



Traffic Impact Study Guidelines



TRAFFIC IMPACT STUDY PREPARATION

Application Level Determination: The application level will be determined by UDOT during the pre-application meeting based on the preliminary data supplied by the applicant and the table below.

Waiver: The UDOT Region Traffic Engineer may waive the TIS requirement for Permit Level I and II.

General TIS Requirements: All traffic studies shall, at a minimum, incorporate traffic engineering principles and standards as presented in R930-6, Department standards, and national practices.

TIS Scope and Study Area: The TIS scope and study area is determined by the Department during the pre-application meeting. This determination is based on the size and intensity of the development and surrounding development. The study area may be identified by parcel boundary, area of immediate influence, reasonable travel time boundary, or by market area influence. The TIS scope may include, but is not limited to, site location and proposed access point(s), phased and/or full development trip generation, connection point design elements, adjacent and relevant development, existing and future traffic volumes, assessment of the system impacts, and mitigation measures. The region permits officer and/or the region traffic engineer may determine the need for additional requirements and investigation.

R930-6-8(4) ACCESS APPLICATION LEVELS

LEVEL	AADT*	Proposed Roadway/Signal Modification**	Land Use Intensity
LEVEL I	Less than 100.	No modification to signals or the roadway.	A) Single Family: <10 units. B) Apartment: <15 units. C) Lodging: <11 occupied rooms. D) General Office: <9,000 sq. ft. E) Retail: <2,500 sq. ft.
LEVEL II	Between 100 and 3,000 AADT or less than 500 peak-hour vehicle trips.	No modifications or minor modifications to traffic signals or elements of the roadway.	A) Single Family: 10 to 315 units. B) Apartment: 15 to 450 units. C) Lodging: 11 to 330 occupied rooms. D) General Office: 9,000 to 270,000 sq. ft. E) Retail: 2,500 to 70,000 sq. ft. F) Gas Station: < 18 fueling positions. G) Fast Food: < 6,000 sq. ft. H) Restaurant: < 26,000 sq. ft.
LEVEL III	Between 3,000 and 10,000 AADT or between 500 to 1,200 peak-hour vehicle trips.	Installation or significant modifications of one or more traffic signals or elements of the roadway, regardless of project size.	A) Single Family: 316 to 1,000 units. B) Apartment: 451 to 1,500 units. C) Lodging: 331 to 1,100 occupied rooms. D) General Office: 9,000 sq. ft. E) Retail: 2,500 sq. ft. F) Fast Food: 6,000 to 20,000 sq. ft.
LEVEL IV	Greater than 10,000 AADT.	Significant modification of two or more traffic signals, addition of travel lanes or modification of freeway interchange, regardless of project size.	A) Single Family: > 1,000 units. B) Apartment: > 1,500 units. C) Lodging: > 1,100 occupied rooms. D) General Office: > 900,000 sq. ft. E) Retail: > 230,000 sq. ft.

*The Department may require more precise trip generation estimates to determine the appropriate access application level for mixed land use or complex developments.

**The Department reserves the right to determine which modifications are considered minor or significant.



LEVEL I TIS, ADT < 100 TRIPS

1. The study area may include property frontage, neighboring and adjacent parcels, and require applicant to identify site, cross, and next adjacent up and down stream access points within access category distance of property boundaries.
2. Design year – indicate the opening day of the project
3. Indicate the analysis conditions and period a. Identify site traffic volumes and characteristics b. Identify adjacent street(s) traffic volume and characteristics
4. Identify right-of-way, geometric boundaries and physical conflicts and investigate existence of federal or state, no-access or limited-access control line
5. Generate an access point capacity analysis as necessary a. Analyze site and adjacent road traffic for the following time periods: weekday a.m and p.m. peak hours including Saturday peak hours b. Identify special event peak hour as necessary (per roadway peak and site peak).
6. Design and mitigation -- Identify operational concerns and mitigation measures to ensure safe and efficient operation.

LEVEL II TIS, ADT 100 to 500 TRIPS

1. Study area includes the intersection of site access drives with state highways and any signalized and un-signalized intersection within access category distance of property line, including any identified queuing. Indicate the distance at site and study intersections
2. Design Year – Indicate the opening day of project
3. Analysis Period – Identify site and adjacent road traffic for weekday a.m. and p.m. peak hours
4. Data Collection
 - a. Identify site and adjacent street roadway and intersection geometries
 - b. Identify adjacent street(s) traffic volume and characteristics
5. Conflict / capacity analysis a. Diagram flow of traffic at access point(s) for site and adjacent development b. Perform capacity analysis as determined by Region Traffic Engineer
6. Right-of-way access a. Identify right-of-way, geometric boundaries and physical conflicts b. Investigate existence of federal or state, no access or limited access control line
7. Design and mitigation a. Determine and document safe and efficient operational design needs based on site and study area data b. Identify operational concerns and mitigation measures to ensure safe and efficient operation.

LEVEL II, ADT 500 TO 3,000 TRIPS OR PEAK HOUR > 500 TRIPS

1. Study area includes the area includes the intersection of site access drives with state highways and any signalized and un-signalized intersection within access category distance of property line including any identified queuing, indicating the distance at site and study intersections
2. Design Year a. Indicate the opening day of project and five-year after project completion b. Document and include all phases of development (includes out pad parcels)
3. Analysis Period a. Identify site and adjacent road traffic for weekday a.m. and p.m. peak hours b. Identify special event peak hour as necessary
4. Data collection a. Daily and Turning Movement counts b. Identify site and adjacent street roadway and intersection geometrics c. Traffic control devices including signals and regulatory signs d. Crash data
5. Trip generation – Use equations or rates available in latest edition of ITE Trip Generation. Where equations are unavailable, perform trip rate study and estimation following ITE procedures or develop trip rate agreed to by the department
6. Trip distributions and assignment – document distribution and assignment of existing, site, background, and future traffic volumes on surrounding network of study area
7. Conflict / capacity analysis a. Diagram flow of traffic at access point(s) for site and adjacent development b. Perform capacity analysis as determined by Region Traffic Engineer
8. Traffic signal impacts a. Traffic signal warrants as identified b. Traffic signal drawings as identified c. Queuing analysis
9. Right-of-way access a. Identify right-of-way, geometric boundaries and physical conflicts b. Investigate existence of federal or state, no access or limited access control line
10. Design and mitigation a. Determine and document safe and efficient operational design needs based on site and study area data b. Identify operational concerns and mitigation measures to ensure safe and efficient operation.



Level III TIS, ADT 3,000 to 10,000 OR PEAK HOUR TRAFFIC 500 to 1,200 TRIPS

1. Study area as defined by the region permits officer or region traffic engineer and must include the intersection of site access drives with state highways and any intersection within 1/2 mile of the property line of each side of project site
2. Design year a. Opening day of project, five years and twenty years after opening b. Document and include all phases of development (includes out pad parcels)
3. Analysis period a. For each design year analyze site and adjacent road traffic for weekday a.m. and p.m. peak hours including Saturday peak hours b. Identify special event peak hour as necessary (adjacent roadway peak and site peak)
4. Data Collection a. Daily and Turning movement counts
b. Identify site and adjacent street roadway and intersection geometries c. Traffic control devices including traffic signals and regulatory signs d. Automatic continuous traffic counts for at least 48 hours e. Crash data
5. Trip generation – Use equations or rates in latest ITE Trip Generation. Where equations are unavailable, perform trip rate study and estimation following ITE procedures or develop justified trip rate agreed to by the department
6. Trip distributions and assignment – document distribution and assignment of existing, site, background, and future traffic volumes on surrounding network of study area
7. Capacity analysis a. Level of service (LOS) for all intersections b. LOS for existing conditions, design year without project and design year with project 8. Traffic signal impacts for proposed traffic signals a. Traffic signal warrants as identified b. Traffic signal drawings as identified c. Queuing analysis d. Traffic systems analysis, including deceleration and weaving e. Traffic coordination analysis
9. Right-of-way access a. Identify right-of-way, geometric boundaries and physical conflicts b. Investigate existence of federal or state, no access or limited access control line
10. Accident and traffic safety analysis, existing vs. as proposed
11. Design and mitigation a. Determine and document safe and efficient operational design needs based on site and study area data b. Identify operational concerns and mitigation measures to ensure safe and efficient operation.

LEVEL IV, ADT > 10,000 TRIPS OR PEAK HOUR TRAFFIC > 1,200 VEHICLES PER HOUR

1. Study area as defined by the region permits officer or region traffic engineer and must include the intersection of site access drives with state highways and any intersection within 1/2 mile of the property line of each side of project site and any intersection or freeway interchange impacted by more than 500 peak hour trips.
2. Design year a. Opening day of project, five years and twenty years after opening b. Document and include all phases of development (includes out pad parcels)
3. Analysis period a. For each design year analyze site and adjacent road traffic for weekday a.m. and p.m. peak hours including Saturday peak hours b. Identify special event peak hour as necessary (adjacent roadway peak and site peak)
5. Data Collection a. Daily and Turning movement counts b. Identify site and adjacent street roadway and intersection geometries c. Traffic control devices, inc. signals and signs d. Automatic continuous traffic counts for at least 48 hours e. Crash data
6. Trip generation – Use equations or rates available in latest edition of ITE Trip Generation. Where equations are unavailable for intended land use, perform trip rate study and estimation following ITE procedures or develop justified trip rate agreed to by the department
7. Trip distributions and assignment – document distribution and assignment of existing, site, background, and future traffic volumes on surrounding network of study area
8. Capacity analysis a. LOS for all intersections b. LOS for existing conditions, design year without project and design year with project
9. Traffic signal impacts for proposed traffic signals a. Traffic signal warrants as identified b. Traffic signal drawings as identified c. Queuing analysis d. Traffic systems analysis, including deceleration and weaving e. Traffic coordination analysis
20. Right-of-way access a. Identify right-of-way, geometric boundaries and physical conflicts b. Investigate existence of federal or state, no access or limited access control line c. Accident and traffic safety analysis, existing vs. as proposed 21. Design and mitigation a. Determine and document safe and efficient operational design needs based on site and study area data b. Identify operational concerns and mitigation measures to ensure safe and efficient operation.



APPLICATION SUBMITTAL AND TIS REPORT FORMAT

The applicant must submit one complete application with attachments to the appropriate region permitting office, including all attachments required by the permitting office or region traffic engineer. Please include scaled schematic drawings illustrating alignment, number of lanes, lane widths, signing, and pavement markings. If traffic signal modifications are proposed, drawings must show signal phasing, signal head locations and lane marking.

The Traffic impact study must follow the recommended format below.

1. Introduction and summary
2. Proposed project
3. Study area conditions
4. Analysis of existing conditions
5. Projected traffic
6. Traffic analysis
7. Conclusions
8. Recommendations
9. Appendices
 - a. Traffic counts
 - b. Traffic capacity analysis
 - c. Crash summary
 - d. Request for change of access (if applicable)
10. Figures and tables
 - a. Site location showing area roadways
 - b. Site plan
 - i. Identify geometric / physical concerns relating to area, site and specific access points
 - ii. Include adjacent street and access points
 - c. Existing roadway and traffic control features (number of lanes, lane widths, alignment, location of traffic signals, signs) Include off-system features as related to site plan and access point(s)

- d. Existing daily volumes (directional if possible) and peak hour turning volumes. Discuss traffic characteristics (vehicle mix, % make-up and any special vehicle requirements)
- e. Collision diagram summary
- f. Site generated trip summary. Discuss trip/vehicle make-up and any special vehicle requirements. Discuss trip reduction strategies if applicable.
- g. Directional distribution of site generated traffic
- h. Assignment of Non-site related traffic (existing, background and future). Document both existing and committed development, and when appropriate other background planned development traffic and assignment of total future non-site traffic for design year.
 - i. Assignment of Site Traffic
 - j. Traffic capacity analysis
 - k. Projected levels of service without the project – coincide with development phase years
 - l. Projected levels of service with the project (by development phase years)
- m. Recommended mitigation / improvement