

Residential Development Impact and Design Guidelines State of the Practice

Purpose

The purpose of this project is to develop guidelines for the access of local streets to the arterial network and to determine the impact to the street network of the development or other development associated with the subdivision. The main focus of the project is residential developments.

Questions to resolve

- What is the spacing of access onto the arterial or collector network?
- How many units in a development area are allowed before multiple access points to the arterial network are required?
- How to determine if available land near the development is considered in the impact analysis?
- What is the number for the trips required before impact analysis is required? (less than 100, more than 50, something else)
- Normal Traffic Impact Analysis focus on the flow of other traffic and the operation or need for traffic signal or other traffic control devices. What is the focus of this analysis?
- Do we define the impact differently for developments near key intersections or locations?

Other Related Issues

The local impact of residential development is cumulative, and the small nature of subdivisions in our areas does not allow planners and engineers to determine the future requirements of the street network until the area around the need is developed. Other issues related to the scope could include the following:

- Block length
- Number of access points per unit
- Maximum Cul-de-Sac length and number in a development
- Intersection design
- Better identify the location of the arterial network
- Network level

Purpose of Other TIS

- Identify in advance any potential adverse impacts on the existing transportation network and ensure adequate mitigation is provided for by proposed development;
- Assist public and private sector entities in the early identification of issues related to traffic operations, including but not limited to driveway/access locations, traffic signals, and other elements of transportation facilities; and
- Support long term planning solutions that foster responsible growth of transportation infrastructure consistent with the local government's Comprehensive Plan and vision for the community.

Time Periods

Almost all the reviewed policies require an analysis of date of opening or when the project is complete and 20 years in the future. Some TIS have a mid-year analysis at five, ten, and fifteen years.

Review of Similar Traffic Impact Analysis

Type of Impact

Even in the small development most of the TIS requirements were limited to commercial development.

Traffic Threshold

- 50 peak hour trip
- Less than 100 peak hour trips

What items are evaluated

- Existing traffic
- Impact on adjacent neighborhoods
- Future traffic (model)
- Key Intersections
- Access Points
- Circulation

Other Concepts

To not evaluate just commercial developments and to evaluate residential development the following concepts were found in other guidelines.

- Use the Travel Demand model and Synchro to evaluate all streets and key intersections
- Identify current standards LOS traffic level or even LOS for un-signalized intersections to determine current and future conditions and design standards for roads
- Any land use not considered in the model would require an evaluation of impact. This would model the current zoning and if for example, an Agriculture zone was switching to residential an evaluation of the impact would be required.

Types of Documents

In my research there are two main types of documents required a traffic impact analysis and traffic impact statement. The traffic impact statement is a shorted version and does not usually have an in-depth analysis of the impacts.

Outline of TIS Documents

The following general TIA format should be followed. For TIA study types that do not require a certain analysis, such as Future Traffic analysis for

- Introduction and Executive Summary
- Proposed Development Description and Site Plan
- Existing Area Conditions
 - Roadway and Transportation System
 - Area Land Uses
- Development Traffic

- Trip Generation and Distribution
- Mode Split
- Assignment
- Future Traffic
 - Background Traffic Growth
 - Proposed Off-site Development Traffic
 - Total Traffic
- Analysis (without proposed roadway improvements)
 - Existing Conditions
 - Opening Year Traffic Conditions without Development
 - Opening Year Traffic Conditions with Development
 - Future Horizon Year Traffic Conditions without Development
 - Future Horizon Year Traffic Conditions with Development
- Improvement Analysis (with proposed roadway improvements)
 - Existing Conditions
 - Opening Year Traffic Conditions without Development
 - Opening Year Traffic Conditions with Development
 - Future Horizon Year Traffic Conditions without Development
 - Future Horizon Year Traffic Conditions with Development
- Bicycle and Pedestrian Levels of Service
- Findings
 - Motor Vehicle
 - Bicycle/Pedestrian
 - Recommendations
 - Technical Appendix a. Hourly Traffic County Data b. Trip Generation/Assignment Calculations c. Printouts of Operational Level of Service Analysis d. Pedestrian and Bicycle Level of Service Calculations For a development that is adjacent to a state highway, the DOT TIA format may be substituted for

Direct and Cumulative Impacts

Develop a method to determine the direct impact on the arterial and adjacent traffic signals. Develop a method to use a combination of Impact analysis software (communityViz), travel demand model, and Synchro to analysis the impact of developments on key intersections

Examples Found

City of Palo Alto California - Traffic Access and Circulation Memo For projects that are anticipated to generate less than 50 net new peak hour vehicle trips, a traffic impact analysis is not typically required. These projects are considered as relatively small and would generate an insignificant amount of traffic relative to the local street network (i.e., they would not have the potential to result in direct, indirect, or “considerable” contributions to cumulative impacts). In turn, a “Traffic Memo” is typically required to document the estimated number of peak hour project trips, and to identify necessary safety and access improvements at project driveway points. A traffic memo will typically include:

- A Trip Generation analysis that verifies the project would conservatively generate less than 50 AM or PM peak hour trips on a typical day. If a local street is anticipated to be affected by potential cut-

through traffic from the project site, then an estimate of the amount of cut-through traffic is typically requested. An analysis of the access driveways, circulation into and out of, and around the project site to ensure any safety concerns are addressed.

- If the project is located at a sensitive intersection, an analysis of the intersection with and without the project may be requested under the existing conditions. Traffic Data for TIAs For the Existing Conditions Analysis, existing traffic counts are used, and are typically required to have been collected within the last 2 years. For Cumulative Future 2035 traffic volumes, the City has historically used a travel forecast model or an assumed growth rate, and the City is now transitioning to use of an updated Travel Forecast Model, as discussed below. For the near-term Background Conditions, trip generation assumptions based on a list of approved or reasonably planned (i.e., “probable future projects” per CEQA Guidelines Section 15130(b)(1)(A)) projects are added to the existing conditions traffic counts to set a near-term baseline condition. projects that will generate less than 400 ADTs or less than 100 peak hour trips per day. A Tier 1

City of Redding California – The city’s TIS guideline does include residential developments (35 or more home or 56 apartment units). The TIS is focused on intersection and warrant analysis does have a roadway segment analysis which covers local streets and residential collectors. The analysis is on the volumes of the road to ensure it is below the standard of 2,000 vehicles per day or 180 peak hour vehicles for local and double the local standard for collectors. There is some intersection spacing analysis required.

Virginia Department of Transportation – Virginia is different since it requires cities to send comprehensive plans and subdivision plans to the state for review and comment. There is a section for under 100 peak hour vehicles that reduces the requirements. The focus is on the major streets level of service and intersection capacity.

Iowa Department of Transportation - Uses traffic impact letter to advise the department of the potential impact of development along a primary highway. The number of trips for the letter is 100 per hour and 500 AADT. The analysis has a good format for a form which is fillable and easy to understand.

York County – Tier 1 documents are for under 100 peak hour vehicles. The conclusion is the best part.

- Describe the impact of the proposed development on the surrounding area and roadway system. Note the percentage of increase over existing traffic volumes that are projected to occur due to traffic generated by the proposed development.
- No non-residential development shall increase the traffic on an existing residential subdivision street with at least 300 ADT by more than 25%.

City of Middleton, Wisconsin – two small study types the first is access location and design review for developments under 50 peak hour trips. Major components are: existing roadway geometrics, planning level capacity analysis, sight distance analysis, access evaluation, and trip generation. The guide is primarily for commercial developments.

Town of Queen Creek, Arizona - The focus is on commercial development but the following excerpt is a good analysis of the purpose and potential impact. Required for all developments so that the level of further study required can be determined. If the peak hour trips are less than 100 with no other negative factors, this will serve as the only traffic impact study document. It shall include at a minimum:

the site location and access points and expected trip generation. The following factors may require additional traffic analysis even if the development generates less than 100 peak hour trips.

- Traffic concerns that currently exist and could be aggravated by the proposed development
- Public concerns regarding the development
- Negative impact on adjacent neighborhoods
- Proximity of site driveways to existing driveways or intersections
- Other local issues that may be present

City of Oregon City, Oregon – The city uses a traffic impact letter for residential developments under 24 units. Outline of letter:

The TAL shall include the following:

1. The expected trip generation of the proposed development including the AM peak hour, the PM peak hour, daily traffic, and other germane periods as may be appropriate, together with appropriate documentation and references.
2. Site plan showing the location of all access driveways or private streets where they intersect with public streets plus driveways of abutting properties and driveways on the opposite side of the street from the proposed development.
3. Documentation that all site access driveways meet Oregon City Private Access Driveway Width Standards.
4. Documentation that all site access driveways meet Oregon City's Minimum City Street Intersection Spacing Standards.
5. Documentation that all new site accesses and/or public street intersections meet AASHTO intersection sight distance guidelines.
6. Documentation that there are no inherent safety issues associated with the design and location of the site access driveways.
7. Documentation that the applicant has reviewed the City's TSP and that proposed streets and frontage improvements do or will comply with any applicable standards regarding the functional classification, typical sections, access management, traffic calming and other attributes as appropriate.