I. INTRODUCTION

Background

Land use and transportation are strongly interdependent. Transportation facilities and services are essential for development to occur, and high levels of mobility and accessibility are needed to attract the economic development to provide and maintain a high quality of life.

The transportation decisions made in the land development process have a significant cumulative effect on the safety and efficiency of a community's street system. There is a strong correlation between the amount of access provided to major streets and the safety and efficiency on those streets. Therefore, it is in the long-term interests of all parties to balance the mobility and safety needs of the traveling public with the accessibility to development.

Purpose

The primary purpose for evaluating the impact of development through transportation impact studies is to protect the integrity of the transportation systems. Neither public nor private interests are well served if transportations systems needlessly degrade due to poor planning and design.

In order to accomplish this objective, the review of transportation systems associated with development needs to be more extensively scrutinized and needs to take a long-term perspective. What might be acceptable today may not be as an area develops and matures. This is certainly consistent with the City's long-range planning for land use, major streets and other infrastructure.

These transportation impact study guidelines, and the resulting work products, will allow for more informed decision-making and could lead to a framework for the negotiation of mitigation measures for the impacts created by development.

II. EXTENT OF STUDY REQUIRED

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 guidelines will be followed.

All Applications

1. Establish the scope of the study area in coordination with the City prior to performing any analysis. 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). Also 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 Lawrence/Douglas County Comprehensive Plan for the proposed development site under study, as well as the ultimate 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. Identify the functional classification of the public street(s) bordering the site and those streets on which access for the development is proposed. The functional classification is shown on the Major Thoroughfares Plan, which is incorporated into the Comprehensive Plan.

4. Identify allowable access to the development site as defined by City design criteria and/or access management guidelines and adopted Access Management Plans for arterial and collector streets in Lawrence.

5. Document current public street characteristics adjacent to the site, including the nearest arterial and collector streets, number and types of lanes, speed limits or 85th percentile speeds, and sight distances along the public street(s) from proposed access(es).

6. Compare proposed access with established design criteria (driveway spacing, alignment with other streets and driveways, width of driveway, and minimum sight distances). Identify influences or impacts of proposed access to existing access for other properties. If appropriate, assess the feasibility of access connections to abutting properties, including shared access with the public street system.

7. 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 with appropriate documentation provided for review. The City Engineer shall make such determination. 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 Comprehensive Plan, also estimate the number of trips that would be generated by the land use indicated in the Comprehensive Plan. The City Engineer or designee shall approve the potential land use intensity in such cases.

Development or Site Plan Generates 100 to 499 Trips in a Peak Hour
A Standard Transportation Impact Study will be required. The study area may tend to be confined to the street or streets on which access is proposed but should be extended to at least the first major intersection in each direction.

Development or Site Plan Generates 500 or More Trips in a Peak Hour
A Standard Transportation Impact Study will be required. The study area may extend beyond the streets onto which access is proposed.

Proposed Land Use Deviates from Comprehensive Plan
Determine the extent of a transportation impact study based on anticipated trip generation. Conduct comparative analyses using the proposed land use and the land use identified in the comprehensive plan.

III. QUALIFICATIONS TO CONDUCT AND REVIEW A 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 the person reviewing the study must be registered professional engineers with demonstrated experience in the preparation or review of transportation impact studies for land development.

The City Engineer or designee shall determine whether an individual professional engineer is qualified to conduct a transportation impact study. Credentials shall be provided upon request.

IV. REVIEW AND USE OF STUDY

A transportation impact study should be viewed as a technical assessment of existing and projected transportation conditions. The extent to which individual professional judgment has to be applied will be minimized by provision of community policies and practices with respect to street and traffic control design and land development.

Ultimately, a transportation impact study will be used by professional staff to make recommendations to the planning commissions and governing bodies charged with reviewing and approving development applications. Transportation is one element amongst many that must be considered.

City personnel charged with reviewing transportation impact studies have several functions to consider:

- Determine whether the impacts of development have been adequately assessed.
- Ensure that proposed access is properly coordinated with existing and planned facilities, fits into the ultimate configuration of the street system, and is appropriately designed at its connection to the public street system.
- Determine whether proposed improvements for the public street system are sufficient to mitigate the impacts created, and that the improvements meet local requirements.
- Ensure that the development plan considers the needs of pedestrians, bicyclists, and transit users.
- Determine whether the development layout can accommodate all anticipated vehicle types.
- Invite other responsible and applicable transportation agencies or entities, e.g., Kansas Department of Transportation, to participate in the study and review processes.
- Provide consistent, fair, and legally defensible reviews.

V. STANDARD TRANSPORTATION IMPACT STUDY PROCEDURES

Step 1 Study Methodology Determination

Prior to conducting any transportation impact study it is necessary to determine the minimum technical responsibilities and analyses that will be performed. It is the applicant's responsibility to ensure that the study utilize the techniques and practices accepted by the City and other participating agencies.

The following items shall be considered, discussed and agreed to by the City Engineer or designee (and others if appropriate) and the applicant for transportation impact studies prior to performing any analysis.

- Definition of the proposed development, including type and intensity of the proposed land

uses and proposed access.
- Study area limits based on the magnitude of the development.
- Impact or influence on access for adjacent and nearby properties.
- Time periods to be analyzed, e.g., weekday A.M. and P.M. peak hours.
- Scenarios or conditions to be analyzed, e.g. existing conditions, existing plus development conditions, and Long Range Transportation Plan Horizon Year conditions.
- Future analysis year(s), including special study procedures for multi-phase development plans.
- General assumptions for trip generation, trip distribution, mode split, and traffic assignment.
- Traffic analysis tools and acceptable parameters.
- Availability and applicability of known data.
- Traffic data collection requirements and responsibilities, including time periods in which traffic counts will be collected.
- Transportation system data, e.g. traffic signals, transit stops, bicycle and pedestrian facilities, etc.
- Planned transportation system improvements, including the anticipated timing, for all modes of transportation, e.g. street widening, bicycle trails, transit stops, etc.
- Methodology for projecting future traffic volumes.
- Current level of service and access management requirements.
- Acceptable mitigation strategies.

Study Area

The study area and the intersections and street segments to be included will vary for a number of reasons - the type and intensity of the development, the maturity of other development in the vicinity, the condition of the street network, etc. The study area should be large enough to assess the impact or influence of proposed access along street segments and to evaluate the ability of streets and intersections to absorb the additional traffic.

The study area should at least include those street segments onto which access is proposed and should typically extend to the next major intersection (arterial/arterial, arterial/collector, or collector/collector) in each direction.

Analysis Periods

Transportation impact studies should be based on peak-hour analyses. The analysis period(s) should be based on the peaking characteristics of both the public transportation systems and development traffic. The typical analysis periods for most development are the A.M. and P.M. peak hours, of a typical weekday (Tuesday, Wednesday, and/or Thursday). Retail development that is typically not open early in the morning may not warrant study for the A.M. peak hour. On the other hand, intense retail activity in an area may warrant study during the Saturday peak hour.

Analysis Years

In general, the analysis years should be related to the opening date of the proposed development and the horizon year in the City's long-range transportation plan.

Method of Determining Future Traffic Volumes

Future daily traffic volumes on arterial and collector streets shall be identified from the long-range transportation plan or from the traffic model used to develop the plan for each arterial and collector street segment in the study area.

Step 2 Analysis of Existing Conditions

Once the parameters for the transportation impact study have been established, the first step in the study process is to collect relevant data and assess existing conditions.

3.1 Data Collection

The applicant is responsible for collecting, assembling, analysis and presentation of all data. Typically, the following types of data are required for the study area.

Proposed Site Development Characteristics
Identify the specific development plan under study and any existing development on and/or approved plans for the site. This includes land use types and intensities and the arrangement of buildings, parking and access. Also 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.

Information for the proposed development shall be displayed on a scaled drawing. If detailed information regarding abutting property is not shown on the development plan, it may be exhibited on a current aerial photograph, or other drawing, along with the proposed development.

This information is needed to assess the proposed access in relation to existing driveways and side streets at the site and along the street corridors on which access is proposed. This process should also take into account potential access for undeveloped land in the vicinity.

Transportation System Data
This includes the physical and functional characteristics of the transportation systems in the study area. Data to be collected includes:

- The functional classification and jurisdiction responsible for each street.
- The number and types of lanes for all intersections and street segments.
- Traffic control devices such as traffic signals (including left-turn control type(s) and phasing), other intersection control, and speed limits.
- Transit, bicycle, and pedestrian routes and facilities.
- Available sight distances to/from each proposed point of access.
- Planned streets not yet built.
- Planned improvements for each street and/or intersection (either programmed for construction or included in the long-range transportation plan).

Transportation Demand Data
This includes current traffic volumes (intersection turning movement counts), percent trucks, peak hour factors, transit patronage, bicycle usage, and pedestrian usage. For some studies, additional data such as right-turn-on-red usage, traffic distribution by lane, or other similar data may be required.

Intersection turning movement counts shall be taken on a Tuesday, Wednesday, and/or Thursday for weekday conditions. It is preferred that morning and afternoon counts be taken on the same day. For a study requiring traffic counts at several intersections that cannot be accomplished all in one day, the counting program should be organized so that adjacent intersections are counted

as close in time as possible. As a minimum, traffic volumes should be measured at any existing site driveway and on the adjacent streets, including the nearest arterial/arterial or arterial/collector intersection in each direction along streets bordering the development site. If a proposed driveway or street will line up with an existing driveway or street opposite it, traffic volumes shall be collected at the existing intersection. 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. A minimum of one hour is required but the count periods should extend at least 15 minutes before and at least 15 minutes beyond the anticipated peak hour to ensure that the highest one hour of traffic is identified. 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. The City Engineer or designee shall determine, based on the nature of the development, additional time periods in which current traffic volumes shall be documented.

Land Use Data

Identify the land use(s) shown in the Lawrence/Douglas County Comprehensive Plan for the proposed development site under study.

Crash Data

Collect existing crash data for the most recent five year period in which data is available and provide discussion of any patterns and possible mitigation strategies.

3.2 Operational Analysis

Capacity analyses shall be performed for each intersection in the study area. All capacity analyses shall be performed using a method or software approved by the City Engineer or designee. In general, capacity analyses must be based on methodologies outlined in the latest edition of the Highway Capacity Manual (HCM). Planning level methods of analysis will not be accepted.

While other types of capacity analyses may be required for some transportation impact studies, most will include only signalized and unsignalized intersections.

Signalized Intersections

Analysis programs require input of intersection-specific information such as traffic volumes, number and types of lanes, signal phasing, etc., but also include a number of parameters reflecting traffic characteristics and signal operations that typically have preset default values. Care must be exercised to ensure that these parameters provide a true reflection of actual traffic operations and are based on normal practices of the City.

Cycle lengths used in these analyses must be reasonable based on the signal phasing and traffic demand at the intersection. For example, an arterial/arterial intersection with 8-phase control and protected-only left-turn phasing would likely use a cycle length of at least 100 seconds but possibly as high as 120 to 140 seconds. The cycle length to be used for the analyses shall be based on either existing operations or a cycle length optimization available with most capacity analysis software. Likewise, the green time (or cycle split) allocated to each phase must provide an accurate reflection of existing conditions. For isolated intersections, it is preferred that green times be determined through an optimization program in order to show how well the intersection could operate. For signalized intersections in coordination, actual timings should be used. Other

means of developing green times shall be reviewed in advance with the City Engineer or designee.

Other considerations in most analyses include the peak hour factor (PHF), percent trucks, clearance intervals, and the queuing model. The PHF should reflect the actual counts taken at the intersection. Some percentage of trucks should be input - either the amount measured or an estimate agreed to with the City Engineer or designee. Clearance intervals shall be calculated based on practices recommended by the Institute of Transportation Engineers (ITE). These practices will typically yield clearance intervals (yellow plus all red) in the range of 5 to 6 seconds. The type of queue model used should be applicable to the conditions and queue estimate should provide at least a 90 percent confidence level of the maximum anticipated queue.

On occasion, the lane utilization factor may need to be adjusted. Under some circumstances, near an interchange for example, the lane utilization may be imbalanced to such an extent that default values would not provide a likely representation of actual conditions.

The most important outputs of these analyses are the overall intersection level of service and the anticipated vehicle queuing in each lane.

Under some circumstances, traffic simulation modeling may be necessary or more appropriate to assess a street corridor. Closely-spaced traffic signals or corridors that employ traffic signal coordination are good candidates for simulation modeling. Any such model, however, must produce outputs comparable to HCM methodologies in order to estimate levels of service.

Unsignalized Intersections

The analysis on an unsignalized intersection is actually an analysis of only those movements that must yield to another movement. For example, at a two-way stop-controlled intersection, the through and right-turn movements on the uncontrolled street are allowed free flow and are not subject to any delay.

Analysis results shall never be expressed as an overall intersection level of service; the term is meaningless.

The most important outputs of these analyses are the levels of service by lane or lane group and the anticipated vehicle queuing in each lane.

Roundabouts

Roundabouts should be evaluated and compared with traffic signal operation at all potential locations including arterial-arterial, arterial-collector and collector-collector intersections. For planning purposes, roundabouts should be evaluated to determine if they provide v/c ratios of 0.85 or below for all approaches for the design year. Analysis should use software that is specifically tailored for roundabout analysis. For roundabouts with unusual geometrics (such as more than two circulating lanes, more than four approaches, or angles between approaches of less than 75 degrees), more detailed analysis may be required.

3.3 Acceptable Levels of Service

Levels of service, while graded similarly, should be interpreted differently at signalized and unsignalized intersections. At signalized intersections, the overall level of service is most important to the assessment of intersection operations. At unsignalized intersections, the level of

service applies to only individual movements, not the overall intersection. Because of the nature of these analyses, the level of service of an individual movement is influenced more by the magnitude of other traffic movements than the volume of the individual movement.

The following standards would apply to peak hour conditions typically experienced during the early morning and late afternoon peak periods of a typical weekday. These standards would also apply to other peak conditions associated with a proposed development.

Signalized Intersections
The minimum levels of service (LOS) that would guide the need for improvements are LOS D on arterial streets and LOS C on all other streets. The level of service goal of an intersection will be determined by the highest classification of street at the intersection.

Unsignalized Intersections
For the left-turn movement from an arterial or collector street, LOS D or better would be deemed acceptable. For lanes or lane groups on side streets or driveways, LOS D is desired but LOS E and F could be deemed acceptable under certain circumstances. Where a lane group (multiple movements served from the same lane) is projected to operate at LOS E or F, an additional lane should be provided when the peak hour volume for the lane group exceeds 100 vehicles. Where a lane serving through and/or left-turn movements is projected to operate at LOS E or F and the volume exceeds 50 vehicles, additional or different site access should be considered unless other site driveways provide reasonable alternative access to a signalized intersection.

Roundabouts
Roundabouts should provide v/c ratios of 0.85 or below for all approaches for the design year.

3.4 Vehicle Queuing Considerations

At signalized intersections, vehicle queues should be contained within turn lanes and should not extend into adjacent intersections. Vehicle queues in through lanes may influence the ability to access turn lanes and should be considered in assessing traffic operations.

At unsignalized intersections, vehicle queues should be contained within turn lanes. In the case of a side street or driveway serving a development site, vehicle queues should not impede site circulation, particularly inbound movements from public streets.

Step 3 Background Traffic Growth

Background traffic is the expected increase in traffic volumes over time except for the specific development under study. Background traffic needs to be estimated out to the applicable horizon year in order to assess future traffic conditions.

Future daily traffic volumes on arterial and collector streets shall be identified from the long-range transportation plan or from the traffic model used to develop the plan for each arterial and collector street segment in the study area. Traffic split by direction, the percent attributable to each peak hour, and the distribution by movement on an intersection approach shall be determined through consultation with the City Engineer or designee.

Step 4 Trip Generation

Trip generation is the process used to estimate the amount of travel associated with a specific land use or development. Trip generation is estimated through the use of “trip rates” that are based on

some measure of the intensity of development, such as gross leasable area (GLA) or gross square footage (GSF).

Trip Generation published by ITE is the most comprehensive collection of trip generation available. The rates provided are based on nationwide data but many rates are not supported with a large amount of data. Nevertheless, this manual is generally accepted as the industry standard and shall be used for studies in the City of Lawrence. Caution needs to be applied when limited data points exist for a land use category. Local trip generation characteristics may be used if deemed to be properly collected and are consistent with the subject development application with appropriate documentation provided for review. The City Engineer shall make this determination.

In making the estimate of trips, the instructions and recommendations included in Trip Generation shall be followed. Typically, the trip generation equations, where available, provide the best estimates. Where data is provided for multiple independent variables, the one yielding the highest number of trips and is based on at least 10 samples (studies) shall be used.

Trip generation shall be estimated for the proposed development for daily, A.M. peak hour, and P.M. peak hour conditions. Other time periods may be necessary based on the land use and/or the inclusion of additional analysis periods in a particular study.

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 that requires an amendment to the comprehensive plan, also estimate the number of trips that would be generated by the land use indicated in the Comprehensive Plan. The City Engineer or designee shall approve the potential land use intensity in such cases for the purpose of estimating vehicle trips.

If internal capture rates and/or pass-by and diverted trips are used by the applicant, the applicable rates must be justified and approved by the City Engineer or designee prior to use. In general, the number of pass-by trips should not exceed 10 percent of the adjacent street traffic during a peak hour or 25 percent of the development's external trip generating potential.

Step 5 Trip Distribution

Trip distribution is the general direction of approach and departure to/from a development site. Trip distribution will typically be estimated using existing travel patterns exhibited in the area, the position of the development in the community, and the likely market area of the development. Data from similar development in the immediate vicinity should be used. Good judgment is necessary to develop reasonable estimates of trip distribution.

Step 6 Mode Split

Mode split is the estimate of number of travelers anticipated to use transportation modes other than automobiles. Data associated with most transportation impact studies is taken from suburban locations where there is little to no alternative to automobile transportation. Further, the trip generation rates are based on the actual number of vehicles, not persons, entering and departing a particular land use. Therefore, mode split will not be applicable to most transportation impact studies.

Mode split, or modified trip generation rates, can be applied where the influence of alternative transportation modes is clearly demonstrated and documented. Prior approval must be received from the City Engineer or designee.

Step 7 Trip Assignment

Trip assignment involves the determination of traffic that will use each access point and route on the street network. While it certainly uses the trip distribution estimates, it is a different process. This is also the step where trip-reduction factors such as pass-by and diverted traffic are applied.

The assignments should reflect the conditions anticipated to occur in the analysis year. Assignments are estimates of how drivers will travel and need to account for physical and operational characteristics of the roadway and the habits of typical drivers. Some of these factors might include:

- The type of traffic control device at an intersection. For example, drivers might avoid a protected left-turn movement if they can reach their destination via the through movement and the left-turn phase has expired on approach.
- The design of internal circulation systems on the development site.
- The number of opportunities to enter from the same street. Typically, most drivers will use the first opportunity to enter but exiting trips tend to be more balanced.
- The difficulty turning left onto a major street at an unsignalized intersection.
- Drivers tend to travel in the most direct path towards their destination. In other words, drivers tend to avoid backtracking unless conditions either require it or an overall gain in safety and efficiency is expected.

Since some of these factors conflict, good judgment is necessary. Further, an iterative process might be necessary based on internal circulation alternatives and/or traffic mitigation alternatives considered. For example, the initial access plan may show a full-access driveway but the mitigation may call for it to be limited to right turns in and out.

Step 8 Existing Plus Development Conditions Analysis

The analysis of existing plus development conditions is based on the combination of existing traffic and development traffic anticipated on opening. The methods of analysis shall be the same as described in Step 2.

Two sets of conditions shall be analyzed in this step:

- Existing Plus Development Traffic with No Improvements
- Existing Plus Development Conditions with Improvements

In the first scenario, existing plus development traffic is analyzed with the current street geometry and traffic control except for the proposed access. The purpose is to demonstrate likely traffic conditions before mitigation measures are considered.

The second scenario is typically an iterative process where mitigation measures are necessary to achieve acceptable levels of service and/or to manage vehicle queuing. The final results of that process are to be documented along with the mitigation measures associated with those results. Improvements that become warranted by City design criteria or access management guidelines shall be identified and included in this process.

Mitigation measures might include:

- Additional turn lanes on the public streets and/or the site access.
- Additional through lanes on public streets.

- Revised traffic control, including new traffic signals.
- Access management strategies, e.g. build a raised median on the public street.
- Site plan or land use changes.

Mitigation measures should be logical for the conditions at a specific location, consistent with the corridor design and operations, and should contribute towards or at least be consistent with the ultimate configuration of the public street. The ramifications of mitigation measures must be clearly identified. For example, adding a second left-turn lane on one approach to an intersection will typically necessitate widening of the opposite approach.

In addition to achieving acceptable levels of service, anticipated vehicle queuing needs to be assessed to ensure that turn lanes are properly designed and that queues from one intersection do not impact operations at other intersections. This applies to the development site where access driveways connect to the public street system. In general, the site circulation layout should not create conditions where entering traffic might queue back onto the public street and/or the efficiency of exiting traffic is diminished. Further, the site plan and design should allow for all vehicle circulation to take place on-site and not on the public streets.

Step 9 Future Conditions Analysis

The analysis of future conditions is important to further assess the proposed access in relation to the configuration of the public streets at a more mature stage of development. What might be deemed acceptable today might not fit with the long-range configuration of a street corridor. It may also prove useful in determining when improvements to major streets need to be planned.

The analysis methods are outlined in Steps 2 and 8. The analyses should reflect street improvements planned to occur prior to the horizon year.

Step 10 Pedestrian, Bicyclist, Transit and Truck Considerations

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 text by no means represents a comprehensive list of site planning elements but each must be addressed.

Pedestrians
Sidewalks along public streets or off-street paths provide mobility for pedestrians. Pedestrians should be provided the opportunity to readily travel between these public infrastructure and adjacent land uses. All development plans should provide this connectivity.

Bicyclists
Similar to pedestrians, development sites 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. The Lawrence Bikes Plan should be consulted to determine if additional bicycle facilities are required.

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. Bus turnouts may be planned for specific corridors or intersections, or adjacent to major generators.

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.

Step 11 Documentation

The transportation impact study shall be documented in a typewritten report outlining the findings and conclusions of the study, including exhibits illustrating the site plan, traffic volumes (current and projected), and existing and proposed street conditions (lane configurations and intersection traffic controls). The report, or an appendix, shall include all analysis worksheets. One PDF of the final report shall be submitted to the Planning Department.

The report shall be well organized and generally follow the study process chronology. The report should be divided into sections to clearly distinguish between the site plan details, assessment of existing conditions, assessment of existing plus development conditions, and the assessment of future conditions. The concluding section of the report shall summarize the significant findings and outline the recommended mitigation measures needed to meet accepted standards. Trip generation information, trip distribution assumptions, and analysis results should be organized in tables and page numbering should be used.

Documentation of the mitigation measures shall include a detailed description of the proposed improvements. For example, turn lanes shall include a recommended length. It is expected that due diligence has been conducted to reasonably conclude that the mitigation measures can be implemented without disruption to existing roadside facilities, other public street facilities, e.g., another turn lane, and/or existing access. If proposed access or a mitigation measure will cause such a disruption, the impact shall be clearly described.

It is not appropriate to define or suggest funding responsibilities in the study report.

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.

All assumptions and analysis methodologies should also be identified. The final report should be complete to the extent that the reviewer could find all information necessary to understand how analyses were conducted and could even recreate those analyses and achieve the same results.