COLORADO
Department of Transportation

Traffic Assessment Guidelines for CDOT Access Permits (in conformance with SHAC)

This document is supplemental to the "State Highway Access Code" (SHAC) and is intended to provide additional clarity to applicants regarding the required content of traffic assessments submitted as part of a CDOT access permit application. Refer to the "CDOT Traffic Assessment levels" (TAL) document (*Attachment A*) and coordinate with CDOT as needed to determine the appropriate level of assessment for a particular development. *Table 1* in this memo lists the specific traffic assessment items required for each level of traffic assessment and is applicable to most routine access permit applications. Some access permit applications may require additional analysis or discussion of other topics in addition to the items denoted in *Table 1*. It is required that the applicant arrange a pre-application meeting with CDOT to discuss application details and specific requirements for Level 2 and 3 traffic assessments. Refer to *Attachment B* for a sample Traffic Study Methodology Form that illustrates the items applicants should be ready to discuss during a pre-application meeting.

Traffic assessments should contain all items indicated in *Table 1* for the appropriate traffic assessment level (Level 1, 2, or 3) and should generally be presented in a similar order as in *Table 1*. Figures, maps, and tables shall be labeled, including a table or figure number, and presented in a legible scale. All levels of traffic assessments shall include an appendix with all relevant supporting documentation used to complete the traffic assessment report, including raw data collection records, trip generation pages and calculations, trip reduction justification and calculations, traffic modeling output files, copies of email correspondence, etc.

All proposed accesses and intersection improvement recommendations shall adhere to the requirements set forth in the SHAC. While not always specifically stated in *Table 1,* every traffic assessment should continuously reference applicable standards set forth in the SHAC such as the number of accesses per parcel, intersection spacing, auxiliary lane requirements, access width and radii, etc. The TIS may only identify any anticipated waivers from the design standards of the SHAC as described in Section 4.12 of the SHAC. Waivers cannot be issued for procedural requirements.

Deliverables required for a Level 2 (TripGen) and Level 3 (TIS) traffic assessment should be a formal report and include report elements such as a title page (include project name and number, date, company name, address and phone number and licensed engineer name, address, phone number, e-mail address, signed PE stamp and expiration date), list of figures, list of tables, executive summary, etc. All traffic and safety model files and output reports should also be included with the TIS submittal. Traffic modeling files should be dated and named in a clear, relevant, and consistent manner when transmitting to CDOT so that reviewers can easily navigate the submission folder. The list of files being transmitted to CDOT should be noted along with the list of attachments at the end of the traffic assessment report.

Table 1 begins on the following page and continues through page 7. The table outlines and clarifies the requirements for each level of traffic assessment in conformance with SHAC and applies to most CDOT's routine access permit applications.

Table 1: Traffic Assessment Study Content Guidance

Category	Description	L 1	L 2	L 3
Pre-Application Meeting	**Pre-Application Meeting** – Discuss traffic assessment assumptions and proposed methodology with a CDOT representative. Local entities should be invited and other stakeholders may also attend pre-application meeting with CDOT.		X	X
Development Context	**Location Map** - Clear, scaled map showing development parcel(s) and relation to the surrounding roadway network and jurisdictional boundaries.	X	X	X
	Project Description - Detailed description of the existing land use and the proposed development.	X	X	X
	Development Buildout (Open Year) - Year that development is expected to open to traffic.	X	X	X
	Development Design Year (Horizon Year) - 20 years after the planned open year.		X	X
	Phasing Plan - CDOT recommends preparing the TIS for the full build-out condition or the most reasonable level of completion that the development will reach within 5 years. Phases that are expected to be completed more than 5 years from the application date should submit a new permit application when new phases are expected to be completed within 5 years. TISs that include a phasing plan should evaluate no more than two phases, an interim conditional and a full buildout condition.		if applicable	if applicable
	Site Plan - Figure should include driveway widths, radii, and show expected circulation of vehicles on site.		X	X
	Access Locations - Detailed description of existing and proposed access points to the development. Description should include mile point location, existing and proposed access configuration (full access, 3/4 access, RIRO, etc.), control type (signal, stop-controlled, roundabout, etc.), and status of the access point (existing - to remain, existing - to close, existing - to be modified, proposed, etc.)	X	X	X
	Access Point Spacing - Map should clearly identify existing and possible future access locations on both sides of the roadway within one-half mile of the development in each direction. Include distance between access point edges on the figure.		X	X
Study Area [1]	**Study Intersections** - List of all intersections in the study area. Include existing control type and lane configuration of intersection approaches including lane movement assignments and turn bay lengths.	X	X	X
	Road Names - Map or list with names of roadways in the study area. State highways should use route designation identified in OTIS in addition to local road names for the highway.	X	X	X

Table 1: Traffic Assessment Study Content Guidance

Category	Description	L 1	L 2	L 3
Study Area *Cont.*	**Existing AADT** - AADT of all roadways in the study area. AADT of State Highways can be found in CDOT OTIS and MS2SOFT.	X	X	X
	Roadway Classification - Functional classification and access control classification (for state highways) of all roadways in the study area.	X	X	X
	Posted Speed Limit - Existing posted speed limit within 1,000' in each direction of proposed development access points and study area intersections.	X	X	X
	Planned Improvements - All projects that are planned or funded within one-half mile of the study area. Review local and state plans for funded improvements and list any projects within one-half mile of the study area. Reference any approved Access Control Plans (ACP) within the study area.		X	X
Existing Volumes	**Data Collection** - Describe the data collection plan including date (must be collected within 2 years of TIS submittal), day of week, location, duration, and type of data collection.		X	X
	Peak Hours - List all peak hours to be analyzed. Analysis should include peak hours on the adjacent roadway and the peak hour of the generator.	X	X	X
	Existing Volume Data - Include Peak Hour Factor (PHF), truck percentage, and any other relevant data related to the existing conditions traffic.		X	X
	Adjustment Factors - Describe adjustment factors that were applied to the collected data to develop existing conditions turning movement volumes, including source data and calculations or describe why adjustment factors do not need to be applied to the existing conditions volumes. Note - Existing conditions peak hour volume should be adjusted as needed to reflect approximately the 30th highest hourly volume of the year (Design Hourly Volume, DHV).		X	X
	Existing Peak Hour Volume Diagram - Provide Figure showing peak hour turning movement counts (TMC) at all study intersections for all peak hours being analyzed. Volumes should be rounded up to the nearest whole number and balanced across intersections as outlined in CDOT “Traffic Analysis and Forecasting Guidelines”.		X	X
Trip Generation[2,3]	**Land Use** - Describe land use code selection, or justification of alternative trip generation methodology [2].	X	X	X
	Trip Reductions - If applicable, describe all adjustments to trip generation that will be utilized for the development including internal capture, pass-by trips, mode split, or other adjustments. All adjustments must include supporting documentation in the report appendix.		if applicable	if applicable

Table 1: Traffic Assessment Study Content Guidance

Category	Description	L 1	L 2	L 3
Trip Generation *Cont.*	**Trip Generation**[3] - Include Table of trip generation calculations using ITE Trip Generation Manual (most recent edition at the time of submission). Use of CDOT table template[4] is highly encouraged. The table must include land use code, independent variable, development size (in relation to independent variable), total daily trips, and peak hour trips (total, entering, and exiting) for each peak hour being analyzed. If trip reductions are recommended, they should be separated into reductions that will reduce volumes at the driveways (such as internal capture) and reductions that will not reduce volumes at the driveways (pass-by or diverted). Volumes should be rounded up to the nearest whole number.	X	X	X
	Trip Distribution - Describe distribution of trips generated by the proposed development. Description should include assumptions and calculations and all relevant sources.		X	X
	Trip Distribution Figure - Provide a Figure showing percentage and directional distribution of individual movements entering and exiting the site. When a development contains multiple access points, a separate figure for distribution of entering and exiting traffic is recommended.		X	X
	Development/Site-Generated Volume Diagram - Provide a Figure showing peak hour turning movement volumes of ONLY development/site-generated traffic volumes at all study intersections for all peak hours being analyzed. When a development will contain multiple access points, a separate figure for distribution of entering and exiting traffic is highly encouraged. When pass-by or diverted trips are part of the analysis, separate volume diagrams for distribution of new trips generated by the development and reassignment of pass-by/diverted trip volumes should be included along with the final development/ site-generated volume diagram. Volumes should be rounded to the nearest whole number.		X	X
	Construction Traffic - When the construction of a development will generate at least 10 DHV (PCE) or a development will be under construction for one year or longer, an estimate of construction traffic volumes during analysis peak hours should be included and analyzed alongside development traffic to determine if auxiliary lanes or other mitigation measures are warranted due to construction traffic.		if applicable	if applicable
Future Volumes Development	**Growth Rate** (GR) - List the applied growth rate(s) and describe the process used to determine the growth rate for developing future background traffic volumes. Include calculations, assumptions, and data sources.		X	X

Table 1: Traffic Assessment Study Content Guidance

Category	Description	L 1	L 2	L 3
Future Volumes Development *Cont.*	**Build-out/Open Year Background Volume Diagram** - Figure showing background peak hour turning movement volumes for the build-out/open year at all study intersections for all peak hours being analyzed. Volumes should be rounded up to the nearest whole number.		X	X
	Build-out/Open Year Total Volume Diagram - Figure showing total (build-out/open year background + development) peak hour turning movement volumes for the build-out/open year at all study intersections for all peak hours being analyzed.		X	X
	Design/Horizon Year Background Volume Diagram - Figure showing background peak hour turning movement volumes for the design/horizon year (build-out/open year + 20) at all study intersections for all peak hours being analyzed. Volumes should be rounded up to the nearest whole number.		X	X
	Design/Horizon Year Total Volume Diagram - Figure showing total (design/horizon year background + development) peak hour turning movement volumes for the design/horizon year at all study intersections for all peak hours being analyzed.		X	X
	Auxiliary Lane Analysis - Compare design/horizon year total passenger car equivalent (PCE) volumes with auxiliary lane requirements in the SHAC. Analysis should include a review of all study intersections and turning movements. Make a final descriptive or list of recommendations as to whether an auxiliary lane is or is not warranted. Where auxiliary lanes are warranted, specify the required lane length.		X	X
Traffic Operations Analysis [5,6,7,8,9,10]	**Traffic Analysis Methodology**[5,6] - Describe the methodology for conducting traffic analysis including the type and version of the software used and measures of effectiveness (MOE) being evaluated. Required MOEs include control delay, level of service (LOS), volume-to-capacity ratio, and 95% queue lengths. MOEs should be reported by movement, approach, and for overall intersection as appropriate.		X	X
	Build-out/Open Year - Background Conditions Operations[7] - Results of traffic operation analysis for the build-out/open year with Background traffic volumes only. Planned improvements that will be in place by the year of analysis should be included.		X	X
	Build-out/Open Year - Total Conditions Operations without Mitigations[7] - Results of traffic operation analysis for the build-out/open year with Total traffic volumes (background + development/site-generated). This analysis should not assume any improvements associated with the development except those required to provide access to the site at driveway locations (i.e. driveway connection to the highway and required auxiliary lanes).		X	X

Table 1: Traffic Assessment Study Content Guidance

Category	Description	L 1	L 2	L 3
Traffic Operations Analysis *Cont.*	**Design/Horizon Year - Background Conditions Operations**[7] - Results of traffic operation analysis for the design/horizon year with Background traffic volumes only. Planned improvements that will be in place by the year of analysis should be included.			X
	Design/Horizon Year - Total Conditions Operations without Mitigations[7] - Results of traffic operation analysis for the design/horizon year with Total traffic volumes (background + development/site-generated). This analysis should not assume any improvements associated with the development except those required to provide access to the site at driveway locations (i.e. driveway connection to the highway and required auxiliary lanes).			X
	Operations Deficiency[8,9] - Describe deficiencies that were identified in the traffic operations analysis, if any. These deficiencies trigger the need for mitigations and improvements.		X	X
	Alternatives Analysis[7] - When improvements are determined to be needed based on the traffic analysis results, the TIS must analyze a range of reasonable alternatives including no build or no direct access alternatives. Innovative intersection alternatives should also be considered. A new traffic signal may only be included as an option in an alternatives analysis if a signal warrant study indicates a signal is warranted [5,10]. CDOT may request ICAT (or other tools) as part of the TIS deliverables. CDOT's ICAT (Intersection Control Assessment) Tool is developed to facilitate the screening, ranking, and prioritization of available ranges of alternatives (ICAT stage 1). It also facilitates benefit-cost analysis (BCA) for the top five alternatives, using output results from traffic, safety, and environmental analyses, along with vulnerable road user (VRU) opportunities and stakeholder support levels. These five alternatives are then ranked based on their overall BCA score (ICAT stage 2).			X
	Recommended Mitigations - Make final recommendations in mitigating the identified deficiencies based on the alternatives analysis results.			X
	Concept Plan - Provide a scaled concept plan of all proposed mitigations, including required auxiliary lanes.			X
Safety Analysis	**Historical Crash Data** - Report crash data from the most recently available 5 years by severity and type of crash at study intersections. Historical crash data may be requested from CDOT during the pre-application meeting or by email. CDOT may provide additional information about existing crash patterns which should be addressed in the TIS if applicable.		if requested by CDOT	if requested by CDOT
	Safety Impacts and Potential Mitigations - Describe potential safety impacts of the proposed development including the impact caused by increased traffic, and new access points. Make recommended mitigations as applicable.		X	X

Table 1: Traffic Assessment Study Content Guidance

Category	Description	L 1	L 2	L 3
Multimodal Analysis (non-motorized modes)	**Multimodal Infrastructure** - Document location of existing and proposed multimodal (non-motorized) infrastructure within the study area. This may include crosswalks, bus stops, designated bike parking areas, micro-transit corrals, etc.	X	X	X
	Pedestrian - Analysis should address pedestrian access and circulation including the interface with bicycle and transit facilities. The analysis may include pedestrian level of service analysis and should clearly define the methodology used.		if requested by CDOT	if requested by CDOT
	Bicycle - Analysis should address bicycle access and circulation. The analysis may include bicycle level of service analysis and should clearly define the methodology used.		if requested by CDOT	if requested by CDOT
	Transit - Analysis should document existing and planned transit services servicing the development including expected frequency of service. The analysis may include transit level of service analysis and should clearly define the methodology used.		if requested by CDOT	if requested by CDOT
Measurements	**Sight Distance** - Include measured sight distance at all development access locations to the state highway, along with relevant photos. Development must meet adequate sight distance requirements per SHAC Section 4.3.	X	X	X
	Clear Zone - If applicable, provide evidence of available clear zones, including relative photos.	if applicable	if applicable	if applicable
Conclusions	**Required Roadway Improvements** - Clearly summarize roadway improvements, including auxiliary lanes, required to accommodate development traffic and describe when the improvement should be implemented and who will be responsible for completing the improvement.		X	X
	Conformance to State Highway Access Code – Clearly state that the recommended improvements are in compliance with all requirements set forth in the State Highway Access Code. If any improvements are not in compliance, include documentation of CDOT concurrence to the variance request.		X	X
	Summary of Driveway Volumes - Clearly summarize the Design Hourly Volume (DHV) to be used for each required access permit. The DHV is the anticipated highest total hourly traffic volume that will use the access point in the design/horizon year.	X	X	X
	Sealed Report: The Report must be Signed and Sealed by the Registered Colorado Professional Engineer.		X	X

Table Footnotes:

1. Refer to SHAC for determining how large a study area to include for each traffic assessment. The extent and contents of the study area depends on the location and size of the proposed development and conditions of the adjacent area and is defined in SHAC.

2. Engineering judgment should be used when selecting the proposed land use and independent variable for trip generation calculations. Note ITE guidance related to trip generation calculations:

    a. Use Fitted Curve Equation, when:
        - A fitted curve equation is provided and the data plot has at least 20 data points, or
        - A fitted curve equation is provided, the curve has an R^2 of at least 0.75, the fitted curve falls within the data cluster, and the weighted standard deviation is more than 55% of the weighted average rate.

    b. Use Weighted Average Rate, when:
        - The data plot has at least three data points (and preferably, six or more);
        - The R^2 value for the fitted curve is less than 0.75 or no fitted curve equation is provided;
        - The weighted standard deviation for the average rate is less than 55% of the weighted average rate; and
        - The weighted average rate is within data cluster in plot.

    c. Collect Local Data, when:
        - Study site is not compatible with ITE Land Use Code definition;
        - Data plot has only one or two data points (and preferably, five or fewer);
        - The weighted standard deviation for the average rate is greater than 55% of the weighted average rate;
        - The independent variable value is not within range of data; or
        - Neither weighted average rate line or fitted curve is within data cluster at size of study site.

3. Some studies may need to provide separate trip-generation deliverables for passenger cars (PC) and trucks (HV).

    When a proposed land use is not included in the most recent version of the ITE Trip Generation Manual the traffic assessment should propose a reasonable estimate of daily and design hourly volumes. The preferred methodology is to calculate trip generation rates based on peak period counts collected at a similar facility. Wedding and special event venues may reference the memo included in *Attachment C*.

4. See *Attachment D - CDOT Trip Generation Table Template*

5. When signalized intersections are part of the study area, the applicant should request existing signal timing data to use for analysis. TIS analysis should assume cycle length consistent with the existing corridor signal operation and function, and the same yellow and all red times as in the existing timing plan. When timing plans are not available, the analyst must calculate yellow and all red clearance times using a CDOT-approved methodology or assume a minimum 5-second yellow and 3-second all-red phase. The analysis should use the same cycle length as adjacent intersections if part of a coordinated corridor or may assume a cycle length from 60 to 140 seconds at isolated intersections. If the access is proposed to have a traffic signal, or will necessitate modifications to a traffic signal, additional analysis and documentation are required per SHAC.

6. When an intersection is adjacent to a railroad crossing, the study should include a description of train operations in the report. Ensure operations analysis accounts for the distance between crossbucks on approaches indicating the area where vehicles may not stop on tracks. If the intersection is signalized or is proposed to be signalized in the future, coordination should be made with the Region Traffic Engineer to determine if signal preemption is or will be used and if it may be incorporated into operations analysis.

7. Traffic operations analysis must use passenger car equivalent (PCE) volumes or accurately account for truck percentages in analysis.

8. At signalized intersections, all movements and the overall intersection should operate at LOS D or better in the peak hours, unless otherwise approved by CDOT prior to the TIS submittal. If LOS E and F cannot be avoided (due to long cycle lengths or other constraints agreed upon with the Region Traffic Engineer prior to TIS submittal), the operations analysis should ensure the intersection geometry can accommodate the anticipated queue and that the signal is able to process the entire queue during each cycle.

9. LOS E and F on a minor street approach at a two-way stop-controlled (TWSC) intersection should be further investigated. The developer should coordinate with the local agency if side street operations are a concern to determine the preferred course of action (no action, mitigation, etc.). Documentation of these conversations and recommended action should be included in the report.

10. Notes regarding signal warrant studies:

    - Signal warrant studies must be attached to the TIS and must include analysis of all 9 warrants.
    - An intersection that meets criteria for Warrant 3 (Peak Hour) or Warrant 8 (Roadway Network) must also meet at least one other warrant criteria (that is not Warrant 8 or 3) to recommend a new traffic signal unless specifically approved by the Region Traffic Engineer.
    - Where a dedicated right-turn lane exists or is planned, right-turn volumes on applicable approaches should be reduced by 50% if turning into a shared lane or by 100% if turning into a dedicated right-turn acceleration lane.
    - Study should indicate if the signal is warranted based on projected build-out/open volumes or design/horizon volumes. Note that some Regions may not permit signals based on design/horizon year volumes.
    - Note that satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic signal. The final decision regarding the approval of new traffic signals lies with the Region Traffic Engineer.

Attachments

Appendix A. CDOT Traffic Assessment Levels (TAL) Memo

Appendix B. Sample form for Traffic Study Methodology

Appendix C. Example for Trip Generation and Distribution Rates - Special Event Venue, Wedding

Appendix D. Template for CDOT Trip Generation Table

Attachment A

CDOT Levels of Traffic Assessment

COLORADO
Department of Transportation

CDOT Traffic Assessment Levels

Section 2.3(5) of the "State Highway Access Code" (SHAC) specifies the thresholds and general requirements of a traffic impact study (TIS). A TIS is required when the proposed land use will generate a Design Hourly Volume (DHV) of 100 vehicles or more, or when considered necessary or desirable by CDOT. This document is supplemental to the SHAC and describes three (3) levels of traffic assessments and the associated requirements for each.

The permit applicant should contact the appropriate CDOT Region to determine the appropriate traffic assessment level and the specific requirements for each application. Level 2 and 3 traffic assessments are required to arrange a pre-application meeting to discuss requirements and agree on a proposed methodology. The contact information for CDOT Regions' access permit is listed at the end of this document.

Sections below list and summarize the CDOT Traffic Assessment Levels. For guidance on the content required for each Traffic Assessment Level, refer to *Table 1* in the "Traffic Assessment Guidelines" for CDOT Access Permits document.

Level 1 – Trip Generation Assessment (TripGen)

The purpose of a Level 1 Assessment is to document the project trip generation and to confirm if auxiliary turn lanes are not required at the proposed access point. A Level 1 Assessment is required for **all projects that generate less than DHV of 10 Passenger Car Equivalents (PCEs) at both the construction and after build-out**. For example, a single-family home usually generates one trip in the peak hour, so a project with nine or fewer homes would fit into this category. It is unlikely that any commercial or industrial development would fit into this category.

Level 2 – Auxiliary Turn Lane Assessment (TurnLn)

The purpose of a Level 2 Assessment is to document the project trip generation and to determine auxiliary turn lane requirements at the proposed access points within the immediate study area. The results of this assessment may reveal that no additional turn lanes are needed. The assessment may also reveal that a Traffic Impact Study is necessary (see Level 3), as determined by CDOT. It is strongly recommended that all assumptions be confirmed with the CDOT traffic engineer prior to completing the assessment. A Level 2 Assessment shall be required for **all projects that generate between 10 and 99 DHV trips in the peak hour**. A Professional Engineers seal is required for all traffic assessment submissions.

Level 3 – Traffic Impact Study (TIS)

The purpose of a Level 3 assessment or Traffic Impact Study (TIS) is to understand the full traffic impact of the proposed development, and to identify traffic mitigation measures. A TIS is **required when the proposed land use will generate a DHV of 100 vehicles or more, or when considered necessary or desirable by CDOT**. A Professional Engineers seal is required. It is strongly recommended that all assumptions be confirmed with the CDOT traffic engineer prior to completing the study.

CDOT Regions Access Permitting Contact Information:

- R1 access permitting (303-512-4272)
  steven.loeffler@state.co.us
  2829 W. Howard Pl., 2nd Floor, Denver, CO 80204
- R2 access permitting (719-562-5540)
  cdot_r2_permits_access@state.co.us
  5615 Wills Blvd, Suite A, Pueblo, CO 81008
- R3 access permitting (970-683-6284)
  Brian.killian@state.co.us
  222 South Sixth St, Room 100, Grand Junction, CO 81501
- R4 access permitting (970- 302-4022)
  timothy.bilobran@state.co.us
  10601 W. 10th St., Greeley, CO 80634
- R5 access permitting (970-385-3626)
  cdot_region5accesspermits@state.co.us
  3803 N. Main Ave, Suite 100, Durango, CO 81301

Attachment B

Traffic Impact Study (TIS) Methodology Form

COLORADO
Department of Transportation
Region 3

Transportation Impact Study Methodology Form

Prior to starting a traffic impact study, a Methodology Form must be submitted for review and signed by the Region 3 Access Engineer. It shall be included as part of the study.

CONTACT INFORMATION	
Consultant:	Name:_____
	Telephone:_____
	Email:_____
Developer/Owner Name:	_____

PROJECT INFORMATION	
Project Name	
Project Location	
Project Description *(Attached proposed site plan)*	
State Highway	
County	
Mile Post	
Posted Speed Limit	

TIS ASSUMPTIONS				
Study Years	Current Year:		Buildout Year:	Long Term Year:
Traffic Assessment Level *(Provide justification)*				
Study Intersections	1.		6.	
	2.		7.	
	3.		8.	
	4.		9.	
	5.		10.	
Future Growth Rate	☐ OTIS		☐ Regional TDM	☐ Other
Seasonal Adjustment Factor				

ASSUMPTIONS CONTINUED				
Project Trip Distribution *(State assumptions and attach sketch that shows individual movements.)*				
Trip Reduction Percentage	Internal Capture:		Pass By:	
	Multi-Modal:		Other:	
Study Time Periods *(Check all that apply)*	☐ AM (7-9)	☐ PM (4-6)	☐ Weekday	
	☐ SAT (Midday)	☐ Other		
Existing and Proposed ITE Trip Generation Land Use				
Analysis Methods *(Check all that apply)*	☐ Synchro or ☐ HCS *(isolated intersections only)*		☐ SimTraffic or ☐ Other *(closely spaced intersections or when known/expected queuing issue)*	
	☐ Signal Warrants		☐ Pedestrian/Transit/Bicycle	
	☐ Safety/Sight Distance		☐ Queuing and Storage	
	☐ Other			
Notes and Other Assumptions				
Crash Data	CDOT will perform a crash data analysis for the highway in the vicinity of the proposed access and provide to the consultant. As a part of the study consultant shall recommend mitigation measures for any identified safety issues.			
Simulation Input Files	Consultant to provide computer files used for analysis with a signed and sealed copy of the study.			

CDOT INTERNAL USE ONLY	
Review Comments ☐ Revise and Resubmit	
Engineer Signature/Date	☐ Approved

This is a sample Traffic Assessment Methodology form intended to illustrate the items that applicants should be ready to discuss during a pre-application meeting.

Attachment C

Wedding Venue Trip Generation Rate Memo

COLORADO
Department of Transportation
Region 3 Traffic and Safety

DATE: January 30, 2018

FROM: Kent Harbert, CDOT Region 3 Access Engineer

SUBJECT: Wedding venue trip generation and trip distribution

The ITE Trip Generation Guide does not include a land use category for wedding venues. It is, therefore, desirable to establish a standard methodology to project the trip generation rates and the trip distribution assumptions. The following is proposed:

Trip Generation

A wedding is a single event at a pre-established time. All of the wedding party and wedding guests will be in attendance at the ceremony. Therefore, the trip generation rate will be based on the capacity of the area within the venue to be used for the ceremony.

Typically, a wedding party will rent a venue with a capacity near the size of their wedding. Estimate that 75% of the venue capacity will be the typical size used for trip generation.

Estimate that the wedding party and vendors represent 10% of those attending the wedding and that they arrive more than one hour before the ceremony. The remaining 90% will arrive during the one-hour period prior to the ceremony.

Many of the wedding guest travel together as couples, families or groups of friends. Assume there will be 2 to 2.5 guests per vehicle.

Using the above factors gives a range of 0.27 to 0.33 for the trip generation factor as a function of the venue capacity. Use an average rate of 0.30 with 100% entering.

If the venue does not include a reception area use the same 0.30 rate for the exiting trips. If the venue has a reception area the exiting will be dispersed over a few hours. Use a rate of 0.12 (0.30 x 40%) for the peak hour of exiting vehicles.

Trip Distribution

Trip distribution for a wedding venue is not like other land uses where the traffic in one direction plus the traffic in the opposite direction totals to 100% of the design hour volume. For a wedding venue the majority of the traffic can be to and from one direction for one wedding and to and from the other direction for a different wedding. The two distributions need to be analyzed separately, not averaged.

222 S. 6th Street, Room 100, Grand Junction, CO 81501-2769 P 970.683.6271 F 970.683.6290 www.coloradodot.Info

Attachment D

CDOT Trip Generation Table Template

Table 1: Trip Generation Table Template (Project with No Proposed Trip Reductions)

Land Use	ITE LUC	Proposed Size	Weekday Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Strip Retail Plaza (<40ksf)	822	23,000 SF	1,250	35	20	55	70	70	140
High-Turnover (Sit-Down) Restaurant	932	10,000 SF	1,070	50	45	95	55	35	90
Total Trips			**2,320**	**85**	**65**	**150**	**125**	**105**	**230**

Table 2: Trip Generation Template (Project with Proposed Trip Reductions)

Land Use	ITE LUC	Proposed Size	Weekday Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Strip Retail Plaza (<40ksf)	822	23,000 SF	1,250	35	20	55	70	70	140
High-Turnover (Sit-Down) Restaurant	932	10,000 SF	1,070	50	45	95	55	35	90
Total Trips			**2,320**	**85**	**65**	**150**	**125**	**105**	**230**
Trip Reductions (Internal capture, linked trips, etc.)			-50	-5	0	-5	-5	0	-5
Total Driveway Trips[1]			**2,270**	**80**	**65**	**145**	**120**	**105**	**225**
Pass-by Trips			-850	-30	-30	-60	-40	-40	-80
Net New Trips			**1,420**	**50**	**35**	**85**	**80**	**65**	**145**

[1]Operations analysis shall be performed using the total vehicular volume experienced at an access point/driveway or study intersection which includes pass-by trips. Pass-by trips should be reassigned to the access point/driveway from the adjacent roadway network as needed.

These Trip Generation tables are examples. Actual project-specific trip generation and distribution data should be adequately obtained and presented similarly.