TRAFFIC ANALYSIS
PROCEDURES & CHECKLIST

Community & Economic Development
City of Arlington • 18204 59th Avenue NE • Arlington, WA 98223 • Phone (360) 403-3551

All Commercial and Multi-family Development Projects submitted to the City of Arlington must include a traffic analysis. The traffic offer for each project shall include the items listed in the attached checklist according to the following breakdown:

- Projects generating fewer than ten (10) P.M. peak hour trips are required to complete
  - Section I (Project Description);
  - Section II (Trip Generation);
  - Include projects that can demonstrate a net reduction in traffic generated within the City of Arlington.

- Projects generating at least ten (10) P.M. peak hour trips, but fewer than seventy-five (75) P.M. peak hour trips are required to complete
  - Section I (Project Description);
  - Section II (Trip Generation);
  - Section III (Trip Distribution);
  - Section IV (Traffic Volumes);
  - Section V (Level of Service);
  - Section VI (Mitigation Requirements).

- Projects generating seventy-five (75) or more P.M. peak hour trips are required to complete all sections.

TRAFFIC ANALYSIS
PROCEDURES & CHECKLIST

Community & Economic Development
City of Arlington • 18204 59th Avenue NE • Arlington, WA 98223 • Phone (360) 403-3551

I.	**PROJECT DESCRIPTION**	
	☐	Location (vicinity map & site plan)
	☐	Horizon year (year of completion & full occupancy)
	☐	Type, size and location of development
II.	**TRIP GENERATION (ITE Trip Generation Manual, Current Edition)**	
	☐	PM peak hour trips
	☐	Assumption and methodology for pass-by trips
III.	**TRIP DISTRIBUTION**	
	☐	Show distribution percentages on vicinity map / diagram
IV.	**TRAFFIC VOLUMES**	
	☐	Existing PM peak hour counts & date (< 2 years old)
	☐	Future PM peak hour trips with / without project
	☐	The annual growth rate factor (%) and its source
	☐	Include the trips from pipeline developments (provided by Community Development)
V.	**LEVEL OF SERVICE (LOS) CALCULATIONS**	
	☐	At intersections impacted by 10 or more peak hour trips from the development
	☐	• Signalized I / S
	☐	• Un-signalized I / S
	☐	LOS calculation sheets must be included
	☐	All assumptions should be noted for volume reductions, saturation flow rates, splits, etc., and their basis
VI.	**MITIGATION RECOMMENDATIONS**	
	☐	Local Agency Interlocal guidelines
	☐	LOS deficiencies
	☐	Right of way frontage improvements
	☐	Installation of a signal (warrant analysis per MUTCD must be included)
	☐	Possible mitigation coordinated with other pipeline projects
	☐	Impact fee calculation
VII.	**ACCIDENT ANALYSIS**	
	☐	An accident analysis at critical intersections (provided by Community Development)
	☐	Current 3 year accident history (data may be obtained for the Arlington Police Department)
	☐	Collision diagrams
	☐	A discussion of both of the above, including the predominant accident types and their locations, any accident patterns, an assessment of the development's traffic safety impact, and mitigation for its safety impact
VIII.	**SUBMITTAL REQUIREMENTS**	
	☐	Two (2) copies of Traffic Analysis
	☐	Traffic Analysis report must be signed and stamped by a Professional Engineer

TRAFFIC MITIGATION GUIDELINES

Community & Economic Development
City of Arlington • 18204 59th Avenue NE • Arlington, WA 98223 • Phone (360) 403-3551

The City of Arlington Community & Economic Development has prepared this City of Arlington Development Assistance Bulletin to provide guidance to Property Owners, Developers, and Traffic Engineers on what trip generation information the City of Arlington needs and will accept for various development proposals. Additional information is available in the City of Arlington Municipal Code Title 20.90.

The City requires that each Developer execute a Traffic Mitigation Agreement which sets the upper limit of their responsibility for financial participation in the relevant projects where the corridor has not yet been constructed, or pay a Traffic Mitigation Fee where those corridors have already been constructed, based upon the number of PM Peak Hour Trips generated by the proposed development. Adjustments to the stated upper limit are made to account for inflation, and for any City approved Land Use decisions which increased the potential traffic impacts anticipated from the subject sites that were planned for based upon the existing zoning and land use densities. Recent changes in the City's Comprehensive Plan, for example, resulted in corresponding increases in the permitted densities for residential developments that must now be accounted for in the financial amounts specified in the Transportation Improvement Plan.

For all development or re-development projects the method that is used to distribute the Developers' cost is based upon the total number of new PM Peak Hour Trips generated by the proposed land use. The Regression Equations and Weighted Average Rates contained within Trip Generation manual, published by Institute of Transportation Engineers (hereinafter ITE), are typically used to determine the number of new vehicles that would be added to the public street system and expected to cross a development's driveways during a typical workday, and for the number of vehicles added to the street system during the PM (evening) peak hour.

When the estimated number of trips, both average Daily Traffic (ADT) and/or PM Peak Hour Trips differ significantly depending upon whether ITE Weighted Average Rates, or ITE Regression Equations are used, or with the choice of Independent Variables, then the City will use the suggested criteria given in the Trip Generation Manual, current edition, an ITE Proposed Recommended Practice (hereinafter Trip Generation Manual), published by ITE to determine which method and Independent Variable shall be applicable to determine the appropriate number of PM Peak Hour Trips for the proposed development and land use.

The guidelines for determining which ITE method to use to determine the number of trips are restated below for the convenience of the reader:

Use ITE Regression Equations when:

a. A Regression Equation is provided.
b. The Independent Variable is within the range of plotted data, AND
    1) Either the date set has at least twenty (20) points, OR

    2) $R^2 < 0.75$; and the Independent Variable falls within data cluster in plot, and Standard Deviation > than 110% of Weighted Average Rate.

Use ITE Weighted Average Rate when:

a. At least six (6) data points exist
b. Independent Variable is within range of plotted data
c. Standard Deviation <= 110% of Weighted Average Rate

d. $R^2 < 0.75$, or no Regression Equation is given
e. Weighted Average Rate falls within data cluster in plot

Collect Local Trip Generation Data when:

a. Study site or land use is not compatible with ITE Land Use Code definitions
b. Less than six data points are within the range of data
c. Neither Weighted Average Rate line, nor Fitted Curve line fall within data cluster at the size of the development

Determining the number of new PM Peak Hour Trips

The number of new PM Peak Hour Trips to be generated by a proposed use shall generally be estimated based upon a trip generation estimate for a development that is consistent with the description for a Land Use Code contained within the most recent edition of Trip Generation Manual, published by ITE (currently the 8th edition.) However, when Trip Generation Manual does not contain a Land Use Code that is consistent with the proposed land use, OR when the scope of the proposed development is outside of the range of data points within Trip Generation, OR when less than six studies were conducted and summarized within Trip Generation, OR when the Trip Generation database has an unsatisfactory Standard Deviation (i.e., when Standard Deviation / Weighted Average Rate is more than 1.1), or when the database has an unsatisfactory Regression Equation (i.e., when R^2 is less than 0.75), THEN the Applicant is required to provide the City Engineer with a Local Trip Generation Study prepared by a professional Traffic Engineer, except as noted below.

NOTE: For very small developments which are expected to create very few PM Peak Hour Trips, the City may offer and/or accept a "negotiated" or "reasonable" figure for the number of PM Peak Hour Trips to be included to avoid the cost of preparing a Local Trip Generation Study, but this process requires the cooperation and agreement by the Developer.

Local Trip Generation Studies

When it becomes necessary to establish a local trip generation rate, the Traffic Engineer shall survey at least three sites, and preferably five sites, that truly meet the ITE recommended site selection criteria.

Site Selection Criteria. Failure to select sites appropriately may lead to inaccurate trip generation rates and equations. Use of unrepresentative sites as a basis for trip generation estimates can result in over estimating or under estimating trips to be generated by a proposed development.

The Criteria for identifying suitable sites for the collection of trip generation data are as follows:

- Data should be transferable; it is critical that both trip data and development characteristics of a "successful" development.

- The development should have reasonably full occupancy (i.e., at least 85 percent) and appear to be economically healthy; the percent occupancy at the time of the survey should be recorded when applicable.

- The data needed to describe the independent variables should be readily available.

- The site should be selected on the basis of the ability to obtain accurate trip generation and development characteristics.

- The site should have a limited number of driveways – a cost consideration only.

- The driveways and the method of counting traffic should ensure against double-counting vehicles.

- The site should consist of a single land use activity.

- There should be minimal, or no on-site construction, and no adjacent roadway construction.

- Permission should be obtained from the owner or the building manager to conduct the survey.

- It should be possible to isolate the site for counting purposes:

    - No shared parking, unless the parking areas for each development within the site are easily distinguishable;
    - No shared driveway, unless the driveways for the site are easily distinguishable;
    - Limited ability for pedestrians to walk into the site from nearby parcels;
    - Limited mass transit availability or use; and
    - No through traffic.

- The Local Trip Generation Study shall include a completed ITE Trip Generation Data Form (Parts 1 and 2) as provided at the end of Chapter 4 of the Trip Generation manual.

Pass-By Trips

For many land uses, the number of new PM Peak Hour Trips is equivalent to the number of trips crossing the development's driveways. Some land uses such as retail establishment, restaurants, banks, service stations, and convenience markets, however, attract a portion of those driveway trips from traffic passing the site on the way from one location to another. In these cases the driveway trips must be adjusted to account for these so called Pass-By trips. In other words, for some developments and land uses the actual number of new vehicles on the streets as a direct result of the development is not the total number of PM Peak Hour Trips that would be counted crossing the development's driveway(s), but a percentage of the number of PM Peak Hour Trips generated by the development and counted in their driveways. The City of Arlington does not accept reductions to the number of PM Peak Hour Trips to account for so-called Diverted Trip Linkages.

The Traffic Engineer must have prior City approval of the percentage to be used for Pass-by Trips, unless Pass-By Surveys are going to be conducted for the subject study. Prior City approval is particularly important for estimated pass-by rates when the proposed land use makes this reduction appropriate, but a narrow range of percentages for Pass-By Trips is not included in Trip Generation Manual.

Pass-By Surveys. The number of pass-by interviews should meet the minimum sample size listed in Table 5.27, contained within Chapter 5 of the Trip Generation manual.

The pass-by survey data shall also meet the following criteria:

- The Local Trip Generation Study shall contain copies of the Survey Questions used to determine the applicable Pass-By Trip percentage for the total number of PM Peak Hour Trips.

- Interviews should be conducted at all driveway locations so as not to favor one area or roadway over another.

- The pass-by survey results should be summarized in a format similar to that presented in figure 5.17, also contained within Chapter 5 of the Trip Generation Manual.

- The pass-by section of the Local Trip Generation Study shall include the following information at a minimum:

    - Name, address, and City, and State of Development;

- Land Use Classification, especially if it differs from existing ITE Land Use Code;
- ITE Land Use Code;
- Survey date and day of week;
- Time period during which the survey was conducted;
- Number of interviews conducted;
- Volume of traffic on adjacent streets that have access to the development site (hourly volume during survey period and ADT);
- Size of the development measured in the same units as specified in the Trip Generation manual;
- And size of the development in terms of other independent variables that could be collect and forecast and that might correlate to pass-by trips.

For speculative developments, and other developments where the exact nature of the developments is unknown, the number of PM Peak Hour Trips determined by the City is intentionally conservative to reflect the uncertainty of what land uses will eventually reside in those developments. A minimum of six months after full-build-out has occurred (a minimum of two years is preferred), the City permits the Developer to revise the presumably conservative number of PM Peak Hour Trips – *if the Local Improvement District (LID) has not actually been formed to finance the construction of the subject corridor in the mean time.* To take advantage of this option, the Developer must hire a professional Traffic Engineer to count PM Peak Hour Trips for at least one 7-day period (only Tuesday through Thursday is typically used to determine the weighted average number of PM Peak Hour Trips). The City will use the weighted average one hour PM driveway count to revise the number of PM Peak Hour Trips. The Traffic Engineer is required to obtain prior City approval for dates, times, the proposed mean to make the driveway counts, and the methods used to arrive at the appropriate number of new PM Peak Hour Trips.