City of Tulsa City Requirements for Traffic Impact Analysis (TIA)

1.0 INTRODUCTION

The City of Tulsa requires traffic and circulation impacts of proposed developments be analyzed to ensure safe and acceptable movement of vehicles is maintained. The traffic impacts of proposed developments are to be analyzed through a Traffic Impact Analysis (TIA) prepared in compliance with City requirements as set forth in this document. The Traffic Impact Analysis must be prepared, signed and sealed by a licensed professional engineer registered in the State of Oklahoma. The following guidelines have been established to assist a professional engineer in providing the information needed for city staff to adequately analyze impacts of the development proposal. The TIA will be submitted after the predevelopment conference as part of the IDP plan submittal package.

2.0 DEVELOPMENT PROPOSALS REQUIRING TRAFFIC IMPACT ANALYSIS

IDP projects meeting the requirements below shall complete the *TIA Pre-Determination Worksheet,* found in **Exhibit A**. It is a policy of the City of Tulsa that a TIA for development proposals be submitted to Development Services at the time of application for new developments that generate more than 100 new peak hour trips, see *TIA Pre-Determination Worksheet,* as part of:

1) New plats
2) IDP process

Developments generating less than 100 peak hour trips may be required to submit a TIA in specific cases. A table for the threshold size of common land use to generate 100 trip is found in **Exhibit D**. Examples where this may apply are:

1) The presence of an existing or potential safety problem or the project is located on the high injury network detailed by the INCOG Local Roads Safety Action Plan.
2) The presence of a nearby substandard intersection or street.
3) The need for a focused analysis for access/operational issues.
4) A request from an affected agency, such as ODOT.

The examples above are the most frequent conditions where a TIA would be required for a development generating less than 100 peak hour trips; however, the City of Tulsa reserves the right to require a traffic impact analysis for any development regardless of size and/or type.

3.0 COORDINATION WITH PUBLIC WORKS TRAFFIC ENGINEERING, AND DEVELOPMENT SERVICES

In order to streamline the TIA preparation and review process for larger and more complex projects, the Applicant can request a pre-application meeting with the City of Tulsa Public Works – Traffic Operations Division and Development Services staff prior to the preparation and submittal of a Traffic Impact Analysis. A TIA "Pre-Determination Worksheet", attached as **Exhibit A**, shall be prepared by the Applicant in preparation for discussion at the pre-application meeting. The pre-application meeting will determine the following key components before the TIA is initiated:

- Determination of study area, intersections, and roadway links to be analyzed.
- Project trip generation.
- Use of other approved projects for background traffic, or traffic growth assumptions.
- For Projects within one mile of a state highway or turnpike, or any project that may create a significant impact on the state highway or turnpike system, the Applicant shall also coordinate with the Oklahoma Department of Transportation (ODOT) or Oklahoma Turnpike Authority (OTA).

4.0 LEVELS OF ANALYSIS

Tables 1 and **2** describes the level of traffic analysis required based on estimated peak hour trips of the development proposal. The following guidelines are provided to help developers and their consultants determine the size of the area to study for a traffic impact analysis and the detail of the analysis the city staff will require. There are three levels of analysis, each with a different emphasis and level of detail. Developments may have different or unique traffic issues and concerns that may require further analysis. Traffic conditions at each project phase completion are to be analyzed using the same approach as for the project completion year, if applicable. Traffic associated with each previous project phase shall be included in the analyses of each successive phase of the proposed project.

TABLE 1: Traffic Analysis Levels

Traffic Analysis Type	Threshold Total Peak Hour Trips both entering and exiting	Study Horizons	Study Area
Level I*	100 to 499 peak hour trips	Opening year 5 years after opening	Nearby intersections.
Level II	500 to 1,199 peak hour trips	Opening year 5 years after opening 10 years after opening	Level I and 0.5 mile radius from site boundary.
Level III	≥ 1,200 peak hour trips	Opening year 5 years after opening 10 years after opening Complete build out	Level II and one mile radius from site boundary.

*If an applicant can demonstrate that a project will meet the Level I threshold and that nearby arterial streets and intersections are currently operating at a Level of Service of B or better (LOS A for areas with Rural land use designation), the TIA requirements can be waived. The applicant should submit a letter and evidence as prepared by a licensed engineer registered in the State of Oklahoma of the current LOS and the projected impact of the project.

TABLE 2: Required Traffic Analysis Elements

Element	Level I	Level II	Level III
Project Scoping Form	✓	✓	✓
Analysis of Existing Conditions			
Study area and road summary including speed limits	✓	✓	✓
Site Plan including adjacent land uses, driveways, and roadways (existing and dedicated)	✓	✓	✓
Description of existing perimeter streets and intersections (2-mile radius)			✓
24-hour traffic counts and turning movements during morning and evening peak hours	✓	✓	✓
Capacity and existing LOS for perimeter streets and intersections	✓	✓	✓
Traffic accident data for the last 36 months	✓	✓	✓
Analysis of Future Conditions			
5-year projected ADT	✓	✓	✓
Trip Generation for specific uses	✓	✓	✓
Trip Distribution analysis	✓	✓	✓
Future + project conditions analysis at site	✓	✓	✓
Future + project conditions analysis at nearby intersections	✓	✓	✓
Future + project conditions analysis for 0.5-mile radius of site[1]		✓	✓
Future + project conditions analysis for 1.0-mile radius of site[1]			✓
Future 24-hour traffic counts and turning movements during morning and evening peak hours	✓	✓	✓
Capacity and LOS for morning and evening peak hours	✓	✓	✓
Mitigation identification and evaluation	✧	✧	✧
Traffic Signal Warrant Analysis	✧	✓	✓
Safety and Operational Analysis	✧	✓	✓
Street and Access improvement plan	✓	✓	✓
Access design, queue lengths, etc.	✓	✓	✓
Conditions analysis for all approved and nearby proposed projects	✓	✓	✓
Summary of Findings and Recommendations	✓	✓	✓
Additional Information			
Cost estimate of recommended improvements		✧	✧
Truck access routes, adequacy of streets for truck traffic, etc.		✧	✧
Special event land use		✧	✧
Key: ✓= required ✧= may be appropriate on a case-by-case basis [1]Study area may be reduced in downtown area due to density of arterial street system			

The City of Tulsa requires the use of the most recent edition of the Transportation Research Board - Highway Capacity Manual (HCM). Refer to **Exhibit B** for default traffic signal input parameters. For trip generation purposes, the most recent ITE Trip Generation figures shall be used unless an alternate trip generation source is approved by the City Traffic Engineer. Modeling software, such as Synchro or Highway Capacity Software (HCS), can be used. The software and version shall be approved by the City Traffic Engineer.

5.0 TRAFFIC IMPACT ANALYSIS REPORT

The written report should address the following areas utilizing appropriate charts and graphics. A recommended outline for the reports is provided in Exhibit C:

1) A description of the development site, proposed land uses and intensities, and the area of study (see **Table 1**). An access plan for the development, including the proposed internal circulation and available sight distances at major entry points.

2) Existing conditions and analysis:
   - Current Average Daily Traffic (ADT) for the proposed location.
   - Description of the existing conditions of perimeter streets and intersections and any other street in the area, as required in **Table 2**. Information on existing street widths, number of lanes, speed limits, intersection geometrics, locations of traffic signals and other types of traffic control, parking restrictions and transit routes should also be included.
   - 24-hour traffic counts of the perimeter streets and turning movement counts during morning and evening peak periods at the intersections (Counts cannot be more than two years old).
   - Capacity and level of service analysis for the existing conditions of the perimeter streets and intersections.
   - Traffic crash data for the study area both for mid-block locations and intersections in the last 36 months.
   - Transit routes and bus stops that are near the study area and those that will be modified or impacted by the project.
   - Identify any pedestrian facilities within the study area and how they will be impacted by the project. If there are schools near the study area, consideration should be given to provide sidewalks or other pedestrian facilities to complete connectivity to the surrounding pedestrian facilities.
   - Identify any existing or planned trails or on-street bike facilities that are within the study area and how they may be impacted by the project.

3) Calculation, analysis, and representation of the following future conditions:
   - 5-year projected ADT for the proposed location. The annual growth rate should be a compounding growth rate assumed to the project background traffic. This growth rate should be considered based on historical data near the study area, to be approved by the City Traffic Engineer.
   - Trip generation during the 24-hour, morning and evening peak periods, and peak hour of the generator for each land use category in the project should be calculated and shown. A trip table that includes types of land use intensity, trip generation rates and trips generated should be prepared. Impact due to pass-by or internal capture may be included based on the latest edition of the ITE Trip Generation Manual.
     - For all on-site outparcels with unknown tenants, the trip generation land use *High Volume Fast Food [ITE 929]* shall be used.
   - The distribution of generated traffic and assignment of that traffic to the street system during morning and evening peak periods and peak hour of the generator along with reasons for the assumed distribution. The distribution should be based on existing traffic patterns, proposed site access locations, anticipated local traffic patterns for development, and future study area roadway network (if applicable).
   - A directional distribution figure should be provided to clearly communicate the distribution assumption for the study area as a whole and at each intersection and access point. The figure should also distinguish between entering and exiting trips.

Multiple trip distributions may be needed for phased developments to reflect changing traffic patterns resulting from additional land uses and access points in subsequent phases.

- Future 24-hour traffic volume and assignment of that traffic to the street system during morning and evening peak periods and peak hour of the generator along with reasons for the assumed distribution.
- Level of service for morning and evening peak periods, and for the peak hour of the generator. This analysis is to be reported in level of services (LOS). The target LOS identified for the City if LOS D or better. A table that breaks out each LOS and corresponding delays should be provided. When reporting LOS, the model should account for overall intersection peak hour factor (PHF) observed in the field unless the traffic volumes in the future are anticipated to dramatically change. If this is the case, this should be noted along with the assumed PHF. For signalized intersections, existing timing files shall be requested from the City to use in the LOS analysis. For an intersection or approach anticipated to operate at LOS E or worse, mitigation measures will be required in order to bring the intersection or approach back to within an acceptable LOS.
- Thoroughfare capacity analysis for morning and evening peak periods, and for the peak hour of the generator. This analysis is to be done if any of the study area thoroughfares are anticipated to be nearing capacity. The following Volume to Capacity (V/C) breakdowns for the traffic condition are shown below:
    - 0.00 > V/C > 0.65 = Acceptable
    - 0.65 ≥ V/C > 1.00 = Tolerable
    - V/C ≥ 1.00 = Failing

  No recommendations are needed unless the anticipated traffic condition is Failing.
- Proposed mitigation measures for the projects. **Table 3** provides guidance when specific mitigations may be required and the minimum acceptable operating condition after mitigation.

Table 3: Mitigation Requirements

Location	Mitigation Measure	When Required	Minimum Operating Condition at Buildout
Site Access Drives	Left-Turn Auxiliary Lane	**	N/A
	Right-Turn Auxiliary Lane		
Thoroughfare Network Study Area Intersections	Traffic Signal	Intersection meets one or more Traffic Signal Warrants	LOS D OR Equal to existing delay if LOS E or F
	Left-Turn Lane	NCHRP Report 457	
	Right-Turn Lane	NCHRP Report 457	
Thoroughfare Network Study Area Roadway Links	Roadway Widening*	Widen roadway if V/C ≥ 0.80	V/C < 0.80
		Consideration for widening if V/C < 0.80 and not to built to future configuration	
Study Area Pedestrian Network	Provide pedestrian routes with associated infrastructure to schools	Schools within up to 0.5 miles of development	N/A

**Widening or new construction of roadways required by the development must be approved by the City.*

***Refer to the City of Tulsa Access Management Standard No. 711A for requirements.*

- Traffic Signal Warrant Analysis
- Safety and Operational Analysis

4) Street and access improvement plan with recommendations by development phase, identifying all needed improvements and the improvements that are the responsibility of the developer. These recommendations should be based on both the morning and evening peak hour projected volumes with an emphasis on the safety aspects of the designs.

5) Proposed driveway locations, geometrics, sight distances, turning movement diagrams, auxiliary lane analysis, and turn restrictions taking into consideration the proximity of nearby intersections and anticipated queues based on arrival rates, should be shown.
   - The proposed project access locations are subject to the spacing criteria from the City's Access Management Standards No. 711A, No 711B, and No. 711C Spacing criteria is subject to the street type per the Major Street and Highway Plan.
   - Field observations should be made to confirm adequate sight distance at each proposed project access drive. Sight distance should also be evaluated based on the ultimate cross section of the major street if future widenings are anticipated. Guidelines provided in the latest edition of AASHTO's Policy on Geometric Design of Highways and Streets for intersection sight distance should be considered. The following movements should be considered for adequate sight distance:
     - Left-Turn from Stop (Case B1)
       - Section 9.5.3.2.1
     - Right-Turn from Stop (Case B2)
       - Section 9.5.3.2.2
     - Left-Turn from Major Road (Case F)
       - Section 9.5.3.6
   - Each proposed project access drive or street should be evaluated for auxiliary lane needs at each phase anticipated of development. The requirements for right and left-turn lanes can be evaluated using methodologies outlined in NCHRP Report 745. When analyzing auxiliary lanes, existing traffic, background traffic and site traffic should be considered.

6) All projects within the study area that have received approvals for development (approved development plans, approved tentative tracts, approved conditional use permits, etc.) shall be identified, and their traffic generation included as cumulative traffic in the report. Proposed projects in the study area that have been submitted to the City for review, but not yet approved, should also be included.

7) Concise summary of findings and mitigation measures for the development plan.

Additional information may be requested depending upon the project and/or the location.

6.0 PROPOSED MITIGATION MEASURES

The intent of the TIA is to determine what, if any, mitigation measures are needed. Mitigation measures may include but are not limited to roadway improvements, access improvements, operational changes or site improvements. **Table 4** presents some examples of mitigation measures.

TABLE 4: Examples of Mitigation Measures

Mitigation Category	Mitigation Measure Examples
Roadway Improvements	• Repaving/re-striping • Realignment of streets • Improve sight distance • Widening • Intersection improvements • Traffic signals (must meet warrants) • Median crossovers • Building new roadways • Interchanges (construct or modify)
Access Management Improvements	• Increase driveway spacing • Relocate driveways or intersections • Reduce the number of driveways • Install medians • Shared access
Operational Improvements	• Modify signal timing or phasing • Coordinate traffic signals
Site Plan / Land Use Improvements	• Reduce intensity • Modify project phasing • Increase driveway queuing • Revise/improve internal circulation • Revise service vehicle/truck access or circulation • Improve pedestrian and bicycle access and circulation • Improve wayfinding through direction signs and pavement markings

7.0 TRAFFIC SIGNAL WARRANT ANALYSIS

The Project Engineer shall review major intersections within the study area, including the project access points, to determine if signal warrants are met for any of the study year scenarios (existing, opening year with project, etc.) The signal warrant analysis shall utilize the latest MUTCD traffic signal warrants. The warrant analysis worksheets shall be included in the report appendices.

8.0 SAFETY AND OPERATIONAL ANALYSIS

The TIA shall examine existing roadway conditions to determine if safety and/or operational improvements are necessary due to increase in traffic from the project or cumulative projects. The types of improvements to be identified may include, but are not limited to:

- Need for turning lanes
- Intersections needing sight distance studies
- Parking restrictions
- Measures to reduce cut-through project traffic in adjacent residential areas
- Potential impacts to adjacent schools
- Queue lengths and impacts to adjacent intersections
- Need for signal interconnect systems
- Pedestrian/Bicycle Facility Improvements

9.0 SUBMITTAL REQUIREMENTS AND PROCEDURE

1) If a pre-application meeting is requested, the *TIA Pre-Determination Worksheet* should be completed and submitted for approval prior to preparation of the traffic impact analysis.

2) Upon completion of the traffic impact analysis report, a digital copy of the report shall be included with the IDP plan submittal. Review and approval of the TIA will be part of the overall approval process of the IDP plans.

3) A Traffic Impact Analysis is valid in the City of Tulsa for a period of two (2) years. If the project does not begin construction within two (2) years of approval, a reevaluation based on recent traffic information may be necessary to determine the degree to which background conditions have changed since the original traffic analysis was approved. If needed, a new traffic analysis will be required to provide information to help determine and decide if any additional mitigation measures are necessary at the discretion of the City Traffic Engineer.

4) The findings of the analysis shall be incorporated into the approved plans for the proposed project. Acceptance of the public infrastructure improvements associated with the findings of the TIA are a condition of the closeout of the IDP project.

10.0 USE OF TRAFFIC IMPACT ANALYSIS

City staff will review the traffic impact analysis to determine appropriate traffic and transportation improvements required with the development.

APPROVED:

Terry Ball — **2/3/2026**
Terry Ball, City Public Works Director — Date

Tracy Nyholm — **2/3/2026**
Tracy Nyholm, City Traffic Engineer — Date

Exhibit A

City of Tulsa TIA Pre-Determination Worksheet

Complete this worksheet and submit to the City of Development Review to determine if a TIA is required. Provide a site plan, methodology, growth rate, trip distribution and proposed intersections.

SECTION 1 – GENERAL INFORMATION					
Project/Subdivision Name:				Date:	
Subdivision Plat Number:		Project Address/Location:			
Owner Name:					
Owner Address:					
Owner Phone:		Owner Email:			
Preparer Company:					
Preparer Name:					
Preparer Address:					
Preparer Phone:		Preparer Email:			

SECTION 2 – PROPOSED LAND USE AND TRIP INFORMATION *(Reference ITE or Exhibit D)*

	Land Use	ITE Unit	Intensity	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
					In	Out	In	Out
1								
2								
3								
4								
5								
6								
7								
8								
			TOTAL:					

TIA Methodology Confirmed with the City of Tulsa Staff?	☐	Yes, date:	
	☐	No	

TIA Submittal Type:

☐	TIA Worksheet Only – Less than 100 peak hour trips	☐	TIA (300+ peak hour trips)
☐	TIA Worksheet Only – Previous TIA Approval *	☐	Special Circumstances
☐	Methodology Memo – Prior to TIA Submittal		

SECTION 3 – INTERSECTIONS TO BE EVALUATED

☐	None required (TIA determination worksheet only)
☐	Site access drives and thoroughfare and collector intersections within 1 mile (TIA)
☐	Additional intersections (identified by City of Tulsa):

1		5	
2		6	
3		7	
4		8	

SECTION 4 – TIA WORKSHEET APPROVAL (TO BE COMPLETED BY CITY OF TULSA)

Project Name:					
Reviewer Name:				Review Date:	
Approved:	☐	Yes, comments:			
	☐	No, comments:			

*If within two (2) years of approval date and one (1) of the following:
1) Within 10% of the peak hour trips of a previously planned development
2) Within 100 peak hour trips of previously planned development

Exhibit B
SIGNALIZED INTERSECTION ANALYSIS INPUT PARAMETERS FOR PROPOSED TRAFFIC SIGNALS

PARAMETER	VALUE
Base Saturation Flow Rate	1900 vphpl
Heavy Vehicle factor	2% typical. Actual percentage may be requested depending on location.
Approach Grades	Include as appropriate
Minimum green, walk and clearance times.	5 seconds for left turns. 10 seconds for through movements. 7 seconds minimum WALK time. Pedestrian change interval shall be contained withing the associated vehicle green interval. Yellow clearance and Red change intervals shall be calculated per ITE Recommended Practice.
Cycle length	60 sec to 130 sec plus pedestrian crossing time if greater than vehicle splits. If the proposed signal is on a coordinated corridor, the background cycle length of the corridor must be used.
Peak Hour Factor	PHF=(peak hour volume)/(4 times the peak 15 min vol. during peak hour)

Exhibit C
Traffic Impact Analysis Outline

I. Executive Summary
   a. Introduction
   b. Project Description
   c. Project Phasing Plan
   d. Level of study, study limits and what surrounding additions/developments included in analysis
   e. Conclusions and Recommendations

II. Existing Conditions and Analysis
   a. Roadway Description
   b. Land Use
   c. Traffic Volumes
   d. Turning Movements
   e. Capacity and Level of Service
   f. Crash Data

III. Future Conditions and Analysis
   a. Background Traffic Forecasts
   b. Trip Generation
   c. Trip Distribution
   d. Traffic Assignment
   e. Total Traffic Conditions

IV. Analysis
   a. Capacity Analysis and Level of Service for Future Conditions
   b. Safety and Operational Analysis
   c. Signal Warrant Analysis

V. Proposed Site Access
   a. Driveway Design and Spacing
   b. Access Improvements
   c. Sight Distance Evaluation
   d. Auxiliary Lane Analysis

VI. Conclusions

VII. Recommended Mitigation Measures

VIII. Appendices

Exhibit D
Traffic Impact Study Level Thresholds

ITE Code	Land Use	Units	Size to Generate 100 vph
110	General Light Industrial	Sq. Ft.	135,000
130	Industrial Park	Sq. Ft.	295,000
140	Manufacturing	Sq. Ft.	140,000
150	Warehouse	Sq. Ft.	600,000
210	Single Family	Units	106
220	Multi-Family (Low-Rise)	Units	195
221	Multi-Family (Mid-Rise)	Units	260
254	Assisted Living	Beds	420
310	Hotel	Units	170
445	Multiplex Movie Theater	Screens	*Note C*
480	Soccer Complex	Units	*Note C*
495	Recreation Community Center	Sq. Ft.	35,000
560	Church	Sq. Ft.	*Note C*
565	Daycare	Sq. Ft.	9,000
710	General Office	Sq. Ft.	66,000
720	Medical Office	Sq. Ft.	25,000
750	Office Park	Sq. Ft.	*Note A*
812	Building Materials and Storage Store	Sq. Ft.	45,000
813	Discount Superstore	Sq. Ft.	*Note A*
816	Hardware Store	Sq. Ft.	34,000
820	Shopping Center	Sq. Ft.	*Note B*
840	Automobile Sales (New)	Sq. Ft.	42,000
850	Supermarket	Sq. Ft.	11,500
881	Pharmacy w/ Drive Thru	Sq. Ft.	10,000
912	Drive-In Bank	Sq. Ft.	5,000
929	High-Volume Fast-Food Restaurant	Sq. Ft.	*Note A*
931	Fine Dining Restaurant	Sq. Ft.	13,000
932	High Turnover Sit Down Restaurant	Sq. Ft.	10,000
934	Fast Food w/ Drive Thru	Sq. Ft.	3,000
937	Coffee/Donut Shop w/ Drive Thru	Sq. Ft.	*Note A*
945	Convenience Market w/ Gas Pump	Fuel Pos.	*Note A*
Institute of Transportation Engineers (ITE) *Trip Generation*, 12th Edition			

Notes
A. TIA required due to land generating more than 100 vph.
B. Shopping Center land use applied to development with multiple commercial retail centers with shared parking.
C. Peak generator times for land use typically occur during Friday or over the weekend. City of Tulsa will determine the study analysis days and time periods to account for the weekend peak hour.