



**DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION  
MEMORANDUM**

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**TO:** All Engineers, Surveyors, and Developers

**VIA:** John A. Cosgrove, Jr., PE, Director of Public Works

**FROM:** Robert White Acting Engineering Division Chief

**DATE:** July 13, 2023

**SUBJECT:** Traffic Impact Analysis Update

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We are pleased to provide you with a copy of the recently updated and adopted guidelines and requirements for conducting a "Traffic Impact Analysis" (TIA) within Calvert County, Maryland. These guidelines are established as a part of the "Calvert Road Ordinance" but will stand independently to that ordinance and may be revised or modified as conditions and practices dictate. The effective date of these updated guidelines will be effective immediately.

Please take a moment to review these guidelines. The requirements contained therein will be required in all submittals to the County. We continue to look forward to working with you and your staff in these matters of traffic operations and safety so important to the citizens of Calvert County.

## Traffic Impact Analysis

A Traffic Impact Analysis (TIA) shall be required for any proposed subdivision, commercial, industrial, or institutional development, which generates 200, 2-way trips per day or generates 20 peak hour "morning or evening" trips on any local or State highway or intersection. This TIA shall include but not be limited to an analysis of the impact of the proposed development on the area transportation system as agreed to by the Director of Public Works or designee. The appropriate level of study is determined by the particulars of the project, the prevailing highway conditions, and the forecasted traffic. When a project's traffic impact to a highway facility can clearly be anticipated without a study and all parties involved are able to negotiate appropriate mitigation, a TIA may not be necessary.

The TIA shall be submitted and approved by the Director of Public Works or designee prior to the Planning Commission's conditional commercial site plan or preliminary subdivision approval, which shall meet the following guidelines:

### A. Preliminary Meeting

The applicant is required to meet with the Director of Public Works or designee and the State Highway Administration (SHA) prior to the preparation of the TIA to determine the scope of the TIA. The following should be discussed at this meeting:

1. The study area including County and State highway facilities.
2. Clarification, justification, and agreement on all assumptions used in the report.
3. Approved preliminary subdivisions and commercial site plans within the study area, which will be included for estimation of background traffic.
4. Future roadway construction/improvements in the area, which may impact the subject site.
5. Approved growth rate to apply to background traffic and to intersection approaches or movements which would be decided at this meeting.

If the applicant fails to comply with the technical requirements and the scope of the study outlined in the preliminary meeting, the applicant will be advised in writing that an addendum is needed. All issues regarding the TIA and the recommended improvements must be resolved prior to receiving preliminary subdivision or conditional site plan approval. If the project is delayed due to Chapter 3 of the Calvert County Code, the Adequate Public Facilities Ordinance requirements, an updated TIA will be required within 6 months prior to final subdivision approval. An updated traffic study will also be required for a commercial or industrial site plan conditional approval if the traffic study data is over "2" years old prior to the developer taking the plan to the Planning Commission. At that time a determination will be made to decide whether additional improvements are warranted to meet Chapter 3 of the Calvert County Code, the Adequate Public Facilities Ordinance.

B. Study Area

The designated study area will be proposed by an Engineering Professional Representative and approved by the Director of Public Works or designee. The study area will include all the existing County and State roads and intersections in all directions from each point of entrance of the site to the first intersection of a minor collector or arterial road as determined by the Director of Public Works or designee to reasonably reflect the impact upon public infrastructure. In the case of a collector road in a Town Center that is presently built to collector road standards as set forth in the Calvert County Road Ordinance then in effect, the road will be designated a collector road for the purpose of the traffic study. The study shall not exceed 2-road miles in all directions, except when a residential development or business or industrial use generates 1,500 or more trips per day. The required study area may be required to be expanded under these conditions. The Director of Public Works or designee may increase or decrease the scope of this study based on professional discretion.

C. Design Year

The design year shall be the expected completion of the project, including actual construction of the project plus any time period added by other APFO constraints. Any changes within the preliminary subdivision plan or commercial site plan approval may be subject to a new TIA, as determined by the Director of Public Works or designee. The project may be analyzed in phases provided the Director of Public Works or designee approves.

A TIA requires updating every 3 years or if the amount or character of traffic becomes significantly different than the original study. As determined by the Director of Public Works or designee, the impact studies shall be prepared for the ultimate design year and build-out of a project. If the build-out schedule extends more than three years, the study will be required to cover the initial three-year build-out in addition to the ultimate build-out. This study will be required to be updated every three years from the date of initial occupancy for residential or commercial uses until the final proposed construction if the actual construction does not meet the proposed ultimate schedule projection. The Director of Public Works or designee will decide if an updated study is required based on the increased volume or character of the traffic within the study area.

D. Traffic Data Requirements

1. Existing Traffic

All existing traffic counts shall be conducted within a 12-month period with an annual growth factor determined by the Director of Public Works or designee prior to submitting the report. This growth factor is based on the average traffic volume of the latest 5-year period SHA Traffic Volume Maps.

- a. The existing traffic consists of a 1-day peak hour, 15-minute interval, 3-hour a.m. and 3-hour p.m. turning movement volume count. Other peak hours (weekend) may be required by the Director of Public Works or designee to determine the significance of the traffic impacts generated by a project.

- b. If a traffic signal is anticipated, a 12-hour, 15-minute interval turning movement volume count is required.
- c. Vehicle counts should be conducted on Tuesdays, Wednesdays, or Thursdays, during the weeks not containing holidays. Vehicle counts should also be conducted in favorable weather conditions.
- d. Seasonal and weekend variations in traffic should also be considered where appropriate (recreational routes, tourist attractions, etc.). School traffic should be a major consideration in the count and additional counts may be requested to include this factor.

## 2. Trip Generation

The estimated trip generation for each land use shall be obtained by utilizing the Institute of Transportation Engineers (ITE) Trip Generation Manual, current edition. The land use code in the manual shall be indicated for each category and agreed upon at the preliminary TIA meeting. The use of local data may be utilized for land uses not compatible to the ITE Trip Generation Manual. When the proposed land used has a limited number of studies to support the trip generation rate ( $r^2 < .75$ ) consultation between the Director of Public Works or designee and TIA preparer is recommended. If a commercial development is proposed, the trip generation volumes should be based on the actual uses if possible and not under the umbrella of general class of uses. No discount for internal trip capture should be allowed to the limited data samples available or when using "general" types of development.

The fitted curve equation shall be used for all trip generation estimates except for land used where the equation is not available, or the Director of Public Works or designee recommends the weighted average rate.

In addition to the peak hour trip generation, the daily trip generation for all uses shall be included in the report. Commercial developments weekend trip generation, and capacity analysis shall be included in the report for a single peak hour if requested by the Director of Public Works or designee. The peak hour trip generation for townhouses shall be calculated by using the residential condominium/townhouse category.

Pass-by trip reduction factors on major or minor arterials may be considered for commercial developments upon concurrence with the Director of Public Works or designee based on TIA rates prior to preparation of the report. Each case will be considered for the possible pass-by trip reduction rate on an individual basis. Pass-by trips are only considered for retail-oriented developments. "Pass-by percentages greater than" the following land use listing will require consultation for acceptance, and justification by the preparer of the study. ITE percentages may be used in lieu of the following:

Recommended Pass-by Percentages		
Land Use		Pass-by%
Shopping Center		
	Larger than 400,000 GLA	20
	100,000 to 400,000 GLA	25
	Smaller than 100,000 GLA	35
Convenience Store		40
Discount Club/Warehouse Store		20
Fast Food Restaurant		40
Sit Down Restaurant		15
Service Station		45
Supermarket		20

\* GLA = Gross Leasable Area

It should be noted that the full number of trips should be shown (and analyzed) at the site driveways pass-by reduction would only affect the amount of traffic at, and "impact" to, non-driveway intersections within the study area.

"If a study is being prepared for an existing use, the trip generation for the expansion should be based on driveway counts for the existing facility."

E. Total Future Traffic Estimates

The documented total future traffic in the report for assessing the impact of a residential subdivision and commercial site plan project shall include:

1. Background traffic consisting of:
  - a. The existing traffic adjusted by a growth factor for the buildout year, based on the past 5-year SHA Traffic Volume Maps.
  - b. The estimated trip generation of all preliminary subdivision plans or commercial site plans within the previous two-year period located within the designated study area.
2. The estimated trip generation to and from the site.

Any approved preliminary plan proceeding to final site plan or final subdivision approval after the 3-year period from date of preliminary subdivision plan approval or conditional site plan approval shall submit a new TIA for consideration, subject to all the provisions of this document. Phased development projects will be required to submit a TIA for each phase of development if the total average daily vehicle trip accumulation of all phases exceeds 200 two-way trips for all the phases approved and/or under review to date or developments which exceed 20 peak hour trips. This is applicable for both commercial and residential development.

#### F. Trip Distribution and Assignment

Trip generation, distribution, and assignment shall be anticipated for the year of the project or phase reaches completed construction. Any of the following methodologies are acceptable for the purposes of trip distribution only after concurrence from the Director of Public Works or designee.

1. Gravity model,
2. Utilization of demographic data,
3. Current directional distribution provided that the land use and transportation system would not change prior to the project build out.

Justifications of the distribution modeling should be discussed at the preliminary meeting with the Director of Public Works or designee. Assignment of traffic to the network shall be in accordance with the percentage distribution and type of transportation facility. The inbound/outbound traffic may not always have similar distributions or assignments. These items shall be discussed and agreed to prior to the preparation of the report.

#### G. Analysis

The capacity analysis shall be performed for all intersections and roadways in the selected network. The analysis shall be in accordance with the methodologies contained in the current edition of the Highway Capacity Manual (HCM). Analysis may be required after consultation with the Director of Public Works or designee. This may include:

1. Weaving areas,
2. Multi- Lane Highways -HCM,
3. Two-lane Highways- HCM,
4. Signalized Intersections -HCM, Traffix, Syncro; and
5. Unsignalized Intersections-HCM.

Unsignalized intersections not meeting the adopted level of service standards may be required to complete a signal warrant analysis.

Critical lane analysis may be requested by the State Highway Administration but is not an acceptable alternative to the HCM analysis.

Progression analysis may be required for an impacted minor collector or arterial road containing two or more traffic signals within a mile. Passer II, Transit 7F, "Syncro" or Highway Capacity Manual (HCM) programs shall be utilized for the purpose of progression analysis.

Gap studies will be required for multi-lane highways at non-signalized median crossovers where the turning movements through the median area exceed 200 vehicles during the am or p.m. peak period. Delays, holding lane capacity, exclusive lanes and adequate median storage should be discussed within the study.

All intersections shall be analyzed for off-site/on-site queuing to determine length of left turn lane and storage area.

An accident review study shall be conducted where 6 accidents have occurred within 1000' on any road segment or 12 accidents have occurred within an intersection area (500' on each leg) over the last 36-month period using the latest SHA data.

The TIA shall include capacity analysis for all identified locations within the study area with and without the proposed development to determine the site's impact and the needed improvements.

#### H. Recommendations

The TIA should provide the nexus between a project and the traffic impacts to a County or State highway roadways. The TIA should also establish the rough proportionality between mitigation measures and traffic impacts. The mitigation measures must be included in the traffic impact analysis, as this determines if a project's impacts can be eliminated or reduced to a level of insignificance. " Delay and v/c ratio will also be considered as a development could increase delay but still maintain the current level-of-service." The TIA report shall include but not be limited to the following recommendations to mitigate the traffic impact on the area transportation system:

1. Widening of roadways, intersections and needed rights-of-way,
2. Access points shall be located and designed in a way to qualify for a traffic signal or otherwise operate at a minimum acceptable level of service without a traffic light,
3. Location of traffic control devices for signalization including a warrant analysis based on the Manual on Uniform Traffic Control Devices (MUTCD) requirements; and
4. Specific off-site and on-site improvements

A TIA without specific recommendations to mitigate negative impacts shall not be considered complete. Reduction of the current level of service is considered a negative impact. The consultant may include roadway improvements proposed by the SHA, County, or other developer only if the projects are funded and scheduled for construction or bonded as part of an Access Permits Agreement for a vicinal development. For a signalized intersection, the acceptable level-of-service must be for each approach in addition to the overall intersection level-of-service.

The consultant must perform a preliminary constructability review of any proposed roadway improvements. The review should consider right-of-way, utility relocations, grading impacts to adjacent properties, etc. If a mitigation proposal does not appear feasible an alternative measure must also be considered.

I. Report

The TIA report should include the following information:

1. Executive Summary,
2. Table of Contents,
3. Introduction: including:
  - a. Explanation of project/purpose of report,
  - b. Area map showing site location,
  - c. Site Plan including all access to local and State highways,
  - d. Vicinity Map showing circulation of all local and State highways,
  - e. Land Use and Zoning; and
  - f. Phasing Plan including proposed dates of project (phase) completion.
4. Existing conditions
  - a. Traffic counts and analysis; and
  - b. Existing lane configuration sketch,
5. Background conditions, without the proposed development, including:
  - a. Annual growth in traffic to build year,
  - b. Traffic generated by other approved developments,
  - c. Background analysis (background traffic = existing traffic + growth in existing traffic+ approved development); and
  - d. Background analysis with approved/funded highway projects.

6. Projected conditions, with proposed development with clearly stated assumptions, including:
  - a. Existing and projected traffic volumes, facility geometry (storage lengths), and traffic controls including signal phasing and multi-signal progression where appropriate;
  - b. Traffic generated by the proposed development (i.e., site generated traffic) at build out, and/or at any significant stage of development including references;
  - c. Total traffic analysis (total traffic = existing + growth + approved development + site generated);
  - d. Analyze total traffic with improvements; and
  - e. LOS and Warrant analysis including existing conditions, cumulative conditions, and full buildout of general plan conditions with and without the project;
  
7. Conclusions/recommendations:
  - a. Explain results of analysis including LOS and appropriate v/c ratios,
  - b. Recommend improvements to mitigate the site traffic impacts including dates of proposed mitigation measures,
  - c. Define responsibilities for impending mitigation measures; and
  - d. Cost estimates for mitigation measures if it is a shared responsibility.
  
8. Appendices:
  - a. Description of traffic data and how it was collected;
  - b. Description of methodologies and assumptions used in analysis; and
  - c. Worksheets used in analysis (i.e., signal warrant, LOS, traffic count, etc.)
  
- J. Exceptions

The Director of Public Works or designee can increase or decrease the scope of work at the preliminary project meeting. A TIA can be required by the Director of Public Works or designee, even if the average trips are less than 200 2-way trips per day or generates 20 peak hour morning or evening trips on any local or State highway or at any intersection based on mitigating circumstances, field observations, or professional judgement.