

Travis County



*Guidelines for
Transportation Assessment (TA)*

Effective September 1, 2023

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1. Background

The purpose of the Guidelines for Transportation Assessment (TA) is to provide development and transportation consultants with the framework and guidance to prepare TAs for review by Travis County. These Guidelines also outline the basic information that must be contained in a TA.

As of September 1, 2023, developments have the option of either providing payment of 50% of Rough Proportionality or conducting a Transportation Assessment (TA) that identifies mitigation improvements with a monetary cap of 40% of Rough Proportionality.

The benefit of conducting a TA is that a TA assesses the transportation and safety aspects of a proposed development that has the potential of generating new vehicular trips and provides an analysis of how new developments and re-developments change the travel patterns in and adjacent to a development site.

A TA will:

- A. Be signed and sealed by a Texas licensed professional engineer with demonstrated experience in traffic engineering.
- B. Provide information on the projected traffic generated by a proposed development.
- C. Assess the effects of the proposed development on the surrounding transportation system and recommend measures and/or improvements to mitigate adverse effects on traffic operations caused by said development.
- D. Identify operational, geometric, and safety impacts, then recommend actions to address these concerns.
- E. Include, but not be limited to, capacity analysis, safety and geometric analysis, and conceptual plans or designs to support recommended mitigations.

The TA will be valid for a period of up to five years, from the date sealed by the preparing engineer.

2. Authority and Determination

According to Chapter 482, Section 482.301(b) of the Travis County Development Code:

“In order to calculate the effect on the County roadway network, an engineer's calculations, outlining the nature of the project and any requests for the use of Other Standards from the design standards with justification for such applications, will be utilized to calculate the amount of rough proportionality to the transportation system. A [TA] may be completed for developments that generate traffic volumes in excess of 2,000 vehicles per day in order to identify specific possible improvements and associated costs.”

An applicant or applicant's engineer shall submit a Travis County TA Determination Worksheet (available on the TNR website at <https://www.traviscountytx.gov/tnr/public-works/tia-guidelines>) to Travis County TNR for review in the very early stages of the development submission process. The Travis County TA Determination Worksheet shall contain trip generation information and details of the entire proposed development including future phases. Individual development phases, or portions of parcels, will not be considered as separate developments. The TA Determination Worksheet shall include, but not be limited to:

- A. Project location

- B. Land use
- C. Access points
- D. Density
- E. Phases of site construction
- F. Timeline for occupancy.

The expected number of vehicular trips generated by a project will be determined by the latest edition of ITE's Trip Generation Manual as adopted by Travis County. If there is not an applicable land use code in the ITE Trip Generation Manual to determine the number of trips, an alternative method to determine the anticipated number of trips must be accepted by Travis County.

Travis County Development Services Division (DSD) staff will review the TA Determination Worksheet with TNR Road and Bridge Engineering Division and, after approval, direct the applicant to submit a Draft TA Scope to the Travis County Road and Bridge Engineering Division for review.

3. Projects Warranting a TRANSPORTATION ASSESSMENT - General TA Scope

3-A. Purpose

A TA scope determines the extent of traffic analysis. The General TA Scope guidelines will identify objective criteria to determine the study area and the analysis required.

If after review of the TA Determination Worksheet, a developer elects to complete a TA, the TA scope shall be submitted to the Road and Bridge Engineering Division and documented in MyPermitNow (or permit tracking database currently used by the County) when a permit number exists. The Road and Bridge Engineering Division will review the completed Draft TA scope, then issue an approval to proceed if the guidelines have been followed.

These are general guidelines for preparing and submitting the scope of a TA. However, there may be exceptions based on the development's land use and location. Engineering judgement will be applied where appropriate.

3-B. Submitting a TRANSPORTATION ASSESSMENT Scope

If a TA is initiated, a Draft TA scope shall be submitted to the Road and Bridge Engineering Division for review. In addition to the Draft TA scope, the following background information on the development shall be provided if applicable for the development:

- A. Project Location Map.
- B. Proposed Site Plan.
- C. Land uses, size, and intensity of the proposed development.

- D. Phases of development and timeline/opening year along with the operating conditions for study (e.g. existing, forecasted, build, etc.).
- E. Estimated trip rates, peak hour trips, and daily trips generated by the proposed development.
- F. Proposed internal capture rates where applicable with appropriate supporting documentation/calculations and/or estimates considering size, location, and type of proposed development.
- G. Proposed pass-by trip reduction rates where applicable with appropriate supporting documentation/calculations and/or estimates considering size, location, and type of proposed development.
- H. Proposed transit trip reductions with appropriate supporting documentation/calculations and/or estimates considering location and type of proposed development as well as existing and proposed transit service adjacent to the proposed development.
- I. Proposed background growth with appropriate supporting documentation/calculations considering location and type of proposed development.
- J. List of affected Municipal and TXDOT roadways.

Once this information has been received, a Final TA Scope, signed by the appropriate review agencies will be provided.

3-C. Intersection Capacity Analysis Scoping Guidance

Each proposed development will uniquely impact the transportation system due to their varying sizes, mixes of land uses, orientation to adjacent streets, etc. Intersections that are anticipated to be impacted by the development should be selected for analysis.

3-D. Scope Submittal Guidance and Scoping Meeting Requests

Following the general guidance described herein, a comprehensive draft TA scope shall be submitted for review and approval by the Road and Bridge Engineering Division. Upon review and approval, the Road and Bridge Engineering Division shall send a signed copy of the approved TA scope to the applicant's engineer.

Upon receipt of the approved TA scope, if the applicant's engineer has any questions regarding the scope, they should communicate with the Road and Bridge Engineering Division or request a meeting. TAs received without an approved scope will not be accepted or reviewed by the Road and Bridge Engineering Division.

3-E. Duration of Scope Validity

Given the growth being experienced in the Travis County Area, TA scopes will expire with inactivity. The following will cause a scope to be considered invalid and require a new scope:

- A. When a Scope signed by the Applicant's Engineer has not been returned within five (5) business days of the date on the scope.
- B. When the first submission for a proposed development with a signed scope has not been received electronically within one (1) year of the date on the signed scope.
- C. When a resubmission to an issued completeness check memorandum has not been received electronically within two (2) months of the date on the completeness check memorandum and the signed scope is over one (1) year old based on the date on the signed scope.
- D. When a resubmission to an issued technical review memorandum has not been received electronically within one (1) year of the date on the technical memorandum.

If any of the above occurs, the Scope is considered invalid and expired. When this occurs the Applicant or Applicant's Engineer can request rescoping.

3-F. Joint Scopes with other Jurisdictions

Projects that impact or take access from another Jurisdiction's roadway network will be reviewed/discussed with other regulatory agencies (TXDOT, Municipality, etc.). If, as part of this review/discussion, these agencies determine that a TA is required, the process for scoping and preparing the TA will follow these guidelines. If it will be reviewed by the County and other regulatory agencies then a Joint Scope, signed by each jurisdiction, will be prepared.

4. TA Report Submittals, Contents, and Structure

The cover sheet of all TAs must include the Travis County MyPermitNow (or permit tracking database currently used by the County) permit number (if available), the City of Austin Single Office Number (if applicable), City of XXX permit number, and the owner's name and contact information (e-mail and phone number)

All TAs submitted must be signed and sealed by a professional engineer licensed in the state of Texas. Submissions without this seal will not be reviewed.

All TAs submitted must, at a minimum, contain the following sections.

4-A. TRANSPORTATION ASSESSMENT Submittal Requirements

To be considered a complete submittal, the items identified in the approved scope must be provided. Reports submitted will be checked for completeness prior to the technical review. During the completeness check, the reviewer will check for the inclusion of necessary items for the full review in the order as prescribed by the TA guidelines. If any one of the items are not included, omitted (without justification), or wrongly placed in the TA, the TA will be considered incomplete and will not be included in the Review Queue. The location of each item in the Appendix shall be clearly specified in the main section of the TA.

Reports will not be reviewed until a complete submittal is received. The applicant is tasked to provide all necessary and required information at the time of the submittal.

If a report does not include an item required by the approved scope, the author shall identify this omission in the transmittal letter/memo with an explanation of why an item was omitted. Failure to include this identification will cause the report to be considered incomplete.

Incomplete submittals will not be reviewed and may be retrieved if desired by the Applicant. Subsequent submittals addressing comments are considered stand-alone submittals and must include all information including but not limited to complete report with all appendices, Excel Spreadsheets, Synchro files etc. Partial submittals are not accepted. All exhibits, maps and figures in the report or the appendix must be presented on 11"x17" sheets.

In addition, the following items must be provided:

- A. Existing 24-hour traffic volumes with peak hour calculations, turning movement counts during peak hours, and any existing traffic sign timing plans
- B. Projected traffic generation and distribution maps.
- C. Projected traffic volumes, growth rates, and turning movement counts
- D. Existing Level of Service Analysis of all intersections and existing driveways identified in the scope. Proposed Level of Service Analysis of all intersections and proposed driveways using projected traffic volumes and growth rates based on build out year.

- E. The LOS shall be maintained to LOS D or better in the mitigated conditions. If the Level of Service (LOS) is LOS F in the No Build conditions, mitigations shall be proposed to keep the level of service within 20 seconds of the delay shown in No Build conditions.
- F. List of mitigation improvements required to bring LOS to a D or better along with cost estimates for identified improvements and pro-rate share cost based on impact from the development.

4-B. Executive Summary

This section will contain a brief overview of the purpose of the study, location of the site, site description, site access, trip generation, trip distribution, and land use. The key results of the study should be presented, including principle findings, conclusions, identified improvements for construction, and financial contribution.

4-C. Table of Contents

A table of contents must be provided that identifies sections of the TA along with a list of tables, figures, and appendices.

4-D. Introduction and Background

This section will contain a brief overview of the purpose of the study, location of the site, land use, trip generation, and the type of project supported by the study. Other related studies/applications associated with the proposed development site are also useful information. The study methodology should also be summarized.

All maps must be to scale, and all maps must be clear and shall be presented on 11x17" sheets. The following maps must be included in this section (not in an appendix):

- A. Site Location map which includes adjacent roadways.
- B. Site plan and site land use, including site access roadways or driveways (updated with each submission) showing the driveway detail (lane configuration) and type (full-purpose/ right-in right-out/ exit only/ entry only).

If any of the required Maps are not provided, the reason for the omission must be documented in this section.

4-E. Existing Operating Conditions

This section must contain a detailed overview of the available transportation infrastructure surrounding the proposed development site, as well as identify existing issues and concerns. This section shall include the following components when applicable.

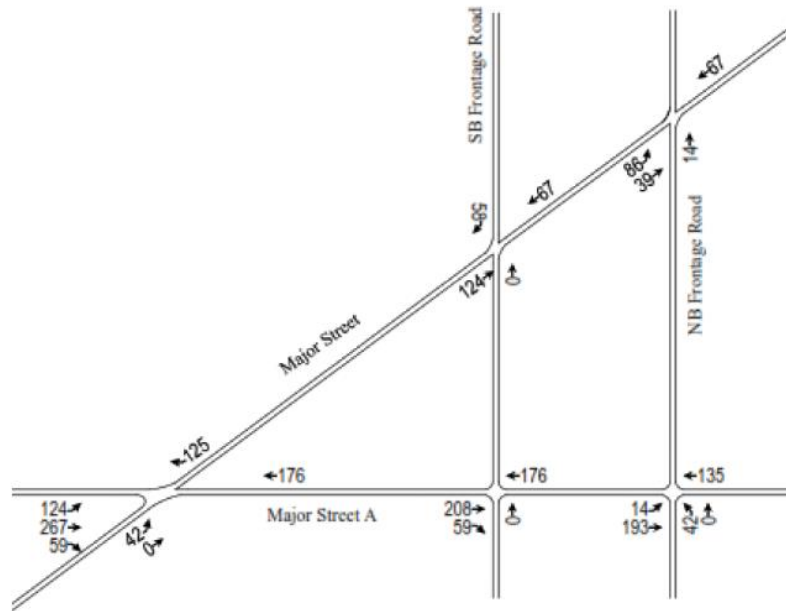
- A. Detailed description of the transportation system with figures outlining speed limits, parking restrictions, bus stops, directional signs, pedestrian signage, surrounding land uses, driveways, distance of driveways to adjacent intersections, railway crossings and any other information that may affect the intersection performance during the selected analyses periods. Data collected through site visits should be presented and described. It is advisable to include photos outlining particular issues (e.g., closely spaced driveways, non-standard intersections, etc.). Functional classification of existing roadways should be presented in this section. Existing roadway classifications are shown on the Travis County GIS Map. (https://geocortex.traviscountytexas.gov/Html5Viewer/index.html?viewer=TNR_Web_Map_View public.TNR_Web_Map). If Roadways are included in the Travis County Blueprint, a description of the proposed roadway and its classification should be presented in this section. This information shall be summarized as follows:

- a. Existing Roadways with a summary table (Sample provided):

Table 2.1 - Existing Roadways				
Street Name	Functional Class	Typical Section	Posted Speed	AADT
FM 812	Minor Arterial	Two-lane undivided	60 mph	18,161
Toll 130 NB Ramp	Major Collector	Two-lane undivided (one-way)	55 mph	1,484
Toll 130 SB Ramp	Major Collector	Two-lane undivided (one-way)	55 mph	2,071
FM 973	Minor Arterial	Two-lane undivided	55 mph	6,681

- b. Existing Intersections
- Signalized
 - Unsignalized

- B. Traffic volumes are to be presented graphically in the form of maps (11"x17") in this section (provide Excel printouts of calculations in the appendix). Daily traffic volumes are to be presented in this section when relevant. Daily traffic volumes can be obtained from actual counts or estimated using proper expansion factors if appropriate and accepted. Traffic volume maps and tables samples are provided below.



- C. Short-term changes in the surrounding area, unrelated to the site are to be documented in this section and reflected in the analyses. The consultant is expected to do due diligence in their review of system changes. If the scheduled date of the change falls within the timeframe of the study of the application, changes must be reflected in the study.

4-F. No-Build (Forecasted) Operating Conditions

This section is to provide a detailed overview of the expected transportation infrastructure in the area surrounding the proposed development site in the build year or years. This section shall include the following components when applicable:

- A. Future background operating conditions and changes to the intersection and roadway configurations, unrelated to site improvements, shall be provided in both descriptive and, if significant, graphic forms. Traffic may be re-routed if it is projected future roadway patterns would alter traffic patterns.
- B. When establishing background traffic volumes for the build year, the applicant's consultant should calculate annual growth rate and consider approved/accepted projects that will impact the study area. The growth rate can be determined from comparing counts from previous years. Calculations performed to obtain the background growth shall be included in the report and shown in the spreadsheets (with calculation formulas). Growth rates shall be rounded up to the next 0.5%. Background traffic volumes must include traffic volumes from other accepted (but not-yet built) developments. Documentation for background developments shall be included in the Appendix.

- C. Traffic volumes for each background projects shall be provided separately and the estimated trips for each background project shall be presented both graphically in the form of maps and in tabular format in this section (provide Excel printouts of calculations in an appendix). This information needs to be provided for existing traffic grown to build year, each background project and total No-Build volumes. Excerpts from the Background projects (including the cover sheet) shall be provided in the Appendix. Daily traffic volumes are to be presented in this section when relevant. Daily traffic volumes can be obtained from actual counts or estimated using proper expansion factors if appropriate and accepted. For background projects, these site trips don't end at the point their study did, they continue beyond. Therefore, these background site trips must be distributed to the limits of the scoped study area. The trip distribution for the background projects should be used if provided and remains appropriate given current area conditions. When the background project does not have a trip distribution or the trip distribution is no longer appropriate, the distribution prepared for the scoped project can be applied to the background projects. When this is done, it must be justified and documented in the TIA. Similarly, if a different distribution is more appropriate, this too needs to be justified and documented.

4-G. Trip Generation and Distribution

This section contains a detailed discussion of methodology used in determining trip generation including a discussion on how the ITE trip generation methodology was applied and distribution throughout the roadway network and between individual site driveways. All site access must be identified.

Site traffic reductions must be estimated based on reductions as approved in the TA scope. All calculations and assumptions used for internal capture and pass-by trips must be provided. Site traffic distribution and assignment must be completed based on the approved TA scope. Trip distribution figures must be included in this section (not in an appendix) that show both percentage and volume distributions. In addition, provide the ITE Manual pass-by trip table in the appendix of the report and to discuss the selected rates considering the proposed land uses in the body of the report.

Trip generation percentages and site generated volumes for each phase of the project shall be provided separately and shall be presented graphically in the form of maps in this section (provide Excel printouts of calculations in an appendix).

4-H. Build (Site + Forecasted) Operating Conditions

This section is meant to provide a detailed description of the proposed development itself including land uses, densities, access points, and any other details that may have an

impact on the transportation system. Build Conditions traffic volumes are obtained from adding the site-generated traffic volumes to the No-Build traffic volumes.

Traffic volumes are to be presented in both graphic and tabular form. Daily traffic volumes are to be presented in this section when relevant. Daily traffic volumes can be obtained from actual counts or estimated using proper expansion factors if appropriate. Traffic volume maps must be provided in this section (not in an appendix).

4-I. Intersection Capacity Analysis

The capacity analysis for each intersection/site access and period as outlined in the approved TA scope must be included in this section.

A. Study Scenarios for Intersection Capacity Analysis:

Capacity analysis must be completed for the following scenarios. Additional peak hours, such as a midday or special event or weekend peak hour, may be required if the proposed development would generate trips during non-standard periods and will be identified in the approved TA scope.

- a) Existing Conditions – AM and PM Peak Hours.
- b) No-Build (Forecasted) Conditions – AM and PM Peak Hours.
- c) Build (Site+Forecasted) Conditions without Mitigation – AM and PM Peak Hours.
- d) Mitigated (Build with Mitigations) Conditions – AM and PM Peak Hours.

Additional operating conditions should be analyzed for long term projects that will be constructed in phases over a period of five years or more. Improvements should be identified in the phase for which they are needed. If not enough is known about the proposed project schedule and land use to estimate proposed phases of construction, TA updates will be required with site plans in addition to estimating the proposed phasing of development.

A description of the methodology and software (Synchro) used to complete the assessment must be included. Signal timing plans must be obtained from appropriate agency that maintains the signal and must be used for the analyses. Timing sheets shall be included in the Appendix of the TA. In the event of a proposed or planned traffic signal, a reasonable signal timing plan should be provided. All intersections must be modeled in one Synchro file (including unsignalized intersections). SIDRA software should be used for any capacity analysis at a roundabout. Synchro files must be in real world coordinates.

B. Peak Hour Factors:

Peak Hour Factors (PHF) used shall be by approach and shall be based on the Traffic counts conducted. The use of the default of 0.92 shall not be allowed except for the following:

- When a new intersection is created or proposed.
- When a new approach is created or proposed.
- When a new movement is created or proposed. However, the remaining movements shall use the PHF from the traffic counts conducted.
- When the volume on an approach is increased by more than 100% by the proposed site traffic.

C. Heavy Vehicle percentages:

The truck percentage used in the analysis shall be based on the traffic counts acquired for the analysis. Using the 2% default would follow the same guidance as PHF above. Use of intrinsic data from developer's other truck-centric operations for truck volume & arrival/departure times shall be considered for build conditions and shall be thoroughly justified and documented.

D. Results for Intersection Capacity Analysis:

The results from the capacity analysis for all the scenarios will include, but not be limited to, the following:

- a) Intersection Level of Service (LOS) by individual movements at an intersection.
- b) Volume/Capacity (v/c) ratio by individual movements at an intersection.
- c) Delay (veh/sec) by individual movements at an intersection.
- d) Overall intersection LOS.
- e) A Sample LOS Table is provided in section 4-J.F.
- f) Queueing analysis with 95% queue length by movements, vs existing storage bay and/or distance from adjacent intersection(s); and

The Highway Capacity Manual (HCM) capacity analysis results must be presented in a single tabular format for all the scenarios noted. Previous versions of the HCM should be used if the latest version of the HCM is unable to analyze intersection operations and documented in the report where this is the case. The HCM methodology used for a given intersection must be consistent for that intersection for all analysis periods. Synchro Lane/Volume/Timing reports should be presented for capacity purposes only if Synchro is unable to analyze intersection operations using HCM methodology. Document in the report where this is the case.

When results obtained from analyses completed in Synchro show poor performance, the consultant shall validate the results with observations in the field for existing conditions or SimTraffic simulation for post development/build

conditions. When this occurs, discussion and documentation must be included in the report.

Poor performance is defined by LOS E or F, and/or Volume/Capacity ratio over 0.95 for individual movements or overall intersection. Poor performance may also include extensive queues for movements that extend beyond available storage/deceleration length or blocks other travel lanes or site driveways, or extensive queues on through movements that extend past and blocks adjacent intersections. If No-Build Conditions are LOS D or better and Volume/Capacity ratio less than 0.95, Mitigated (Build w/ Improvements) Conditions must maintain LOS D or better and Volume/Capacity ratio less than 0.95. Any extensive queues blocking travel lanes, adjacent intersections and/or driveways expected in the Build Conditions must be mitigated to address the potential safety concern.

Definition of poor performance noted above is provided as a general guidance for TA preparation. It is understood that development projects vary in nature, scale, location, and impacts on transportation infrastructure. The purpose is to provide a general guidance on the acceptable traffic parameters in the TA. But it should be noted that each development project will be assessed on a case-by-case basis considering nature, scale, location, and impacts of the proposed development on transportation infrastructure.

E. Special Considerations for phased developments:

- a) For projects with more than one phase of development, signal retiming should be assumed in the No-Build Condition This does not apply to the first phase.
- b) Improvements should not be carried over in the No-Build or Build Conditions of future phases unless there is documentation provided that they will be constructed by the time of the future phase. Improvements should only be included in the Mitigated (Build w/ Improvements) Condition.
- c) Improvements must be identified in the phase for which they are needed.
- d) Improvements by other developments or by governmental agencies can only be included if there is certainty that the improvements are funded and will be constructed/completed for the specified analysis period.

e) Example of Phasing Approach:

Phase	Scenario	Trips	Mitigation Pro-Rata	Roadway network
Phase 1	NB	existing+BG		NB
	Build	E + BG + Ph1		NB + DWY
	Mit	E + BG + Ph1	Ph1/Build	NB + DWY + PH1 Mit
Phase 2	NB	E + BG + Ph1		NB + PH 1 DWY
	Build	E + BG + PH1 + Ph2		NB + PH 1 DWY + PH 2 DWY
	Mit	E + BG + PH1 + Ph2	Ph2/Build	NB + PH 1 & 2 DWY + Ph 2 Mit*
*Ph 2 Mitgation may include similar or the same measures utilized in the Ph 1 analysis.				

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F. Presentation:

Results of Intersection Capacity Analysis must be presented in tabular format, displaying the following for each movement at an intersection for each analysis condition.

- Delay
- Level of Service
- v/c ratio
- 95 percentile queue
- Bay length (storage plus deceleration)

The cells in the table must be highlighted for the following conditions:

- At an unacceptable level of service (LOS E or F).
- When the V/C ratio is greater than 0.95.
- When the queue length is unacceptable.

Here is an example of a sample capacity analysis table.

INTERSECTION	MOVEMENT	2021 Existing PM					2024 No Build PM					2024 Build-Out PM					2024 Mitigated PM				
		95% QUEUE (ft)	TURN BAY LENGTH (ft)	V/C RATIO	DELAY (s)	LOS	95% QUEUE (ft)	TURN BAY LENGTH (ft)	V/C RATIO	DELAY (s)	LOS	95% QUEUE (ft)	TURN BAY LENGTH (ft)	V/C RATIO	DELAY (s)	LOS	95% QUEUE (ft)	TURN BAY LENGTH (ft)	V/C RATIO	DELAY (s)	LOS
1: Wells Branch Parkway & Mopac SBFR	EBT	146	-	0.93	72.5	E	386	-	1.00	82.3	F	396	-	1.01	85.4	F	330	-	0.75	61.8	E
	EBR	125	200	0.63	54.5	D	158	200	0.67	55.7	E	175	200	0.69	56.3	E	199	200	0.63	53.2	D
	WBL	26	-	0.46	1.8	A	36	-	0.50	2.4	A	47	-	0.52	2.9	A	36	-	0.54	4.0	A
	WBT	2	-	0.31	0.3	A	3	-	0.33	0.6	A	3	-	0.33	0.7	A	18	-	0.50	0.7	A
	SBL	231	475	0.75	57.5	E	271	475	0.84	60.5	E	326	475	0.95	65.4	E	309	475	0.89	60.0	E
	SBT	301	-	0.87	57.9	E	332	-	0.92	59.0	E	332	-	0.92	59.0	E	307	-	0.86	55.7	E
	SBR	100	550	0.61	51.2	D	150	550	0.68	52.7	D	154	550	0.68	52.8	D	91	550	0.60	49.1	D
2: Mopac NBFR & Wells Branch Parkway	Intersection	-	-	0.64	40.4	D	-	-	0.63	43.3	D	-	-	0.71	41.5	D	-	-	0.59	37.7	D
	EBL	14	-	0.49	2.4	A	14	-	0.52	2.1	A	15	-	0.52	2.6	A	18	-	0.49	2.6	A
	EBT	10	-	0.34	0.5	A	12	-	0.37	0.8	A	13	-	0.39	1.0	A	18	-	0.55	3.8	A
	WBT	412	-	0.96	74.7	E	462	-	1.03	89.3	F	484	-	1.07	97.5	F	452	-	0.98	69.6	E
	WBR	209	225	0.69	57.2	E	261	225	0.77	61.9	E	288	225	0.79	64.3	E	239	225	0.72	56.6	E
	NBL	388	500	0.55	40.2	D	416	500	0.69	41.4	D	416	500	0.69	41.4	D	431	500	0.75	50.1	D
	NBT	500	-	0.81	42.8	D	539	-	0.86	44.2	D	539	-	0.86	44.2	D	584	-	0.93	54.5	D
3: Wells Branch Parkway & Merrittown Road	Intersection	-	-	0.76	42.3	D	-	-	0.85	48.6	D	-	-	0.90	54.4	D	-	-	0.80	44.9	D
	EBL	28	175	0.28	12.3	B	33	175	0.32	13.3	B	35	175	0.33	13.7	B	39	175	0.49	7.8	A
	EBT	0	-	0.00	0.0	A	0	-	0.00	0.0	A	0	-	0.00	0.0	A	117	-	0.38	3.9	A
	WBL	0	175	0.01	9.6	A	0	175	0.00	9.9	A	5	175	0.06	10.5	B	31	175	0.13	7.0	A
	WBT	0	-	0.00	0.0	A	0	-	0.00	0.0	A	0	-	0.00	0.0	A	302	-	0.58	10.8	B
	WBR	0	-	0.00	0.0	A	0	-	0.00	0.0	A	0	-	0.00	0.0	A	0	-	0.00	10.8	B
	SBL	250	-	1.53	379.9	F	308	-	2.02	611.5	F	353	-	2.80	995.1	F	60	-	0.80	42.2	D
4: Renaissance Court & Wells Branch Parkway	Intersection	-	-	N/A - Unsig	N/A - Unsig	N/A - Unsig	-	-	N/A - Unsig	N/A - Unsig	N/A - Unsig	-	-	N/A - Unsig	N/A - Unsig	N/A - Unsig	-	-	0.52	9.4	A
	EBL	0	-	0.01	10.0	A	0	-	0.00	10.3	B	3	-	0.04	10.8	B	3	-	0.04	10.8	B
	EBT	0	-	0.00	0.1	A	0	-	0.00	0.0	A	0	-	0.00	0.5	A	0	-	0.00	0.5	A
	EBR	0	150	0.00	0.0	A	0	150	0.00	0.0	A	0	150	0.00	0.0	A	0	150	0.00	0.0	A
	WBL	8	150	0.10	10.7	B	10	150	0.11	11.3	B	10	150	0.11	11.3	B	10	150	0.11	11.3	B
	WBT	0	-	0.00	0.0	A	0	-	0.00	0.0	A	0	-	0.00	0.0	A	0	-	0.00	0.0	A
	NBL	55	-	0.51	77.7	F	73	-	0.64	110.2	F	98	-	0.86	191.2	F	98	-	0.86	191.2	F
5: Renaissance Court & Wells Branch Parkway	NBT	55	-	0.51	77.7	F	73	-	0.64	110.2	F	98	-	0.86	191.2	F	98	-	0.86	191.2	F
	NBR	55	-	0.51	77.7	F	73	-	0.64	110.2	F	98	-	0.86	191.2	F	98	-	0.86	191.2	F

4-J. Mitigated (Build w/ Mitigations) Operating Conditions

This section is to provide detailed description of operating conditions with identified improvements. Improvements should be identified for each phase of the development, if applicable. An explanation of why the selected mitigations were chosen and others considered shall be included in this section.

- All roadway improvements used in the analysis should be identified in this section.
- Improvements should be identified for each phase of the development, if applicable.
- For each proposed signalized intersection provide a brief narration of the signal timing and phasing plan. Note that split phasing is not allowed at County maintained intersections.

Mitigations identified should not negatively affect safety and identified improvements should not significantly degrade another movement.

4-L. Turn Lane Analysis

The turn lane analysis for site driveway/roadways as outlined in the approved TIA scope must be included in this section.

- A. Determination of the need for deceleration lanes into the development based on roadway speed, proposed land use and safety considerations.
- B. Turn Lane Analysis for Travis County roadways will be based on NCHRP Report 457 spreadsheets for the appropriate analysis period. This section must include a discussion of the analysis and the results in addition to a discussion of the length of the turn lane when a turn lane is required. Copies of the NCHRP spreadsheets must be included in the Appendix and be provided in electronic format. Considerations must be given to existing and proposed roadway cross-sections, including those presented in the identified adoptive plans.
- C. Turn Lane analysis for non-Travis County roadways shall follow the requirements of the maintaining jurisdiction. In instances where the maintaining jurisdiction does not have a standard, the NCHRP Report 457 spreadsheets shall be followed.
- D. Results shall be provided in tabular format. An example is provided below:

Table 15: NCHRP Report 457 – Right-Turn Bay Warrant Analysis

Variable	Braker Lane & Driveway 1	
	AM Peak	PM Peak
Major-Road Speed, mph:	50	50
Major-Road Volume (One Direction), veh/h;	278	939
Right-Turn Volume, veh/h:	27	103
Limiting Right-Turn Volume, veh/h:	114	23
Guidance for Determining the Need for a Major-Road Right-turn Bay	Not Warranted	Warranted

4-M. Additional Analysis

Additional analysis, listed below, must be included in its own separate section if required by the scope or if it is determined as part of the analysis that there is a need or safety concern. Each section must include all relevant information necessary for review.

- A. Queuing Analysis showing adequate storage/deceleration length. The length of the turn lane must be based on the 95% queue length shown in the intersection analysis plus the deceleration length recommended by AASHTO.
- B. Sight Distance
- C. Signal Warrant Studies
- D. Safety/Geometric Review
- E. Access Management

Results shall be provided in tabular format. Limited examples are provided below:

Sample Queuing Analysis summary table

Intersection		MPH	Req Decel Length (ft)	Direction	Existing Turn Bay Total	Distance from adjacent intersection	Max AM 95th% Queue Length (ft)	Max PM 95th% Queue Length (ft)	Required Turn Bay Length	Proposed Turn Bay Length
101	Example St 3 & 3rd St	30	150	EBL						
				EBT						
				EBR						
		35	205	WBL						
				WBT						
				WBR						
		50	415	NBL						
				NBT						
				NBR						
				SBL						
				SBT						
				SBR						

Sample Intersection Sight Distance Analysis summary table

Location	Case	Design Speed (mph)	Austin TCM Design Sight Distance (ft)	AASHTO Design Sight Distance (ft)	Measured Sight Distance (ft)
Braker Lane and Driveway 2	Looking West	50	1000	480	>1000
	Looking East	50	1000	670	>1000
Braker Lane and Driveway 1	Looking West	50	1000	480	>1000

Sample Signal Warrant Analysis summary table

Warrant Met? (Y/N)			
Warrant 1	Warrant 2	Warrant 6	Warrant 7
Existing (2021) Conditions			
Y	Y	N	N
No-Build (2024) Conditions			
Y	Y	N	-
Build-Out (2024) Conditions			
Y	Y	N	-

4-N. Recommendations, Mitigations and Conclusions

Improvements must be identified and recommended that mitigate the site's impact on the transportation network. The identified improvement, cost estimate and a pro-rata contribution (see appropriate section of these guidelines for more information) must be provided in tabular format. An example is provided below.

Location	Improvement	Total Cost	Pro-Rata Share (%)	Justification for Pro-Rata	Pro-Rata Cost
Example Street and 1 st Street	WBLT Turn lane (200')	\$250,000	48%	WBLT Volume and Queue Length	\$120,000
	SBRT Turn lane (100')	\$150,000	25%	SBRT Volume and Queue Length	\$37500
	Signal Timing Mod	\$5,000	100%		\$5000

The calculations used to determine the pro-rata share must also be included and shown in the appendix and provided in the Excel spreadsheets. Exhibits of the proposed improvements must be presented here. Either planning-level or itemized cost estimates for each improvement must be provided with supporting documentation.

Exhibits must contain:

- Required, available, and to-be-dedicated ROW (approximations shall be provided if survey is not available).
- Lane configurations.
- Signage and Striping.
- Driveway Spacing (dimensioned).
- Relevant items (i.e. ROW width, lane widths, turn bay lengths, etc.) must be dimensioned for roadways and driveways.
- ROW needs shall be identified, and clarification shall be provided indicating if the ROW will be dedicated by the Applicant.

Identified improvements must be prioritized based on safety considerations, the development's needs and impacts, feasibility of construction, as well as the review agencies priorities. Based on the pro-rata share, improvements should be identified for

construction. When construction of the improvement is not desired by the review agency, fiscal may be posted to be used for the improvements identified in the TA.

4-O. Cost Estimates

Cost estimates for improvements identified in the TA, for which the applicant is to construct, may be a high level, lump-sum estimate to determine the pro-rata share of needed improvements. When the applicant has been required to construct an improvement and the ultimate construction cost differs or exceeds the estimated cost of the improvement(s), the obligation will remain with the Applicant.

Cost estimates for improvements identified in the TA for which fiscal will be posted shall be itemized and include all costs reasonably expected to design, permit, and construct said improvements. These include, but are not limited to, the following:

- A. Engineering costs
- B. Contingency
- C. Inflation based on ENR averages
- D. Mobilization costs
- E. Right-of-Way preparation
- F. Traffic control
- G. Concrete and asphalt excavation and/or construction
- H. Traffic signal equipment removal, relocation, and/or installation
- I. Traffic signal re-timing
- J. Traffic signs and markings
- K. Sidewalks and curb ramps
- L. Pavement resurfacing
- M. Drainage/utility modifications
- N. Erosion/Sedimentation Control
- O. Restoration

The cost estimates for the improvements shall be for the year in which they are intended to be built. The cost increase to the future year must be based on the Engineering News Record (ENR) construction cost index for the past 10 years and documented.

4-P. Appendices

Supporting documentation, data, and calculations are to be included in the report appendix. Each section of the hard copies must be tabbed. Calculations associated with each section should be included in the appropriate section. The sections will include:

- A. TA determination worksheet
- B. TA scoping document
- C. Traffic Counts
- D. Background Projects

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- E. Signal Timing Sheets
- F. Trip Generation Calculations
- G. Traffic Volume Calculations
- H. Synchro Outputs
- I. Turn Lane Analysis
- J. Queuing Analysis showing adequate storage/deceleration length
- K. Sight Distance
- L. Signal Warrant Studies
- M. Safety/Geometric Review (when required by the scope)
- N. Access Management (when required by the scope)
- O. Cost Estimates
- P. Other Appendices required in the scope or relevant to the study. These shall be separate appendices and shall be named so that they are discernable.

5. Technical Guidelines and Requirements for TRANSPORTATION ASSESSMENT Reports

5-A. Trip Generation Rates

In assessing the trip generation potential of a site:

- A. The latest edition of the Institute of Transportation Engineers' (ITE) Trip Generation Manual is used as a guide. While determining whether to use average trip rates or trip rates from derived equations included in the Trip Generation Manual, the guidance provided by ITE shall be used.
- B. Trip generation rates from local trip generation studies at proxy sites (sites with similar land use, intensity, surrounding network characteristics, AM/PM peak flow direction, etc.) may be proposed to the Road and Bridge Engineering Division for review, discussion and agreement to use in a TA. The trip generation study must be completed during the times of day and days of the week in which the analyses will be completed and must follow ITE guidelines.
- C. When using non-standard trip generation rates, the applicant's consultant shall submit the appropriate documentation that supports the proposed trip rates (e.g., data obtained from trip generation surveys of proxy sites, rationale of first principles, comparison of trip rates, etc.).

5-B. Trip Reductions: Internal Capture, Pass-by, Transit, Biking

- A. Different factors should be considered in determining internal capture, pass-by trips, transit trips, and Bike trips. Factors include, but are not limited to, the following: location of the proposed development, land use mix of development, size and intensity of development, local context, adjacent roadway system, transit connectivity and access to proposed development, pedestrian and/or bicycle trip generators, and the availability of facilities to justify reductions.
- B. The latest edition of the ITE Trip Generation Handbook may be consulted to determine internal capture or pass-by trips. However, internal capture and/or pass-by trips estimation from this publication may not be readily applicable considering the local context, proposed land use mix, location of proposed development, type and size of development, adjacent roadway system.
- C. Proper engineering judgment should be applied, and documentation provided for all proposed trip reductions.

5-C. Site Trip Distribution and Assignment

When distributing site generated trips, the applicant's consultant should consider existing traffic patterns in the area, availability of connecting roads, and proximity to other

attracting land uses, location of major roadways and highways, and trip-to-work data from Capital Area Metropolitan Planning Organizing (CAMPO). When assigning site generated trips, an applicant's consultant should consider access to the proposed development in relation to the major roadway connections, orientation of development on the site, ease of access, reliability of trip time, shortest duration of travel, shortest path, and connectivity. Considerations should also be made for the differences in traffic patterns in both the AM and PM peak hours as the trip distribution may not be the same across both conditions. The trip distribution, along with a brief description of expected travel patterns, should be submitted with the proposed TA for review.

Site trip distribution and entrance/exit splits between site driveways must be explained and discussed, with supporting calculations, showing how the trips were assigned to each driveway.

5-D. Traffic Count Data and Data Collection

Traffic counts (vehicular, pedestrians, and bicycle) are the foundation for most of the analyses and proper assessment. Consider the following when obtaining/using traffic counts:

- A. All sources of information are to be provided (i.e., who completed the counts, date of completion, periods counted).
- B. Traffic turning movement counts shall be obtained for an average weekday (Tuesday, Wednesday, or Thursday). Traffic turning movement counts shall not be taken during a week with a Travis County Texas, Local City or State of Texas Holiday. AM and PM Traffic turning movement counts shall be for a 2 hour period centered around existing peak hours obtained from 24 hour counts.
- C. Data validity varies depending on the area that is being studied. The County may accept data that is up to two-years-old. However, the County will not accept data beyond one-year-old if the County determines that relevant non-target development has occurred since the data was collected which will affect the validity of the data.
- D. Applicant's consultants are strongly encouraged to collect traffic count data when schools are in session (approximately September to April, actual dates will be reviewed based on development proximity to schools or school districts). If traffic count data is collected when the schools are not in session, appropriate adjustment factors shall be calculated and agreed upon by the Road and Bridge Engineering Division prior to Scoping the TA.
- E. Whenever data is adjusted or modified from what was observed in the field (e.g., balanced traffic volumes, deletion of illegal movements, etc.), rationale for the

modification is to be provided with documentation. Modified traffic volumes shall be clearly identified in the exhibits and in the report.

- F. In cases where additional data is collected, the methodology used must be documented and included in the TA.

5-F. Sight Distance and Safety

- A. **Sight Distance:** Sight distance calculations shall be provided in the TA at proposed site driveways (including those that will be the fourth leg of an existing intersection), newly created intersections of public streets proposed by the development, intersections that could be impacted by the development (i.e. developments at the intersection of two (2) existing streets) and at all proposed signal locations. The TA shall include vertical and horizontal sightline profiles (to scale and labeled) for both Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD). The profiles shall document the required and actual sight distance in relation to field conditions.

SSD provides a view of the road that is sufficient to allow drivers to stop to avoid a collision with an obstruction on the road. SSD shall also be evaluated for vehicles approaching a proposed signalized location to ensure there is sufficient distance to allow drivers to stop to avoid a collision with a queued or stopped vehicle at the intersection.

ISD allows for the safe maneuver of a vehicle from the stopped position at an intersection. Sight triangles at a driveway or at an existing intersection adjacent to the project site shall be clear of obstructions that might block a driver's view of potential conflicts.

SSD and ISD calculations shall be based on the most recent edition of the American Association of State Highway and Transportation Officials (AASHTO) manual with the approval of the TA reviewer. If minimum sight distances cannot be accommodated, the TA shall recognize this and propose mitigation to provide safety improvements at driveways and intersections.

- B. **Safety/Geometric Review:** If any potential safety or geometric issues are identified based on the analysis presented in the TA, proper mitigation measures shall be recommended to address capacity, safety, and/or geometric issues. If the proposed development is located in an area of existing safety concerns, analysis must be completed to identify whether or not the proposed development would worsen the existing safety issues. Appropriate mitigation measures shall be recommended to address any safety issues identified.

5-G. Signal Warrants

Signal Warrants must be provided for all locations where a traffic signal is recommended or where identified in the approved scope following the procedure in the TMUTCD for all warrant conditions and for all warrants. Existing, No-Build, and Build Condition volumes should be used when a signal is recommended as a result of the analysis.

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6. Projects Warranting a TA - Alternative TA Application

6-A. Purpose

An Alternative TA is effectively a TA which is limited in scope. The Alternative TA is intended to identify improvements and provide justification when it may be impractical or unnecessary to conduct additional study, allowing the analysis/report and review to be completed in a shortened timeframe. This may include reference to a study completed as part of a nearby development. Upon acceptance, the Alternative TA fulfills the requirement of a TA.

6-B. Guidance

An Alternative TA may be considered if all the following conditions are met, as determined by the Travis County Road and Bridge Engineering Division:

- A. There has already been a significant study in the last 5 years of the transportation system around the proposed development;
- B. Needed improvements can be identified without further study;
- C. It can be shown that the development's site trips will benefit from the proposed improvements identified;
- D. An alternate TA will not be applicable if the proposed site trips are greater than 4,000 daily trips or more than 50% of the daily trips of the study from which the mitigations are being identified.

6-C. Application for an Alternative TRANSPORTATION ASSESSMENT

To be considered for the Alternate TA process, the applicant should electronically submit a formal request to Travis County Road and Bridge Engineering Division for review. The request should include:

- A. TA determination worksheet.
- B. Site location map.
- C. Site Plan.
- D. Trip generation.
- E. Expected site trip distribution (Diagram).
- F. Identify traffic studies completed around the proposed development. Include the daily trips included in each identified study.
- G. Improvements identified by other studies in the study area.
- H. Improvements proposed to be constructed by the development

Based on review of the application the Road and Bridge Engineering Division will determine if the Alternative TA is applicable. If it is determined to be not applicable, then the applicant must complete a formal TA. If the application is accepted, the applicant

should coordinate with the Road and Bridge Engineering Division to finalize the Alternative TA Scope.

6-D. Alternative TRANSPORTATION ASSESSMENT

Once the application for an Alternative TA is accepted, the applicant should provide an Alternative TA to the Road and Bridge Engineering Division for review. The Alternative TA should include the following:

- A. TA determination worksheet.
- B. Site location map.
- C. Site Plan.
- D. Trip generation.
- E. Trip distribution (Diagram).
- F. Traffic studies completed around the proposed development. Include the daily trips from each identified study.
- G. Identify proposed improvements and proposed contribution for mitigations. An explanation of why the mitigations were selected and documentation of how the proposed contributions were determined.
- H. Justification for proposed improvements as mitigation for the site's traffic impact and demonstration that the site trips will benefit from the identified improvements.
- I. Cost Estimates for the selected mitigations.

As deemed acceptable by the Road and Bridge Engineering Division, the Alternative TA will replace the typical TA requirement.

7. Contribution for Mitigation

This section includes the method of determining the financial participation requirement for system mitigations identified within TAs. Applicants are expected to fully construct site mitigation measures. Once all mitigations to be constructed are identified, a determination of the Applicant's Roughly Proportionate Share will be made to ensure the mitigation requested does not exceed the demand the development is placing on the system.

7-A. Cost Estimates

Cost estimates for improvements identified in the TA may be a high level, lump sum estimate for the purpose of determining the pro-rata share of needed improvements. However, even these high level, lump sum estimates must include inflation to the year intended to be built.

Mitigation measures equivalent to the financial participation as identified in the TA and agreed to with the County should be prioritized and the contribution identified should be pooled to fund the construction of critical improvements. The Applicant should rely on the analysis and work with the Road and Bridge Engineering Division to determine the critical improvements for construction.

If the County and the Applicant agree to a posting of fiscal for improvements identified in the TA, cost estimates shall be itemized and include all costs reasonably expected to design, permit, and construct them. These costs shall be as identified in section 4-O.

7-B. Financial Participation

To determine the financial participation for a development, the Travis County compares the No-Build conditions with Build Condition and identified trip reductions required to determine the relative impact on the transportation system caused by the site. Mitigations should be determined to eliminate adverse conditions to the transportation system caused by the site trips. On this basis, the County utilizes a pro-rata calculation based on the site traffic and the forecasted conditions for the impacted movement, intersection, or roadway. Typically, financial participation for improvement can be based on the greater proportional share of site traffic ($\text{Pro-rata Share} = \text{Site Volume} / (\text{Build Volume})$) in each condition during the AM or PM peak hours. However, this may not cover all cases. In general, total financial participation is to be based on the applicant's cost estimates of the proposed mitigation multiplied by the Pro-rata percentage calculated and will be reviewed and approved by the Road and Bridge Engineering Division.

- A. To calculate the financial participation for a roadway improvement for a specific movement, (e.g. turn lane), a pro-rata calculation should be used. The site traffic must be divided by the Build traffic ($\text{Pro-rata Share} = \text{Site Volume} / (\text{Build Volume})$) for the movement or approach which has caused the need for the improvement,

the 'critical movement'. Pro-rata Share presented in the report table must agree with those presented in the excel calculations.

- B. To calculate the financial participation for signals, the typical method is to use the pro-rata share of the movement with the highest percent of site traffic, the 'critical movement'. However, often it is difficult to determine the appropriate financial participation required for a signal. In many cases, engineering judgment must be used to determine the correct contribution if signal improvements are needed. The pro-rata share should be based on the "critical impact", the approach or movement, with the highest percent of site traffic, which is causing the need for a signal. Typically, the need for a signal is caused by volumes on the major street, volumes on the minor street, and to facilitate left turn movements. Therefore, the pro-rata share will be based on the highest ratio of the site traffic to Build traffic for the approach or movement which is driving the need for a signal. Pro-rata Share presented in the report table must agree with those presented in the excel calculations. Some other items to consider are:
- a. Current Signalized Location - Tee Configuration (new 4th leg): applicant is 100% responsible of all modifications/upgrades required for proper functionality when development is attaching 4th leg.
 - b. Current Signalized Location - Tee or 4-way Configuration (no new 4th leg): applicant is pro rata % responsible of all modifications/upgrades required for proper functionality (LOS to be acceptable or back to Forecasted/No Build conditions) of critical movement/ movements' with said movement/movements' volume as denominator.
 - c. Currently No Signal and Existing, or No-Build conditions meets warrants - Applicant must demonstrate that signal is planned & funded by others to consider it installed at the time of project build-out for there to be no pro-rata % calculation. For these conditions, Pro-rata will be considered based on overall intersection unless the site traffic significantly changes the need for the signal then the pro-rata to be calculated as described above for the critical movement.
 - d. Currently No Signal and No-Build conditions do not meet warrants but Build condition meets warrants: Because site traffic will contribute to volumes for meeting warrants or overwhelmingly meet warrants, a pro rata on that volume shall be used as described above for the critical movement.
- C. To calculate the financial participation for major roadway improvements (e.g. roadway widening) the site traffic divided by the Build traffic for the roadway

segment (Pro-rata Share = site/(Build)). Pro-rata Share presented in the report table must agree with those presented in the excel calculations.

D. Exceptions to Pro-Rata

There are also several cases where the financial participation required is greater than the pro-rata share. In cases where there is a clear safety risk to the public if improvements are not made, the impact of the site traffic in isolation is clearly causing the need for the improvement, or if the improvement is needed to provide connectivity to the site, the financial participation required may be greater than pro-rata.

The Developer contribution shall be 100% for the following exceptions to the calculated pro-rata:

- a) Any improvements that will only serve the proposed development.
- b) Any turn lane improvements where:
 - i. A left turn where site traffic for the proposed movement is greater than or equal to 100 peak hour vehicles.
 - ii. For a right turn where the site traffic is greater than or equal to 150 peak hour vehicles.
- c) Clear safety risk results from the development's impact to the system if improvements identified in the TA are not implemented.
- d) ROW dedication, favorable for system improvements.
- e) Signal timing/phasing improvements.
- f) 100% contribution for a signal or Pedestrian Hybrid Beacon is required if:
 - i. The signal is required to provide adequate access to the proposed development (e.g. at the development's driveway, for pedestrian access)
 - ii. The signal is required due to the addition of an additional approach, needed for the development, at the intersection. (e.g. an additional leg at the intersection due to the development, site access, boundary roadways constructed to facilitate the site)
 - iii. The modification to an existing signal is required due to the addition of an additional approach, needed for the development, at the intersection. (e.g. an additional leg at the intersection due to the development, site access, boundary roadways constructed to facilitate the site)
 - iv. The signal is required for safety reasons (e.g. school crossing, grade crossing, high number of crashes).

