



## Transportation Impact Study Guidelines

The following tasks represent the minimum recommended guidelines for a transportation impact study when such a study is deemed appropriate. The purpose of such a study is to assess the impact of new development or redevelopment on the public street system and to evaluate access and circulation for automobile and truck traffic, pedestrians, bicyclists, and transit.

1. Identify the specific development plan under study and any existing development on and/or approved plans for the site (land use types and intensities and the arrangement of buildings, parking, and access). Additionally, identify land uses (including types and the arrangement of buildings, parking, and access) on property abutting the proposed development site, including property across public streets.
2. Identify the land uses shown in the Basehor Zoning Map/Comprehensive Plan for the proposed development under study and the arterial and collector street network in the vicinity of the site (at least the first arterial or collector street in each direction around the site).
3. Document current public street characteristics adjacent to the site, including the nearest arterial and collector streets (number and types of lanes, speed limits or 85<sup>th</sup> percentile speeds, and sight distances along the public street(s) from proposed access).
4. Show proposed access and driveway spacing, alignment with other streets and driveways, width of driveway, and minimum sight distances). If appropriate, assess the feasibility of access connections to abutting properties, including shared access with the public street system.
5. Estimate the number of trips generated by existing and proposed development on the site for a typical weekday and weekday peak hours using the latest edition of Trip Generation published by the Institute of Transportation Engineers. Local trip generation characteristics may be used if deemed to be properly collected and consistent with the subject development application. Calculate the net difference in trips between existing and proposed uses. If the development site already has an approved plan, also estimate the number of

trips that would be generated by the approved land uses. If the development application is proposing a land use different than indicated in the Basehor Zoning Map/Comprehensive Plan, also estimate the number of trips that would be generated by the land use indicated in the Zoning Map/Comprehensive Plan.

6. Document current peak hour traffic volumes on a typical weekday (Tuesday, Wednesday, and/or Thursday). Traffic volumes should be measured at any existing site driveway(s) and on the adjacent collector streets, including the nearest collector/arterial street intersection in each direction along streets bordering the development site. The time periods in which existing traffic is counted should generally coincide with the highest combination of existing traffic plus traffic expected to be generated by the proposed development. Traffic volume counts at intersections shall document left-turn, through and right-turn movements on all approaches and shall be tabulated in no greater than 15-minute increments.
7. Estimate future P.M. peak hour traffic volumes for the intersections included in the study area. It is recommended that assumptions be discussed with the Public Works Director prior to completing this work.
8. Distribute and assign the new development trips through the site driveway(s) plus the nearest collector/arterial street intersections in each direction along streets bordering the development site. If applicable, this and subsequent tasks shall be repeated based on approved land uses and/or land uses identified in the Basehor Zoning Map/Comprehensive Plan.
9. Conduct volume/capacity analyses for the peak hours at site driveway(s) and other intersections using methodologies outlined in the latest edition of the Highway Capacity Manual published by the Transportation Research Board. The analyses should be conducted for 1) existing conditions, 2) existing plus development conditions, and 3) future conditions.
10. Compare existing plus development conditions and future conditions with acceptable levels of service (LOS) and turn lane requirements. The recommended minimum LOS that would guide the need for improvements are LOS D on arterial streets and LOS C on all other streets. This standard would apply to peak hour conditions typically experienced during the early morning and late afternoon peak periods of a typical weekday. This standard would also apply to other peak conditions associated with a proposed development.
11. Identify geometric and traffic control improvements needed to mitigate deficiencies and/or comply with established guidelines/policies.
12. Prepare an electronic report outlining the findings and conclusions of the study, including exhibits illustrating the site plan, traffic volumes (current and projected), and existing street

conditions. Any deviation from established guidelines/policies shall be clearly identified and justification provided as to the basis for such a condition and its potential ramifications on the public street system.

**Possible Additional Requirements:**

1. Extend the study to additional street segments and/or intersections on the public street system. City staff shall make this determination based on the scale, location, and/or nature of the proposed development and the condition or state of development of the street network in the vicinity of the site.
2. Proximity of a development to KDOT Right-of-Way may require additional coordination with KDOT.

## **WARRANTS FOR TRANSPORTATION IMPACT STUDIES**

The necessity to review all land development applications from a transportation perspective as well as the wide variety of land use types and intensities suggest that multiple thresholds or triggers be established to warrant a transportation impact study. The following triggers are generally recommended for the City of Basehor. Final decision on Minimum Study Requirements will be made by the City of Basehor.

<b>Development Triggers</b>	<b>Minimum Study Requirements</b>
All Applications (1)	Conduct Tasks 1-5.
Development Plan Generates 100 to 499 Trips in a Peak Hour	Conduct Transportation Impact Study (Tasks 1-12).
Development Plan Generates 500 or More Trips in a Peak Hour	Conduct Transportation Impact Study (Tasks 1-12) plus extend the study in each direction along arterial streets serving the development site to at least the next intersecting arterial street.
Proposed Land Use Deviates from Zoning Map/Comprehensive Plan	Conduct Transportation Impact Study (Tasks 1-12) plus extend the study in each direction along streets serving the development site to at least the next intersecting arterial street and conduct comparative studies using the proposed land use versus the land use in the Zoning Map/Comprehensive Plan.

(1) Rezonings, Special Use Permits, Preliminary Development Plans, or Preliminary Plats

## **OTHER TRANSPORTATION ISSUES ASSOCIATED WITH SITE PLANNING**

While transportation impact studies primarily address automobile traffic, recognition of other vehicle types and travel modes is appropriate, particularly in a community that strives for multi-modal choice. The following, by no means, represents a comprehensive list of site planning elements.

## **Trucks**

Site driveways and internal circulation must be designed to accommodate the largest truck anticipated to serve the development. Vehicle turning paths need to be provided such that trucks do not encroach over curbs and medians. Encroachment into opposing turning lanes should be minimized but can be consistent with the scale of the development and the frequency and timing of truck movements. Truck circulation through a development site should minimize conflicts with customer traffic and loading docks should be configured such that parked trucks do not impede normal traffic flow.

## **Pedestrians**

The investment in sidewalks along public streets or off-street paths is diminished if pedestrians can't readily travel between public sidewalk facilities and adjacent land uses. All development plans should provide this connectivity whether it is made via proposed parking lot facilities and/or additional sidewalks or paths.

## **Bicycles**

Similar to pedestrians, development plans should provide reasonable opportunities to travel between adjacent public streets or bicycle trails and the land use. This does not imply that separate facilities are needed; rather, the conditions within a development site should be comparable to conditions adjacent to and near the site. Adequate and properly placed parking facilities for bicycles are a key component to encouraging bicycle travel.

## **Public Transportation**

Bus transportation is currently provided by several private and publicly funded agencies, generally to targeted customers. More widespread public transit could be implemented in the future. Site development should account for both current and potential bus services. Some of these considerations are similar to trucks due to the relatively large size of buses; however, the primary difference is that buses need to circulate with customer traffic flow. One other consideration is that large parking lots can potentially be used as park-and-ride facilities in conjunction with bus transit services.

## **QUALIFICATIONS TO CONDUCT A TRANSPORTATION IMPACT STUDY**

The parties involved in a land development application sometimes have different objectives and perspectives. Further, the recommended elements of a transportation impact study require skills found only in a trained professional engineer with specific experience in the field of traffic engineering.

For these reasons, the person conducting and reviewing the study must be a registered professional engineer in the State of Kansas and have at least 5 years of demonstrated experience either in the preparation or review of transportation impact studies for land development or Certification as a Professional Traffic Operations Engineer (PTOE).

The City staff shall determine whether an individual professional engineer is qualified to conduct a transportation impact study in the City of Basehor. Credentials shall be provided upon request.