analysis based on the Manual on

Uniform Traffic Control Devices must be conducted for each design year. Traffic signals specifically warranted by the land use action shall be identified. Warrant Analysis should also be included the pedestrian analysis.

The acceptability of the signal locations must be demonstrated through a signal progression (time-space) analysis. The analysis shall consider any existing access or intersection or a possible future signal location along the arterial for a distance of at least one mile in each direction of the proposed signal. The maximum cycle length that will be permitted is 110 seconds. A travel speed of 45 mph on majors and 35 mph on minors, unless the existing posted speed limit is less, must be used. A major arterial bandwidth of 50% and a minor arterial bandwidth of 40% are considered desirable, and must be used where existing conditions allow. Where intersections or other accesses have no signals presently, but are expected to have signals, a 60% mainline, 40% cross street cycle split should be assumed. Where more detailed information is available from turning movement projections, other split assumptions may be made.

Any access that would reduce the desirable bandwidth if a traffic signal were installed shall be identified. In general terms, that access should remain unsignalized and have turning movements limited by driveway design or median islands, unless the impacts to traffic operation and safety are made even worse by doing so. The implications of the land use action upon the adequacy of the signal locations for each design year shall be provided. Distances between signalized intersections (centerline) shall be indicated. Signal progression worksheets (time-space diagrams) shall be included in the Appendix.

**4. Peak Hour Intersection Level of Service**

An a.m. and p.m. peak hour intersection level of service analysis shall be conducted for each intersection, based on procedures specified in the most recent release of the Highway Capacity Manual. Levels of service for signalized intersections shall be based on the signal timings developed for the signal progression analysis. All level of service analysis worksheets shall be included in the Appendix.

The principal objective of the intersection level of service traffic impact analysis is to identify whether the traffic from the proposed project when added to the existing plus short and long term planning horizon traffic will result in a significant impact and an unacceptable level of service. For definition purposes, the threshold for acceptable level of service is D.

Significance is defined as: 1) when the added project traffic causes the level of service to deteriorate below level of service D, or 2) when the short term or long term horizon year traffic without the project is below level of service D and the project traffic causes a 2% increase in the volume/ capacity ratio or delay.

For unsignalized intersections, the minimum level of service permitted for outbound left turns is level of service E. An analysis of maximum queue length shall also be performed and if the queue exceeds five vehicles, then a separate left turn lane with adequate storage shall be provided.

5. **Turn Lane Storage Requirements**
   Turn lane storage needs shall be identified for the "necessary" situation, based on projected turning volumes and AASHTO analytic techniques. Appropriate documentation of the calculations must be provided.

6. **Sight Distance**
   The identification of sight distance at the development entrances and all internal streets shall be conducted. Line of sight triangles for determining sight distances and landscape restrictions shall be drawn on the site plan.

7. **Appropriateness of Acceleration or Deceleration Lanes**
   All proposed development access points on arterials shall be evaluated as to whether they require acceleration lanes or deceleration lanes, with justification and basis provided for recommendations.

8. **Pedestrian and Bicycle Analysis**
   Continuity and adequacy of pedestrian and bike facilities shall be provided to the nearest attraction (existing or planned) within a ½ mile walk or bike ride to/from the development site. Destinations of significance include bus stops, elementary schools, parks, activity centers and major bicycle facilities. Adherence to the Americans with Disabilities Act (ADA) shall be required.

9. **Public Transportation Analysis**
   Existing and proposed (if any) public transportation facilities analysis shall be provided. Existing bus stops and proposed bus stop shall be identified on the site plan.

## H. Special Analysis/Issues

Town may require specific focused traffic analyses relative to the proposed development. Issues requiring special study could include access control, access spacing, accident/safety concerns, cut-through traffic and residential quality of life concerns, truck/bus traffic estimates and pavement design, accident statistics, pedestrian safety, routes to schools, emergency routes, etc. This section could also contain environmental and regional air quality conformity analysis, as may be appropriate.

## I. Mitigation Measures/Recommendations

This section shall describe the location, nature, and extent of all transportation improvements that the applicant recommends to yield reasonable operating conditions in each horizon year with the land use action approved as requested. For this discussion, the following terms apply:

***Planned****:* Improvements that are already planned and have committed funding, including those identified in short term capital improvement programs by the Town, State, or others.

***Background Committed****:* Improvements committed to by previously approved development.

***Applicant Committed**:* When existing plus cumulative traffic, with planned and background improvements, results in unacceptable levels of service, the applicant shall identify mitigation measures to offset project impacts.

***Necessary**:* Improvements required to mitigate background plus applicant traffic to establish acceptable levels of service, regardless of the amount of traffic contributed by the project.

The reason that "necessary" improvements (see Section E) must be explored is that often the "background committed" or "planned" improvements, plus the improvements that the applicant typically understands and commits to, are not adequate to provide a satisfactory level of service. The applicant shall assure that all practical solutions have been considered when developing the list of "necessary" improvements, so that the resulting operating conditions will approach the accepted level of service.

For purposes of identifying improvement possibilities (either by the applicant, Town, or State) necessary to yield an acceptable level of service, the cost of the improvements shall not be considered a limiting constraint within the context of the traffic impact study. However, the goal of the evaluation is to identify cost-effective solutions that yield a reasonable level of service. Extremely high-cost solutions may not be cost-effective, but it is important to at least identify solutions so that decision-makers are cognizant of existing options.

The applicant shall use the "Recommended Improvements Summary Sheet" (Table 2) to present the recommendations. One sheet may be used for both design years if all the improvements can be conveniently described thereon. If not, one or more sheets should be completed for each design year.

All recommended improvements shall be identified on the Summary sheet, including "planned," "background committed," "applicant committed," and "necessary." Each project shall be briefly described as to its location, the type of project, flow line and right-of-way needs (for roadways), signal or turn lane improvements (for intersections), and, at a sketch planning level, cost of the improvement. Also, commitment to the improvement shall be identified, either by local governments, districts, or by the applicant himself (this may include both the "applicant committed" and "necessary" projects). Identification of a project as "not currently committed" may be an appropriate description for many needed projects, including some of those that are "planned." However, the goal of the recommendations shall be to identify a firm program of improvements that will support the proposed land use action and background traffic in each design year.

It is further required that all geometric improvements such as pavement markings, signs, adding through or turn lanes, adding project access and assorted turn lanes, acceleration lanes, and changes in medians, shall be presented in a schematic scaled drawing, preferably on a current aerial map. Sufficient dimensions shall be identified to facilitate review. Right-of-way needs shall also be identified on the plan.

## VII. TRAFFIC IMPACT ANALYSIS ATTACHMENTS

1. Summary

Development Name:
Development Location (include section, township, and range):
Applicant Name/Address/Phone:
Traffic Engineer Name/Address/Phone:

2. Introduction

Short Term Planning Horizon:
Long Range Planning Horizon:

Please attach the following maps:
a. Vicinity map, with site and study area
b. Site plan with transportation network
c. Study area land uses
d. Committed surface transportation network

Please attach the table of values for the proposed development adjacent to the site.

3. Existing Traffic Conditions

Attach the daily, a.m., and p.m. peak hour traffic map(s); bicycle and pedestrian counts;
Attach levels of service table.

4. Future Traffic Conditions w/o Proposed Development

Attach the daily, a.m., and p.m. peak hour traffic map(s); bicycle and pedestrian counts;
Attach levels of service table.

5. Proposed Development Traffic

a. Attach trip generation table.
b. Provide documentation for making adjustments to the trip generation rates (include a brief explanation/justification).
c. Attach the trip assignment and traffic volume map(s):

6. Future Traffic Forecasts with The Proposed Development

Attach the daily, a.m. and p.m. peak hour traffic map(s).
Attach levels of service table.

7. Traffic Impacts

Attach following maps (and/or table of values):
a. Capacity and volume/capacity ratios
b. Peak hour intersection level of service
c. Traffic signal and access improvements

8. Special Analysis/Issues

Present brief information on any special analysis or issues which have influenced the results of this traffic impact study.

9. Required Mitigation Measures/Recommendations

Attach “Recommended Improvements Summary Sheet”
Attach map showing level of service resulting from recommended improvements.
Attach scaled map or aerial photograph showing proposed improvements.