TRAFFIC IMPACT ANALYSIS GUIDELINES

CITY OF RICHARDSON, TEXAS
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TRAFFIC IMPACT ANALYSIS GUIDELINES

CONTENTS	PAGE
TIA Application Form	2
Overview: Procedure for TIA Approval within the City of Richardson	3
TIA Purpose and Definitions	5
TIA Assumptions	6
TIA Study Procedures and Data Sources	7
TIA Preparation and Review	8
TIA Report Format	12
TIA Report Content Checklist	13

TRAFFIC IMPACT ANALYSIS
APPLICATION FORM

A Traffic Impact Analysis (TIA) is required for all PD Planned Development zoning requests and for certain other zoning requests and development proposals that are determined to have potential traffic impacts as determined by the City Traffic Engineer or his/her representative. The purpose of this application form is to provide the city with the necessary information to determine if a TIA will be required.

Complete the application as follows:

1. calculate daily trip generation for the maximum uses allowed for the development request based on data contained within the latest edition of the ITE Trip Generation Handbook;
2. sign and date the form; and
3. return the form to the Department of Development Services.

PROPERTY LOCATION: _____

_____

LEGAL DESCRIPTION: _____

LAND USE TYPE	**NUMBER OF UNITS/BLDG. SQ. FT.**	**DAILY TRIP GENERATION RATE**	**DAILY TRIP GENERATION**
		Total:	

_____
Applicant's Name

_____
Firm

_____
Address

_____
Telephone Number

_____
Fax Number

_____
Email

_____
Date

OVERVIEW:
PROCEDURE FOR TRAFFIC IMPACT ANALYSIS APPROVAL
WITHIN THE CITY OF RICHARDSON

A Traffic Impact Analysis (TIA) may be required in support of certain zoning and development requests within the City of Richardson. The purpose of these guidelines is to identify:

1. the types of development requests warranting a TIA;

2. standards for the preparation of a TIA;

3. TIA study procedures;

4. strategies for accommodating impacts; and

5. City responsibilities/actions.

These guidelines have been developed to ensure that the TIA will include the necessary resource information for City Council, City Planning Commission, and staff review. It is not intended as a regulatory tool.

A TIA is required for all PD Planned Development zoning requests and may be required for other zoning requests if deemed necessary by the City Traffic Engineer. (Note: any reference herein to the City Traffic Engineer will include his/her representative or designee). The report must be prepared by a registered professional engineer (PE) with adequate experience in transportation engineering. The City Traffic Engineer may allow a professional other than an engineer to prepare the TIA if that professional can demonstrate adequate experience in the field of transportation planning or engineering.

The submission of a completed TIA application form is the first step in the process. Upon review of this form, the City Traffic Engineer will determine the need for a TIA, and will then meet with the applicant in a pre-submittal conference to define the study area and the precise scope of work.

A complete TIA application shall consist of the following:

1. a TIA application form;

2. three copies of the draft report (including appendices), to be replaced with

3. three copies of the final report (including appendices) in the final submittal;

4. three copies of the executive summary (final report without appendices); and

5. a copy of all reports on CD disk in a common file format.

Computer modeling of traffic impacts, with a base model approved by the City, is also required for projects generating over 10,000 vehicle trips per day. This modeling will be performed by NCTCOG using the most current Regional Mobility Plan with at least a 25-year horizon. NCTCOG will assess the fee to the applicant for this service.

The City Traffic Engineer or his/her representative will determine the type of demand forecasting model to use in the analysis. The model should take into consideration:

1. Existing traffic counts

2. Full build-out of the City—Assume 0.5 FAR (floor to area ratio) for the undeveloped property along the Bush Turnpike Corridor and 0.35 FAR elsewhere

3. Full MTP (Master Transportation Plan) build-out—All planned transportation improvements have been made

4. 10% reduction of trips within ¼ mile of a DART LR station; 5% reduction of all trips within ¼ to ½ mile of a DART LR station; other transit credit trip reductions only as agreed to by the City Traffic Engineer based on specific proposals that can reduce the travel demand.

5. Calculation of FAR for the subject property at the density being proposed as part of the request or what is currently allowed by zoning, whichever is greater

Variance from these assumptions will require advanced approval of the City Traffic Engineer.

The TIA must be prepared according to the following guidelines, including study procedures, data sources, report format, and report content:

TRAFFIC IMPACT ANALYSIS PURPOSE AND DEFINITIONS

PURPOSE

A Traffic Impact Analysis (TIA) is intended to coordinate land use and transportation facility development and to adequately assess the traffic-related impacts of a development proposal on the existing and planned thoroughfare system. It is a means of identifying strategies and solutions to current and future traffic problems which may involve the public sector, the private sector or a partnership of both. This results of this analysis should:

1. compare the traffic generated to thoroughfare system capacity;

2. address the City's requirements and expectations;

3. establish equitable mitigation measures for the accommodation of identified impacts;

4. recommend the safest and most efficient transportation system in conjunction with the development process.

DEFINITIONS

City Traffic Engineer—The City's appointed Traffic Engineer or his/her representative or designee.

Level of Service—A qualitative measure of traffic operating conditions based on such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety (as determined by the current edition of TRB Highway Capacity Manual—Special Report 209)

Traffic Impact Analysis—A study that provides information in order to: a) determine whether or not the existing and planned thoroughfare system can accommodate the traffic to be generated by a proposed development; and b) evaluate the appropriate traffic mitigation measures if the thoroughfare system cannot accommodate the impact.

Travel Demand Forecasting Model—A microcomputer-based model used to project travel demand based on observed relationships among: a) the magnitude and distribution of demographic activity; b) the availability of a transportation system; and c) trip making characteristics. For purposes of a TIA prepared for the City of Richardson, the current version of NCTCOG's Regional Mobility Plan with at least a 25-year horizon should be used.

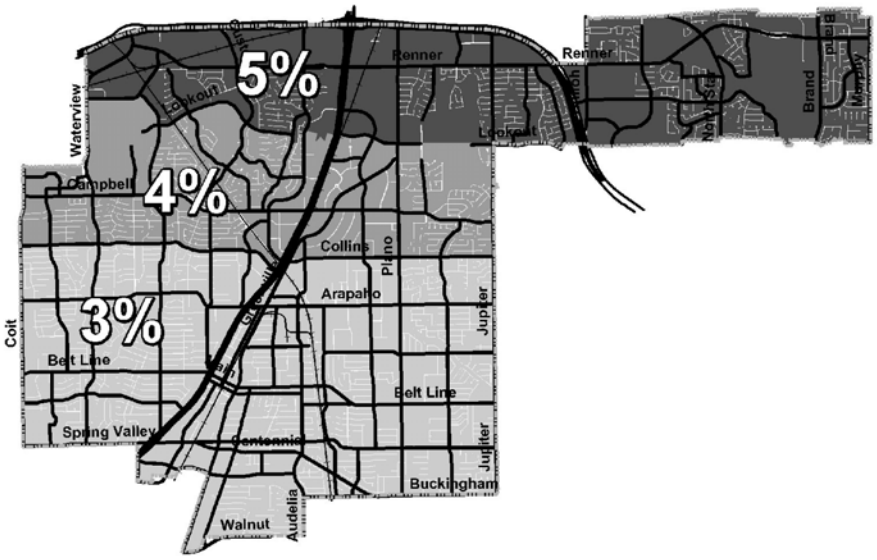
Trip Generation—The number of one-way traffic movements associated with such variables as building size, type of dwelling unit, employees, land area, land use, etc.

Vehicle Trip—A one-way movement of an automobile between two points for a specific purpose.

TIA ASSUMPTIONS

- Target Year (Current NCTCOG Regional Mobility Plan)
- Percent Build-out (100%)
- Land Use
- Internal Trip Satisfaction
- Modal Split
- Directional Split
- Background Traffic
- Traffic Growth Rate (as noted in map)
- Street Capacity
- Study Area—Approximately one mile radius, to include the next major signalized intersection
- Roadway Network
- Trip Generation Rates
- Level of Service (LOS)
- Volume/Capacity/Calculations
- AM and PM Peak

TRAFFIC GROWTH RATES



Three copies of the draft TIA report must be submitted for city staff review as part of the PD Planned Development zoning applications, other zoning requests or development submittals if deemed necessary by the City Traffic Engineer or his/her representative. Review comments will be provided to the applicant for incorporation into the final report. Three copies of the final TIA reports, along with executive summaries, must be returned to the Development Services Department with sufficient time for scheduling of the item on the City Plan Commission Agenda. The submittal deadline shall be determined by the City Traffic Engineer in consultation with the appropriate staff in Development Services Department.

TRAFFIC IMPACT ANALYSIS STUDY
PROCEDURES AND DATA SOURCES

To provide consistency in the evaluation process and to ensure that the TIA will be based on acceptable study methodologies and data sources, the standards listed below shall apply, where applicable.

	Source
Trip generation rates	ITE Trip Generation Handbooks
Trip reductions for passer-by trips and mixed-use developments	ITE Trip Generation Handbooks
Horizon year traffic volumes	Current NCTCOG Regional Mobility Plan with at least a 25-year horizon
Future land use assumptions	City
Transit mode share assumptions	City
Auto occupancy rates	NCTCOG
Percentage of horizon year daily traffic in peak hour	NCTCOG
Capacity analyses procedures	Current Transportation Research Board Highway Capacity Manual—Special Report 209
Signal warrants	Texas Manual on Uniform Traffic Control Devices
Signal timing procedures	Synchro or City's current signal timing model

TIA PREPARATION AND REVIEW

TIA STANDARDS

It is the objective of the City to determine whether the existing and planned thoroughfare system can accommodate the impact of the proposed development. To achieve uniformity in the evaluation process, the following standards will apply:

A. Design Level of Service

The minimum acceptable level of service (LOS) within the city shall be defined as LOS D in the peak hour for the critical movement. All development impacts on both thoroughfare and intersection operations must be measured against this standard.

B. Data Sources

The City's standard for trip generation rates for various land use categories shall be those found in the latest edition of the Trip Generation handbooks published by the Institute of Transportation Engineers (ITE). Alternate trip generation rates (other than those in the City's approved travel demand forecasting model) will not be acceptable; however, trip reductions for passer-by trips and mixed-use developments, in conformance with ITE-established procedures, will be permitted subject to approval by the City Traffic Engineer. All assumptions relative to future auto occupancy, transit mode share, or percentage of daily traffic to occur in the peak hour, etc., must be consistent with data from the City's approved model.

C. Study Background Criteria

The TIA must evaluate the impact of the proposed development on both existing and projected traffic conditions. These projected conditions shall be consistent with North Central Texas Council of Governments (NCTCOG) Regional Mobility Plan, which includes the allocation of observed and expected land use and development densities and in accordance with the City’s Comprehensive Planning Guide and the full implementation of the Master Transportation Plan.

D. Computer Modeling

For development requests generating fewer than 10,000 vehicle trips per day, the applicant will use current vehicle counts, provided by the City or based on NCTCOG’s current model where not available to reflect the background traffic levels in the project horizon year. The applicant will use these projected volumes, along with projected land use assumptions provided by the City, to evaluate the net change in trip generation, and associated impacts due to the project.

For development requests generating 10,000 vehicle trips per day or more, the applicant will obtain the current North Central Texas Council of Governments (NCTCOG) horizon year computer model as a basis for a new model incorporating the proposed development. The applicant will then evaluate the projected traffic impacts.

SCOPE OF TIA

The applicant must meet with the City Traffic Engineer or his/her representative in a pre-application conference to establish the study area and scope for the TIA. Study area limits shall encompass the principle impact area of the project, as determined by the City Traffic Engineer. At a minimum, the TIA shall include documentation on the following:

1. Site Location/Study Area—a brief description of the size, general features, and location of the site, including a map of the site in relation to the study area and surrounding vicinity. Generally, a minimum of one-mile radius will be defined as the study area;

2. Existing Zoning—a description of the existing zoning for the site, including land area by zoning classification and density by FAR, square footage, number of hotel rooms, dwelling units, etc., as appropriate;

3. Existing Development—a description of any existing development on the site and how it would be affected by the development proposal;

4. Proposed Development/Zoning (if applicable)—a description of the proposed development/zoning for the site, including land area by zoning classification and density by FAR, square footage, number of hotel rooms, dwelling units, etc., as appropriate;

5. Thoroughfare System—a description and map of existing and planned thoroughfares and traffic signals and/or other traffic improvements within the study area;

6. Existing Traffic Volumes—recent traffic counts for existing thoroughfares and major intersections within the study area;

7. Projected Background Traffic Volumes—horizon year background traffic projections for the planned thoroughfare system within the study area;

8. Existing Site Trip Generation—a table displaying trip generation rates and total trips generated by land use category for the AM and PM peak hours and on a daily basis, assuming full development and occupancy based on existing zoning (if applicable), and including all appropriate trip reductions;

9. Proposed Site Trip Generation—a table displaying trip generation rates and total trips generated by land use category for the AM and PM peak hours and on a daily basis, assuming full development and occupancy for the proposed development, and including all appropriate trip reductions;

10. Net Change in Trip Generation—proposed trip generation minus existing trip generation (if applicable);

11. Trip Distribution and Traffic Assignment—trips generated by the proposed development (or net change in trips, if applicable) added to the existing and projected volumes, as appropriate, with distribution and assignment assumptions, unless computer modeling has been performed;

12. Level of Service Evaluations—capacity analyses and volume/capacity (V/C) ratios for AM or PM peak hour (as determined by the City Traffic Engineer) and daily traffic for both existing conditions and design year projections;

13. Traffic Signal Evaluations—the need for new signals based on warrants and the impact on transportation system performance;

14. Conclusions—identification of all thoroughfares, driveways, and intersections exceeding LOS D, the percentage of change produced by the proposed development, and any operational problems likely to occur;

15. Recommendations—proposed impact mitigation measures; and

16. Other information required for proper review—as requested by the City Traffic Engineer;

17. Study Area—In general, the area within a radius of approximately one–mile from the boundaries of the site, to include the next major signalized intersection in each direction for less than 10,000 trips per day. A larger radius could be requested for more than 10,000 trips per day as needed. Study area boundaries may be revised in consultation with the City Traffic Engineer based on characteristics of the proposal and the surrounding area. The study area may include portions of a neighboring city.

ACCOMMODATION OF IMPACTS

Mitigation of impacts shall be required if the proposed development would cause a facility to exceed LOS D, or where it already exceeds LOS D, and the development would contribute 5% or more of the total traffic during the project horizon year. If mitigation is required, the applicant must only mitigate the impact of the proposed development, and would not be responsible for alleviating any deficiencies in the thoroughfare system that may occur without the proposed development. Acceptable mitigation measures shall include:

1. reduction of development density;

2. staging of development in order to relate site improvements to the construction of the thoroughfare system;

3. construction or funding of improvements, including the dedication of right-of-way and/or the participation in funding for needed thoroughfare and intersection improvement projects adjacent to the site; and

4. on-site improvements, including access controls and site circulation adjustments.

The City will determine which mitigation measures will be required.

ACTIONS BASED ON THE RESULTS OF A TIA

Based on the results of the TIA and recommendations/actions by the Development Services Department, the City Plan Commission and/or the City Council, as appropriate, may determine that the TIA is adequate to support one or more of the following actions:

1. approve the development request, if the project has been determined to have no significant impact or where the impacts can be adequately mitigated;

2. approve the development request, subject to a phasing plan;

3. recommend study of the Master Transportation Plan to determine amendments required to increase capacity;

4. recommend amendment of the City's Capital Improvement Plan relative to the construction of needed improvements; or

5. deny the development request, where the impacts cannot be adequately mitigated.

It should be noted that the TIA is only one aspect to be considered in the review of a zoning or development proposal. In some instances, while the TIA demonstrates that the traffic impacts of a proposal can be adequately managed, other features of the proposal may not support approval.

FEES

Applicable fees shall be *collected* according to current standard city fee schedules upon submittal of the zoning application or development proposal.

TRAFFIC IMPACT ANALYSIS REPORT FORMAT

The TIA report must be prepared in an 8 1/2" x 11" format; however, it may contain figures on larger sheets, provided they are folded to this size. The various sections of the report should be categorized according to the subject areas below.

I. INTRODUCTION

A. Purpose

B. General Project Description

II. EXISTING AND PROPOSED LAND USE

A. Site Location/Study Area

B. Existing Zoning and Development

C. Proposed Zoning and Development

III. EXISTING AND PROPOSED TRANSPORTATION SYSTEM

A. Thoroughfare System

B. Existing Traffic Volumes

C. Projected Traffic Volumes

IV. SITE TRAFFIC CHARACTERISTICS

A. Existing Site Trip Generation (if applicable)

B. Proposed Site Trip Generation

C. Net Change in Trip Generation (if applicable)

D. Trip Distribution and Traffic Assignment

V. TRAFFIC ANALYSIS

A. Level of Service Evaluations

B. Traffic Signal Evaluations

VI. CONCLUSIONS

VII. RECOMMENDATIONS

APPENDICES

TRAFFIC IMPACT ANALYSIS REPORT CONTENT CHECKLIST

This checklist has been designed to assist the applicant in the preparation of a TIA. Each of the items listed below must be provided within the study report, unless waived by the City Traffic Engineer. Complex and/or unique projects may necessitate other documentation in addition to that listed in order to ensure proper review.

I. INTRODUCTION

A. Describe purpose of study

B. Provide general project description

II. EXISTING AND PROPOSED LAND USE

A. Site Location/Study Area

1. Describe size, general features, and location of the site

2. Provide graphic displaying site in relation to study area and surrounding vicinity

B. Existing Zoning and Development

1. Describe existing zoning for the site

2. Provide table displaying land trip generation based on use and density

3. Describe any existing development in the vicinity of the site and how its access would be affected by the development proposal

C. Proposed Zoning and Development

1. Describe proposed zoning and development

2. Provide table displaying land trip generation based on use and density

III. EXISTING AND PROPOSED TRANSPORTATION SYSTEM

A. Thoroughfare System

1. Inventory existing thoroughfares and signals within the study area

2. Provide graphic displaying existing thoroughfares and signals within the study area

3. Identify thoroughfares and signals within the study area that are planned for improvement by the project horizon year

4. Provide graphic displaying thoroughfares and signals within the study area that are planned for improvement by the project completion year

B. Existing Traffic Volumes

1. Provide graphic displaying daily traffic counts for all thoroughfares within the study area; traffic counts should reflect typical roadway activity (not activity during holiday periods or inclement weather, for example; the validity of traffic counts taken over the summer months may also be called into question)

2. Provide graphics displaying AM peak hour turning movement counts for all major intersections within the study area

3. Provide graphics displaying PM peak hour turning movement counts for all major intersections within the study area

4. Identify source and year of traffic counts

C. Projected Traffic Volumes

1. Provide graphic displaying projected traffic volumes for all thoroughfares within the study area

IV. SITE TRAFFIC CHARACTERISTICS

A. Complete the following table for each land use category:

Traffic Impact Analysis
Site Traffic Characteristics

		Trip Generation Rate	Trips Generated	Trip Reductions	Net Trips Generated
Existing	Daily				
	AM Peak				
	PM Peak				
Proposed	Daily				
	AM Peak				
	PM Peak				
Net Change	Daily				
	AM Peak				
	PM Peak				

B. Trip Distribution and Traffic Assignment

1. Identify directional distribution assumptions, unless computer modeling has been performed

2. Provide graphic displaying directional distribution of site traffic, unless computer modeling has been performed

3. Provide graphic displaying daily assigned site traffic within the study area for base year conditions

4. Provide graphic displaying AM peak hour assigned site traffic within the study area for base year conditions

5. Provide graphic displaying PM peak hour assigned site traffic within the study area for base year conditions

6. Provide graphic displaying total daily assigned traffic within the study area for base year conditions, including existing traffic plus additional site-generated traffic

7. Provide graphic displaying total AM peak hour assigned traffic within the study area for base year conditions, including existing traffic plus additional site generated traffic

8. Provide graphic displaying total PM peak hour assigned traffic within the study area for base year conditions, including existing traffic plus additional site generated traffic

9. Provide graphic displaying total daily assigned traffic within the study area for horizon year conditions, including background traffic plus additional site generated traffic (new assignment when site generation exceeds 10,000 daily trips)

10. Provide graphic displaying total AM peak hour assigned traffic within the study area for horizon year conditions, including background traffic plus additional site generated traffic

11. Provide graphic displaying total PM peak hour assigned traffic within the study area for horizon year conditions, including background traffic plus additional site generated traffic

V. TRAFFIC ANALYSIS

A. Level of Service Evaluations

1. Identify capacity analysis technique utilized (Highway Capacity Manual)

2. Provide graphic displaying lane assignments for capacity analyses for base year conditions

3. Provide graphic displaying lane assignments for capacity analyses for horizon year conditions

4. Perform daily capacity analyses and determine V/C ratios for base year conditions on all thoroughfares within the study area, including existing traffic plus additional site-generated traffic

5. Perform daily capacity analyses and determine V/C ratios for base year conditions at all major intersections within the study area, including existing traffic plus additional site-generated traffic

6. Perform daily capacity analyses and determine V/C ratios for existing conditions at all major driveways serving the development, including existing traffic plus additional site-generated traffic

7. Perform AM and/or PM peak hour capacity analyses and determine V/C ratios for base year conditions on all thoroughfares within the study area, including existing traffic plus additional site-generated traffic

8. Perform AM and/or PM peak hour capacity analyses and determine V/C ratios for base year conditions at all major intersections within the study area, including existing traffic plus additional site-generated traffic

9. Perform AM and/or PM peak hour capacity analyses and determine V/C ratios for base year conditions at all major driveways serving the development, including existing traffic plus additional site-generated traffic

10. Perform daily capacity analyses and determine V/C ratios for horizon year conditions on all thoroughfares within the study area, including horizon year background traffic plus additional site-generated traffic

11. Perform daily capacity analyses and determine V/C ratios for horizon year conditions at all major intersections within the study area, including horizon year background traffic plus additional site-generated traffic

12. Perform daily capacity analyses and determine V/C ratios for horizon year conditions at all major driveways serving the development

13. Perform AM and/or PM peak hour capacity analyses and determine V/C ratios for horizon year conditions on all thoroughfares within the study area, including horizon year background traffic plus additional site-generated traffic

14. Perform AM and/or PM peak hour capacity analyses and determine V/C ratios for horizon year conditions at all major intersections within the study area, including horizon year background traffic plus additional site-generated traffic

15. Perform AM and/or PM peak hour capacity analyses and determine V/C ratios for horizon year conditions at all major driveways serving the development site-generated traffic

16. Identify percentage of daily horizon year traffic assumed for peak hour

17. Summarize level of service evaluations

18. Provide analysis sheets in appendix to report

B. Traffic Signal Evaluations

1. Identify locations studied

2. Identify locations meeting warrants

3. Identify signal-timing procedures utilized

4. Identify impact of new signals on existing system performance

5. Summarize traffic signal evaluation process

6. Provide analysis sheets in appendix to report

VI. CONCLUSIONS

1. For all thoroughfares exceeding LOS D in the base year, provide graphic displaying percentage of change produced by the development on a daily basis

2. For all intersections exceeding LOS D in the base year, provide graphic displaying percentage of change produced by the development on a daily basis

3. For all thoroughfares exceeding LOS D in the base year, provide graphic displaying percentage of change produced by the development during hours when the Level of Service exceeds D

4. For all intersections exceeding LOS D in the base year, provide graphic displaying percentage of change produced by the development during the AM and PM peak hour

5. For all thoroughfares exceeding LOS D in the horizon year, provide graphics displaying percentage of change produced by the development on a daily basis

6. For all intersections exceeding LOS D in the horizon year, provide graphic displaying percentage of change produced by the development on a daily basis

7. For all thoroughfares exceeding LOS D in the horizon year, provide graphic displaying percentage of change produced by the development during the AM and PM peak hour

8. For all intersections exceeding LOS D in the horizon year, provide graphic displaying percentage of change produced by the development during the AM and PM peak hour

9. Provide summary table of all thoroughfares and intersections within the study area where the development would contribute 5% or more of the total daily traffic during the base year, including existing traffic plus site-generated traffic

10. Provide summary table of all thoroughfares and intersections within the study area where the development would contribute 5% or more of the total AM and PM peak hour traffic during the base year, including existing traffic plus site-generated traffic

11. Provide summary table of all thoroughfares and intersections within the study area where the development would contribute 5% or more of the total daily traffic during the horizon year, including horizon year background traffic plus additional site-generated traffic

12. Provide summary table of all thoroughfares and intersections within the study area where the development would contribute 5% or more of the total AM and PM peak hour traffic during the horizon year

13. Summarize any site access or circulation problems in the base year

14. Summarize any site access or circulation problems in the horizon year

VII. RECOMMENDATIONS

1. Describe proposed impact mitigation measures, if the development would cause any facility to exceed LOS D, or where it already exceeds LOS D, and the development would contribute 5% or more of the total traffic during the horizon year

2. Provide graphic displaying needed off-site improvements, if applicable

3. Provide graphic displaying needed on-site improvements, if applicable

4. Identify benefits and/or improved levels of service with implementation of the proposed mitigation measures

5. Provide analysis sheets in appendix to report, if applicable

APPENDICES

1. Include analysis sheets for level of service evaluations performed without proposed mitigation measures

2. Include analysis sheets for traffic signal evaluations

3. Include analysis sheets for level of service evaluations performed with proposed mitigation measures, if applicable