Traffic Impact Analysis and Mitigation

City of Melissa, Texas

A. Purpose – The purpose of a Traffic Impact Analysis (TIA) is to assess the effects of specific development activity on the existing and planned thoroughfare system. Development activity may include but is not limited to rezoning, preliminary site plans, site plans, preliminary plats, driveway permits, certificates of occupancy, and Thoroughfare Plan amendments.

B. Pre-submission Meeting – Prior to the commencement of a TIA, an initial or pre-submission meeting with City staff is required to establish a base of communication between the City and the applicant. This meeting will define the requirements and scope relative to conducting a TIA and ensure that any questions by the applicant are addressed.

C. Applicability of TIA Requirements

1. Zoning – These TIA requirements shall apply to all zoning requests for land uses which will generate 2,500 or more vehicle trips per day or contain a density of 0.75 Floor Area Ratio (FAR) or greater. Applicable requests include zoning requests and Thoroughfare Plan amendments, if no previous traffic assessment was performed. Special circumstances, including but not limited to development with no case history, which do not meet the daily trip generation threshold, may also require a TIA. Such circumstances, as determined by the City Engineer may include, but are not limited to, impacts to residential neighborhoods from non-residential development, inadequate site accessibility, the implementation of the surrounding Thoroughfare Plan is not anticipated during the estimated time period of the proposed development, the proposed land use differs significantly from that contemplated in the Comprehensive Plan, or the internal street or access is not anticipated to accommodate the expected traffic generation.

2. Development – These TIA requirements shall apply to all development requests for land uses, except single-family residential development, which will generate over 100 total trips during the AM or PM peak hour. Applicable development requests include concept plans, preliminary site plans, site plans and preliminary plats. Special cases, in which site generated peak hour trip activity is different from that of the adjacent street (weekdays 7:00-9:00 a.m. and 4:00-6:00 p.m.), may require an additional separate analysis as determined by the City Engineer. Such circumstances may include, but are not limited to, commercial/retail, entertainment or institutional activity. The City Engineer may waive the TIA for a development request if a TIA was performed previously with the Zoning request and conditions listed in the report are still current.

3. Single-Family Residential Exception – A TIA for single-family residential development will not be required if the development contains fewer than six dwelling units unless special circumstances exist, as determined by the City Engineer. These special circumstances may include, but are not limited to, impacts to other residential development from cut-through

traffic, inadequate site accessibility, the implementation of the surrounding Thoroughfare Plan is not anticipated during the estimated time period of the proposed development, the internal street or access system is not anticipated to accommodate the expected traffic generation, or the development is outside the urban core of the community.

4. Daycares and Schools – All development requests and/or specific use permit requests for a daycare, Montessori school, private school, charter school, or public school shall include, at a minimum, a traffic circulation study. This study shall include the estimated maximum peak hour trip generation of the facility, the planned circulation of inbound and outbound traffic during drop-off and pick-up operations, and the estimated length of the queue of cars waiting to pick up students. The design of the site and the circulation plan shall ensure that school traffic does not back up onto any public street. The traffic circulation study shall include a statement that the owner and/or operator of the daycare or school agrees to operate the facility in accordance with the approved circulation plan. The circulation plan must be approved by the City Engineer before the development request or the specific use permit can be approved.

5. Determination of Applicability – The need for a TIA shall be determined by the City Engineer based upon the results and recommendations from a pre-submission meeting. It shall be the responsibility of the applicant to demonstrate that a TIA should not be required. If a TIA is required, the level of effort for a TIA submission shall be determined based on the criteria set forth in Table 1. Depending upon the specific site characteristics of the proposed development, one or more of the following elements may also be required as part of the TIA: an accident analysis, sight distance survey, traffic simulation, traffic signal warrant analysis, queuing analysis, turn lane analysis, and/or traffic circulation plan.

TABLE 1: Criteria for Determining TIA Study Requirements

Analysis Category	**Site Trips Generated at Full Build-Out**	**TIA Analysis Periods(1)**	**Minimum Study Area(3)**
I	>50 peak hour driveway trips; or 100-500 total peak hour trips	1. Existing year 2. Opening year(2) 3. Five years after opening	1. All site access drives 2. All signalized intersections and/or major un-signalized intersections within 0.5 mile to 1 mile of site boundary
II	>500 total peak hour trips	1. Existing year 2. Opening year of each phase 3. Five years after initial opening 4. Ten years after final opening with full build-out	1. All site access drives 2. All signalized intersections and/or major un-signalized intersections within 1.5 miles of site boundary

1. Analysis periods shall include build and no-build scenarios. Assume full occupancy when each phase opens.
2. Assume full build-out.

3. For certain projects, the City may require an enlarged study area. Land uses within the study area should include recently approved or pending development adjacent to the site.

D. Requirements for TIA Updates – A TIA shall be updated when time or circumstances of the original study fall within the parameters presented in Table 2. The applicant is responsible for preparation and submittal of appropriate documentation in order for City staff to process the zoning or development application. A TIA for site development requests must be updated if two years have passed since the original submittal, or if existing or assumed conditions have changed within the defined study area. The City Engineer shall make the final determination as to the extent of a TIA update.

TABLE 2: Criteria for Determining TIA Update Requirements

Original TIA Report was based on:	**Changes to the Originally Proposed Development:**	
	Access Changed(1) or Trip Generation Increased by more than 10%	**Access Not Changed and Trip Generation Increased by less than 10%**
Zoning; or Preliminary Site Plan or Site Plan that is less than 2 years old	Letter Amendment Required: Identify and report only analysis conditions that have changed	Letter Documenting Change (No analysis is required)
Preliminary Site Plan or Site Plan that is more than 2 years old	Prepare New Study. Must meet all current TIA requirements	Prepare New Study. Must meet all current TIA requirements.

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

E. Responsibility of TIA Preparation and Review

1. TIA shall be prepared in accordance with all of the guidelines in this section and submitted in accordance with the Development Review Schedule set by the City. The responsibility for TIA preparation shall rest with the applicant and must be performed by a Professional Engineer (P.E.) licensed in the State of Texas with experience in traffic and transportation engineering. The final TIA report must be signed and sealed by the P.E. responsible for the analysis to be considered for review by the City. Application and review fees are due at the time of each submittal. City staff shall serve primarily in a review and advisory capacity and will only provide data to the applicant when available.

2. It shall be the responsibility of the applicant to submit four (4) draft TIA reports and executive summaries with the zoning and/or development request submission. The proper number of reports, the timing for submission, and the review of these reports shall be based on standard City development review procedures. Incomplete TIAs or failure to submit a TIA with the submission shall delay consideration of zoning and development requests.

Should it be determined during the review of any zoning and/or development plans that a TIA is required, consideration shall be deferred until the applicant submits a completed TIA and the City has reviewed the assessment.

3. The City shall review the TIA and provide comments to the applicant. It shall be the responsibility of the applicant to submit four (4) finalized TIA reports and executive summaries once all review comments have been addressed.

F. TIA Standards

1. 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 all critical movements and links. All development impacts on both thoroughfare and intersection operations must be measured against this standard.

2. Trip Generation Resources – The City's standard for trip generation rates for various land use categories shall be those found in the latest edition of Trip Generation published by the Institute of Transportation Engineers (ITE) or other published or recognized sources applicable to the region. Alternate trip generation rates may be accepted on a case-by-case basis if the applicant can provide current supporting data substantiating that their development significantly differs from the ITE rates. The City Engineer must approve alternative trip generation rates in writing in advance of the TIA submission.

3. Trip Reductions – Trip reductions for passer-by trips and mixed-use developments will be permitted, subject to analytical support provided by the applicant and approval by the City Engineer on a case-by-case basis. Assumptions relative to automobile occupancy, transit mode share, or percentage of daily traffic to occur in the peak hour must be documented and will be considered subject to analytical support provided by the applicant.

4. Study Horizon Years – The TIA must evaluate the impact of the proposed development on both existing traffic conditions and future traffic conditions for the horizon year(s) as specified in Table 1. However, applications for densities of 0.75 Floor Area Ratio (FAR) or greater within the US 75, SH 121, SH 5 or Collin County Outer Loop corridors (throughout the City Limits) shall require that the horizon year land use assumptions be updated to reflect full development based on all proposed zoning. These applications should also assume full development of the Master Thoroughfare Plan or pending amendments.

G. TIA Methodology

5. 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;

6. Existing Zoning – A description of the existing zoning for the site and adjacent property, including land area by zoning classification and density by FAR, square footage, number of hotel rooms, and dwelling units (as appropriate);

7. Existing Development – A description of any existing development on the site and adjacent to the site and how it would be affected by the development proposal;

8. Proposed Zoning / Site Development – A description of the proposed zoning/development for the site, including land area by zoning classification and density by FAR, square footage, number of hotel rooms, and dwelling units (as appropriate); identify other adjacent land uses that have similar peaking characteristics as the proposed land use; identify recently approved or pending land uses within the area;

9. Thoroughfare System – A description and map of existing planned or proposed thoroughfares and traffic signals for horizon year(s) within the study area;

10. Existing Traffic Volumes – Recent traffic counts for existing thoroughfares and major intersections within the study area;

11. Projected Traffic Volumes – Background traffic projections for the planned thoroughfare system within the study area for the horizon year(s);

12. Density of Development – A table displaying the amount of development assumed for existing zoning and/or the proposed development (using gross floor area, dwelling units, occupied beds, etc., as required by the trip generation methodology);

13. 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 (as approved by the City Engineer);

14. 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 (as approved by the City Engineer);

15. Net Change in Trip Generation (for rezoning cases) – Proposed trip generation minus existing trip generation (if applicable); the net increase in trips to be added to base volumes for the design year;

16. Trip Distribution and Traffic Assignment – Tables and figures of 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;

17. Level of Service Evaluations – Capacity analyses for weekday AM and PM peak hours of the roadway and peak hour of the site, if different from the roadway, for both existing conditions and horizon year projections for intersections, thoroughfare links, median openings and turn lanes associated with the site, as applicable;

18. Traffic Signal Evaluations – The need for new traffic signals based on warrants and their impact on the performance of the transportation system;

19. Evaluation of Proposed/Necessary Mitigation – Capacity analyses for weekday AM and PM peak hours of the roadway and peak hour of the site, if different from the roadway, for intersections, thoroughfare links, median openings and turn lanes associated with the site under proposed/necessary traffic mitigation measures;

20. Conclusions – Identification of all thoroughfares, driveways, intersections, and individual movements that exceed LOS D or degrade by one or more LOS, the percentage of roadway volume change produced by the proposed development, and any operational problems likely to occur;

21. Recommendations – Proposed impact mitigation measures consistent with Subsection I below; and

22. Other information required for proper review – As requested by the City Engineer.

H. TIA Report Format

1. The TIA report must be prepared on 8½" x 11" sheets of paper. However, it may contain figures on larger sheets, provided they are folded to this size. All text and map products shall be computer-based and provided in both published format and computer file format (PDF). In addition, all electronic files used as part of the traffic analysis (i.e., Synchro, HCS, Passer II/III, CORSIM, VISSIM, etc.) shall be provided.

2. The sections of the TIA report should be categorized according to the outline shown below:

Executive Summary
I. Introduction
    A. Purpose
    B. Methodology
II. Existing and Proposed Land Use
    A. Site Location/Study Area
    B. Existing Zoning
    C. Existing Development
    D. Proposed Zoning (if applicable)
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. Mitigation

VII. Conclusions

VIII. Recommendations

Appendices

I. Traffic Impact Mitigation

1. Mitigation of traffic impacts shall be required if the proposed development would cause a facility or traffic movement to exceed LOS D, or where it already exceeds LOS D and the development would contribute five percent (5%) or more of the total traffic during any projected 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.

2. Acceptable mitigation measures shall include:

   a. Staging of development in order to relate site development to the construction of the required thoroughfare system;
   b. Staging of development so that the site contributes less than five percent (5%) of the total traffic to the affected facility or traffic movement during the projected horizon year;
   c. Off-site improvements, including the provision of right-of-way and/or the participation in funding for needed thoroughfare and intersection improvement projects (including, but not limited to, through lanes, turn lanes or traffic signals); and
   d. On-site improvements, including access controls and site circulation adjustments.

3. Mitigation is not required if it can be shown that the traffic impacts of the project are fully mitigated ten (10) years after the final opening with any improvements that are already programmed to be implemented within five (5) years of the initial opening.

J. Administration of the TIA – Based on the results of the TIA and actions recommended by the City Engineer, the Planning & Zoning Commission and/or the City Council, as appropriate, shall take one or more of the following actions:

1. Approve the zoning or 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 City Thoroughfare Plan to determine amendments required to increase capacity;

4. Recommend amendment of the Capital Improvement Program (CIP) to expedite construction of needed improvements; or

5. Deny the zoning or development request, where the impacts cannot be adequately mitigated.

K. Cost of TIA Review by City – The cost for review of TIA submittals shall be based on the parameters set forth in the City's Development Fee Schedule and paid in full at time of submission.