CITY OF COLUMBUS

TRAFFIC STANDARDS CODE

USERS' GUIDE

Promulgated in accordance with Ordinance 150-97 by the Director of the Department of Public Service and the Director of the Department of Trade and Development, as published in the Columbus City Bulletin on March15,1997and March 22, 1997.

City of Columbus Traffic Standards Code Users'Guide Table of Contents

I. Introduction

The provision of adequate transportation facilities to serve growth, development, and redevelopment was identified as a major area of concern early in the public process to develop the Columbus Comprehensive Plan. It became increasingly clear that many Columbus residents and business owners perceive growing traffic congestion and over-reliance on the automobile as significant deterrents to a high quality of life. At the same time, the city of Columbus' ability to pay for transportation infrastructure has been diminishing steadily in recent years.

Comprehensive planning has focused on the variety of transportation options available to Columbus residents and visitors including walking, bicycling, driving, and using public transportation. A specific Columbus Comprehensive Plan goal is to "provide Columbus with a balanced, coordinated transportation system which enables individuals and goods to move safely, efficiently and affordably."

The Columbus Comprehensive Plan, adopted by Columbus City Council on December 6, 1993, includes the Columbus Thoroughfare Plan which designates the functional classifications of existing and anticipated major roads and highways and includes right-of-way requirements for each roadway type. It is a planning tool designed to coordinate roadway construction with development activities.

Another recommendation discussed during the comprehensive planning process is the codification of traffic standards to further ensure that roadways meet the transportation demands generated by new and expanded development. Traffic standards code development was identified as a priority implementation task in the Council-adopted document "Making the Plan Work: Plan Implementation Program." In addition, Columbus City Council passed Ordinance 2516-93 establishing the approach to be used in development and adoption of a Traffic Standards Code.

Other implementation activities are closely related to the Traffic Standards Code and are being coordinated carefully. These include the creation of a Unified Development Code (of which traffic standards will be a part), the establishment of new Capital Improvements Program processes and procedures, and development of an Adequate Public Facilities Ordinance (APFO)to coordinate public and private investment in expansion areas.

An important element of traffic standards code is the requirement of traffic impact studies in association with major developments. Requirements for these studies have been instituted in recent years by cities and counties throughout the United States. Most major cities experiencing significant growth have traffic impact study requirements. The trend has been toward increasing requirements as a basis for both assessing the extent of transportation impacts and negotiating funding for needed improvements. Some communities require studies for nearly every development larger than a few single family residences; others vary according to local policies and conditions. In recent years Columbus has requested rezoning applicants to supply traffic impact studies on major new developments and, for the first time in 1994, requested a traffic impact study as a condition for the issuance of an access permit.

The studies recommended by the Columbus Traffic Standards Code benefit the municipal and regional transportation systems because they:

1. provided decision-makers with a basis for assessing the transportation implications of approving proposed rezoning, zoning variance, and special permit applications and preliminary subdivision plats,
2. aid in keeping current both short-and long-range plans,
3. provide a basis for identifying and assessing existing or future localized transportation system deficiencies which should be improved,
4. address transportation-related issues associated with development proposals that may be of concern to neighboring residents,businesses, and property owners, and
5. provide a basis for negotiations for improvements and funding participation in conjunction with rezoning, zoning variance, special permit, and preliminarysubdivision plat approvals.

The purpose of this Users' Guide is to:

1. provide consistency in the request, preparation, and review of traffic impact studies,
2. ensure that critical transportation and development issues are addressed,
3. provide staff with guidance and a checklist in the review process, and
4. promote increased understanding of traffic impact issues among those involved in the development process.

Topics addressed in this Users' Guide include:

1. circumstances under which a traffic impact study is required,
2. required qualifications for study preparers and reviewers,
3. standard processes and procedures for study preparation and review,
4. Columbus' roadway design level goal,
5. reporting and documentation of study results,
6. right-of-way requirements,
7. relationships between traffic standards and other municipal codes and publications, and
8. the inclusion of study reports and data as components of the public record.

It is the intent of the Traffic Standards Code to impose fair and equitable requirements on applicants seeking approvals for rezonings, zoning variances, special permits, and preliminary subdivision plats. These requirements are based on the traffic generated by the subject development as a proportion of total traffic.

II. Traffic Impact Study Required

Major developments are defined as new developments and expansions of existing developments generating the number of average trip ends as shown in the table below for the traffic of the generator at the peak hour of the land use or the peak hour of the roadway- whichever is more significant. These trip ends are calculated using the latest Institute of Transportation Engineers (ITE) trip generation methodology and definitions. Where traffic generation rates are expected to be significantly different than those commonly observed at other developments within the same land use category, and the expected traffic generation rates are too low to require a traffic impact study, the developer should be able to present supporting data to staff. (See item 4 under the TRIP GENERATION ESTIMATION subsection of Section IV,Traffic Impact Study Process and Procedures.)

Land Use	Trip Ends
Fast Food Restaurant Service Station Supermarket Convenience Market Shopping Center	400 or more
All other uses	200 or more

A traffic impact study (TIS) shall be required when seeking rezoning, zoning variance, special permit, or preliminary subdivision plat approvals for all major developments. Additionally, the city may request a TIS for projects other than major developments as defined in this section when, based on engineering judgement and the guidelines presented in the current edition of the ITE's recommended practice report, circumstances specific to that project warrant.

When a TIS is requested for a non-major development, the city shall make that request of the developer within 30 days of the receipt by the Division of Traffic Engineering and Parking of the developer's application for rezoning, zoning variance, special permit, or preliminary subdivision plat.

Revised or new traffic impact studies may be required in circumstances where development plans change significantly between the time that one rezoning, zoning variance, special permit, or preliminary subdivision plat approval is granted and another is sought.

If the latest ITE Trip Generation Report does not address the traffic impacts of the land use(s) proposed for a development, a traffic impact study shall be required unless the requirement is waived by the Traffic Engineering and Parking Administrator. If the traffic impact study demonstrates that the project is a major development, the process is the same as that defined for all major developments. If the traffic impact study shows that the project is not a major project, the city will accept the study and the preparer is not responsible for roadway improvements.

III. Study Preparer/Reviewer Qualifications

Preparer Qualifications

Traffic impact studies shall be prepared byprofessionals with training and experience in traffic engineering and under the supervision of a registered professional engineer with training and experience in traffic engineering (including operations and safety analysis).

The city of Columbus requires that the responsible registered engineer sign and seal the study report.

ReviewerQualifications

A traffic impact study shall be reviewed by one or more members of the professional staffs of each of the following divisions who collectively have training and experience in traffic impact study methodology, land use planning, and traffic engineering (including traffic safety and operations).

Public Service Department:

Division of Traffic Engineering & Parking
Division of Engineering & Construction (as needed)

Department of Trade and Development:

Planning Division
Development Regulation Division

At no time shall the study preparer be a member of the study review team, nor shall the study preparer be a family member of a member of the study review team or hold a financial interest in the project.

Responsibilities

The Division of Traffic Engineering&Parking is responsible for coordinating the traffic impact study process.

The Department of Trade and Development is the lead agency regarding land-use issues. The Public Service Department has primary responsibility for street design requirements, traffic engineering operations, and safety. The Public Service Department's Division of Traffic Engineering and Parking has primary responsibility for traffic projections, with cooperation from the Mid-Ohio Regional Planning Commission (the Metropolitan Planning Organization). The Department of Trade and Development and Public Service Department share responsibility for longrange transportation planning issues.

When a traffic impact study is required, representatives of the Division of Traffic Engineering and Parking, the Planning Division, and the Development Regulation Division will meet with the study preparer to identify study issues, needs, assumptions, procedures, available sources of data, past and related studies, report requirements, and other topics relevant to study requirements. The Division of Engineering & Construction will participate in this discussion if needed. Upon request, these divisions will provide the preparer with relevant data from agency files, including traffic counts, improvement plans and programs, accident records, traffic signal information, comprehensive planning information and reports, data on development planned or approved within the study area, relevant city ordinances, regulations, and policies, and other information directly relevant to the required study.

Once a traffic impact study is submitted, the review responsibilities of each division are as specified below.

Division of Traffic Engineering and Parking and Planning Division:

- long-range transportation forecasting and planning

Division of Traffic Engineering and Parking

- review of the capacity analysis upon study completion
- study methodology
- trip generation, distribution, and assignment
- sight distance and other safety aspects
- accident experience and mitigation proposals
- access locations and provisions
- other traffic engineering issues

Division of Traffic Engineering and Parking and Division of Engineering & Construction:

- geometric changes to existing roadways

Planning Division and Development Regulation Division:

- future land-use projections

IV. Traffic Impact Study Process and Procedures

Formalized Process

The formalized study review process is intended to assist study preparers to developtheir reports in the most efficient and responsive manner possible.It is specifically not intended that the process be cumbersome or cause unnecessary delay in the development review process.

The process is intended to answer the following questions:

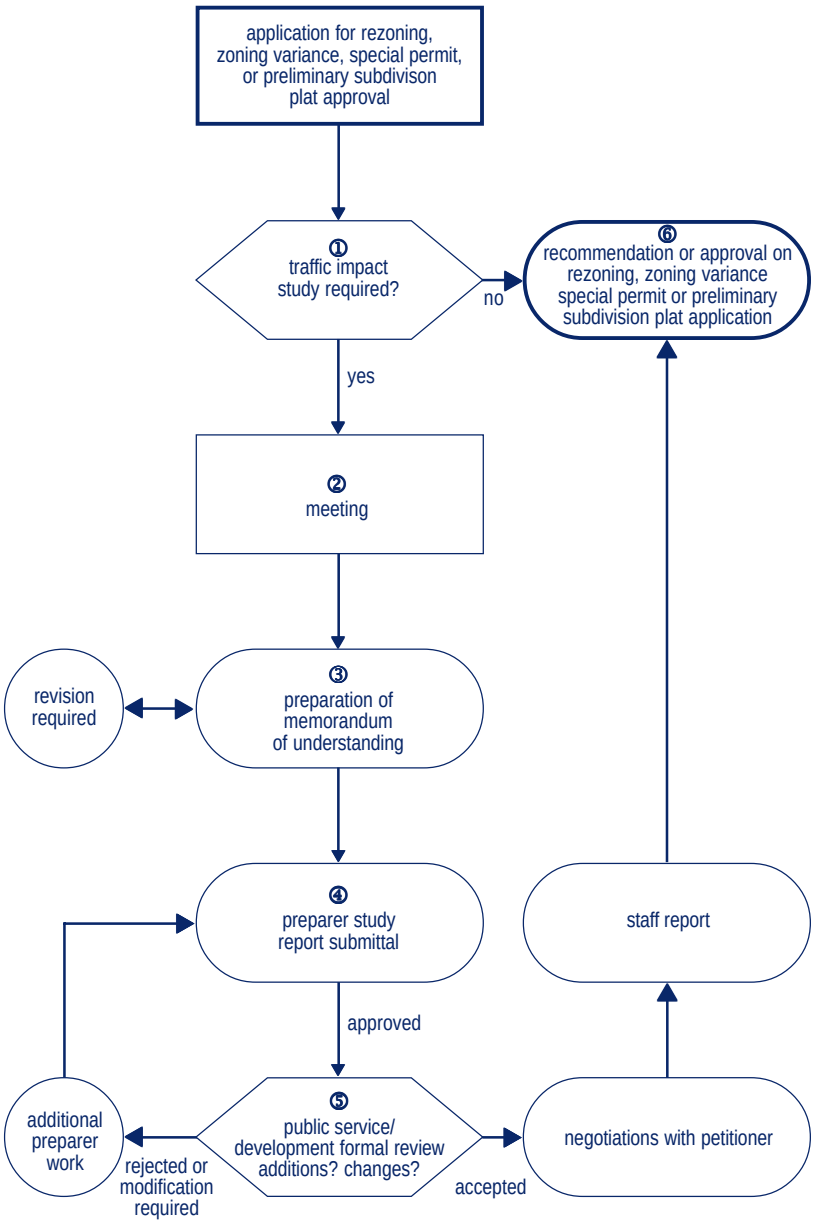
1. Is a TIS required?
2. Is there clear understanding of the study area, horizon year, scope and report contents?
3. Is there clear understanding of methods and techniques for analysis? Are they adequate?
4. Are findings and recommendations reasonable and acceptable?
5. Under what conditions should the staff recommend or grant approval based on professional guidelines, city policies, and regulations?

The figure on page 10 summarizes the traffic impact study process employed by the city of Columbus. There are six major steps involved in the study process:

1. **Determination of whether or not a traffic impact study is required.** This is to be accomplished using Section II of this Users' Guide. The Division of Traffic Engineering and Parking will assist in this determination when necessary and will make a final determinationin borderline cases.
2. **Meetings between preparer and reviewer and meetings with other public agencies and jurisdictions to discuss study issues, scope, assumptions, data and data sources, technical procedures, desired report contents, and other pertinent matters.** The study preparer shall schedule a meeting with appropriate city staff to discuss the issues and reviewers' expectations and requirements for the study. This meeting should cover study area designation, study horizon years, assumptions, procedures, the status of other projects that maybe publicly or privately programmed, the possibility of innovative funding solutions, other study requirements, and data availability and sources. Participants in this meeting shall also agree on a timetable for the city's review of the final traffic impact study.

3. **Preparation (by applicant) and approval (by reviewer) of a memorandum of understanding (MOU)which details the assumptions and methodologies to be used as determined in meeting.** The study preparer is required to submit a memorandum confirming the topics to be addressed, procedures, assumptions, data sources, report contents, and other items agreed to during the meeting, including the timing of the city's review of the final study document. This may take the form of a complete summary memorandum or a typed set of notes on the meeting checklist accompanied by a cover letter. The memorandum or cover letter should request city staff concurrence. It is recommended that such concurrence be requested as soon after the meeting as possible to enable the preparer to proceed without delay.
4. **Preparation and submittal of traffic impact study.** The preparation of the traffic impact study is to be completed following the direction contained in this Users'Guide and in accordance with the provisions agreed upon in the memorandum of understanding.
5. **Formal traffic impact study review by the Department of Public Service and Department of Trade and Development.** Incomplete or inadequate studies submitted in association with rezoning, zoning variance, special permit or preliminary subdivision plat applications will be revised and modified by the preparer as requested by appropriate city staff. The city's responsibility to review the study in the time agreed to in the MOU begins with the receipt of a final and complete study, as determined by the Division of Traffic Engineering and Parking.
6. **Staff recommendation or approval of the rezoning, zoning variance,or special permit application,or preliminary subdivision plat**. Following negotiations with the petitioner (when necessary and appropriate) and a complete staff report, a recommendation or decision will be made on the approval of the subject application or petition.

Traffic Impact Study Process



① *major steps in the traffic impact study process*

Roadway Improvement and Applicable Study Area

A complete traffic impact study analyzing off-site needs and impacts will include, at a minimum, all site access points and major intersections (signalized or unsignalized) within an area bounded by the nearest arterial intersection or signalized intersection in all directions from the subject developmentsite. Beyond this minimum area,the Division of Traffic Engineering and Parking, in consultation with the Department of Trade and Development, will determine anymodified area to be included based on a variety of factors which are reasonably related to the study area, including but not limited to: local or site-specific factors,development type or size, traffic conditions, and public goals and policies potentially affected by the proposed development. The extent of the roadway improvement area is to be clearly defined in the memorandum of understanding. A study area incorporating existing and potential development and redevelopment sites in the general vicinity of the subject development site shall be discussed and agreed upon during the initial meeting. Assumptions about the future use of other sites within the study area will rely on zoning, area plans, and other resources which reliably predict development likely to occur by the study's horizon year. The extent of the study area and land use assumptions therein are to be clearly defined in the memorandum of understanding.

Study Horizon Years and Time Periods Analyzed

Traffic impact studies are to address traffic conditions in: (1) the anticipated completion year of the proposed development assuming full build-out and occupancy or (2) ten years beyond the current year, which ever is later. If the proposed development is to be implemented in phases, it maybe appropriate also to analyze each major phase(i.e., an initial phase,one intermediate phase,and full project build-out).

For each defined horizon year, specific time periods are to be analyzed.In most cases only analyses of weekday street peakhours will be required. However, land use classifications which experience their highest trip generation levels during periods other than weekday street peak hours may require analysesfor such periods to determine proper site access and turn lane storage requirements. Examples of such land use classifications include, but are not limited to: shopping centers, discount stores, recreational uses(e.g., theaters, zoos, theme parks, stadiums, arenas), restaurants, schools, churches, and garden centers.

Traffic signal warrants normally require determination of traffic volumes for more than the weekday street peak hour. As a result, longer time periods are needed for these analyses.

All study horizon years and time periods analyzed are to be clearly stated in the memorandum of understanding.

Site and Off-Site Development Analysis

To provide for the accurate evaluation of implications associated with the applicant's request for rezoning, zoning variance, special permit, or preliminary subdivision plat approval, all transportation infrastructure needs in the study horizon years must be included. However, the impacts and transportation infrastructure needs are to be assessed separately for the horizon year level of service both with and without site development.

Development proposed to be located on the site under study should be categorized by specific land use type consistent with classifications contained in the latest edition of *Trip Generation* (Institute of Transportation Engineers). The proposed number of development (building) units (e.g., gross square feet of building area, dwelling units, hotel rooms,etc.) should be provided. Land area alone may not be sufficient to provide an adequate basis for analysis.

If the proposed land-use and/or density is inconsistent with recommendations of the Columbus Comprehensive Plan (including the Thoroughfare Plan) or any adopted area plan, a comparison of the traffic impacts of the proposed development and the impacts resulting from plan recommendation should be made using classifications contained in the *Trip Generation* report.

All significant developments within the study area that have been approved or are likely to occur by the specified horizon year should be identified and incorporated into the study. The impacts of anticipated offsite development should be assessed separately from those of the proposed development to aid both the city and the applicant to determine the origins of transportation infrastructure needs. Additionally, the study shall determine for the transportation improvements required, the "rough proportionality" of the improvements attributable to the traffic generated by the proposed development. The land-use type and magnitude of the probable future development should be identified in consultation with city staff and are to be enumerated in the memorandum of understanding.

Traffic having neither an origin from nor destination to the subject site is considered non-site traffic. For each horizon year, non-site traffic volumes are to be estimated to characterize the base conditions for the area of study - that is, the traffic volume conditions of the study area in the horizon year, assuming the subject site is not developedor redeveloped. Through traffic and traffic generated by other developments within the study area needs to be considered when estimating non-site traffic volumes.

Non-site traffic volumes are to be calculated using the "build-up" method. This method will typically provide accurate and easily traced results. The concept consists of forecasting peak-hour traffic to be generated by approved and anticipated developments in the study area, estimating growth in through traffic generated outside the study area, and adding both to existing traffic in the study area. If the subject site is being redeveloped, existing site traffic is subtracted from this total to provide the estimate of future non-site traffic.

Once the non-site traffic volumes have been estimated, an analysis of the future base conditions should begin. This will provide an assessment of the traffic operations and needed improvements in the horizon years without the subject development in place. With the base conditions established, the level of improvements required to mitigate the impacts of the proposed development shall be identified.

Improvements necessary to accommodate the non-site traffic in the horizon year at level-of-service D should be determined even though the developer will not be required to undertake these improvements. It is very important to research and identify improvements that have already been committed by other developments.

Additional analyses may be needed depending on the characteristics of the proposed development, its impacts, and the transportation system within the study area. These analyses should be stipulated in the memorandum of understanding and may include traffic control, traffic signal warrantor progressional studies, accident analyses, geometric feasibility of recommended improvements, sightdistance, parking, or other analyses appropriate to the particular situation.

Trip Generation Estimation

Trip generationis the process of estimating the amount of traffic to be generated by a particular development or redevelopment. It is usually accomplished through the use of rates and/or equations expressed in terms of units of development (i.e., per dwelling unit or per thousand square feet of building floor area).

Several data sources and methods of estimating trips generated by development are available:

1. **Institute of Transportation Engineers (ITE) *Trip Generation* report (latest edition) containing data from observations around the country for over twenty years.** This information is available in computer software as well.
2. **Prior local (Columbus area) studies which have been conducted for various reasons, but which are applicable for the purpose of estimating trip generation for site development.** The use of previously submitted and approved traffic impact studies is encouraged when appropriate.
3. **Prior studies made outside the Columbus area.** These should be used only when appropriate prior local studies are not available.
4. **Special analyses conducted especially for the study at hand.** Developments analyzed should be representative of the development for which the trip generation estimate is to be made. They should be local if similar developments exist locally and can be isolated for study. They may be located out of town if no adequate local examples exist. Proper procedures should be used.
5. **A combination ofthe above, adding local data to the ITE data, or combining local and special study data.** Additions to ITE data should be compared with data in the latest edition of *Trip Generation,* if available, to check for consistency.

Trip generation data sources and analysis techniques should be identified in the memorandum of understanding. Additional sources and techniques must be approved by the Division of Traffic Engineering and Parking prior to study report submittal.

Traffic Distribution and Assignment

After the trip generation analysis for the proposed development has been completed, the traffic must be distributed and assigned to the roadway system for the impacts to be determined. The trip generation process estimates the off-site origins and destinations of the generated trips. The assignment process produces estimates of the amount of site traffic that will use each route in the study area.

The directions from which traffic will approach and depart the site can vary depending on several location-specific factors including (1) the type and size of the proposed development, (2) the surrounding and, in some cases, competing land uses, population, and employment distributions, and (3) prevailing conditions on the existing street system.

To help in the distribution of traffic, an influence area may be defined. The influence area should be large enough to include most of the trip ends attracted to the site. Ideally, an existing market study would be used to establish the influence area. However, if no such study exists, the influence area should be established and documented based on reasonable estimates. Existing trip distribution data from actual sites within the immediate vicinity may be used for the purpose of making traffic assignments.

Traffic assignments should consider logical routings, available and projected roadway capacities, and travel times. Realistic estimates should be made of traffic diverting to avoid horizon year congestion if expected. Assignments should consider transportation improvements projected to be in place by each analysis year. If the site is a redevelopment project, assigned traffic generated by the old or existing development should first be subtracted to avoid double counting.

Many land uses (e.g., fast food restaurants, service stations, supermarkets, convenience markets, and shopping centers) not only generate new vehicle trips, but also attract trips that were already passing by in the traffic stream. These trips are commonly referred to as pass-by trips. The procedures described in the ITE *Trip Generation* report should be used to account for these trips. Locally collected data as well as current research may also be used in determining these values if approved in advance by the Division of Traffic Engineering and Parking.

Very little data has been collected locally or elsewhere to quantify the extent of internal trip-making within a mixed use development. Common current practice is to consider internal trip reductions only where mixed use developments consisting of at least two major complementary uses exist. This includes such complementary use combinations as office/retail, office/hotel, office/residential, retail/residential, and office/restaurant. Other combinations may be considered as well. Reductions for internal trip-making will be accepted only if based on actual surveys of similar developments or research as approved by the Division of Traffic Engineering and Parking.

V. Roadway Design Level

The ability of an urban street to carry traffic is determined by analysis of its level of service. Level of service (LOS) refers to a street intersection's capacity or its ability to carry traffic in terms of the average stopped delay per vehicle for the different movements within it. This measure of adequacy is associated with signalized intersections, usually within urban areas. Level of service (which ranges from A to F) is defined as a qualitative measure describing operational conditions within a traffic stream, and the perception of these conditions by motorists and passengers. The level of service generally describesconditions at an intersection in such terms as speed and travel time, freedom of maneuver, traffic interruptions, comfort and convenience, and safety. The table below defines average stopped delay per vehicle for various levels of service.

Level of Service	Average Stopped Delay Per Vehicle
A	5.0 seconds or less
B	5.1 to 15.0 seconds
C	15.1 to 25.0 seconds
D	25.1 to 40.0 seconds
E	40.1 to 60.0 seconds
F	more than 60.0 seconds

The goal of the city of Columbus for the operation of its roadways is level-of-service D or higher. Improvements necessary to accommodate the non-site traffic in the horizon year at LOS D shall be determined even though the developer may not be required to undertake these improvements. The developer will be required to only mitigate the impacts of traffic generated by the project.

VI. Rezoning, Zoning Variance, Special Permit, and Preliminary Subdivision Plat Applicant Requirements

It is the intent of theTraffic Standards Code to impose fair and equitable requirements on applicants seeking rezoning, zoning variance, special permit, or preliminary subdivision plat approvals. If it is perceived that the enforcement of the code requirements for roadway improvements would result in a gross inequity, the applicant must bring the situation to the attention of the Traffic Engineering and Parking Administrator. The city may relax the requirements if a determination is made by the Administrator that a gross inequity exists. The city may also relax the requirements if it assumes the obligation to finance the improvements or when it determines that the identified improvements are not in the best interests of the city due to physical and environmental imitations.

A favorable staff recommendation or decision on the traffic aspects of all rezoning, zoning variance, special permit, and preliminary subdivision plat approvals for major developments (as defined in Section II of this Users' Guide) shall be contingent upon compliance with the following requirements:

An applicant for rezoning, zoning variance, special permit, or preliminary subdivision plat approval shall assume financial responsibility for the amount of roadway infrastructure roughly proportional to the development's contribution to total traffic in the area at the study horizon year. This contribution shall be quantified or otherwise determined using traffic projection studies or other methods as the city may reasonably require to be conducted by the applicant prior to approval of the development plan.

In circumstances where a property has received rezoning, zoning variance, special permit, or preliminary subdivision plat approval based, in part, upon a traffic impact study prepared in conformance with all requirements contained herein, no additional traffic impact studies shall be required in association with subsequent approvals unless a determination is made by the city that development plans for the subject site(s)have changed significantly enough to warrant a new or revised traffic impacts study.

VII.Study Recommendations and Report Documentation

Recommendations

Recommendations are to be developed addressing conclusions resulting from analyses of the proposed development's access needs and impacts on the transportation system.

Recommendations shall address feasible transportation system improvements needed to satisfactorily accommodate site and non-site traffic (identified separately). The recommendations should reflect improvements currently planned or programmed by any public or private agency and may include beneficial project scheduling changes.

Recommendations for improvements shall be sensitive to the following issues:

- Timing of network improvements that are already committed and scheduled.
- Anticipated time schedules of adjacent developments.
- Size and timing of individual phases of the proposed development.
- Logical sequencing of various transportation improvements.
- Amount of right-of-way needed and timing of acquisition.
- Local long-range priorities for transportation improvements and funding (including Columbus Thoroughfare Plan).
- Cost effectiveness of implementing improvements at a given stage of development.
- Necessary lead time for additional design and construction.
- Standards and policies of other public agencies and jurisdictions.

Since transportation improvements can often be implemented in more than one order, the recommendations should address an implementation sequence that would provide maximum compatibility with the overall roadway system needed for network effectiveness.

Report Documentation

All traffic impact studies will be documented in a complete, yet concise, report describing 1) the proposed development, 2) existing conditions, 3) study procedures, 4) data collected, 5) findings of analyses, and 6) conclusions and recommendations. All reports will be reviewed by the Division of Traffic Engineering and Parking, the Division of Engineering & Construction (as needed), the Planning Division, and the Development Regulation Division. Those studies requiring revision or additional information will be discussed with the preparer and returned for additional work.

Report Contents

Each report shall have a **cover** containing the development's name, development's location, applicant's name, preparer's name, and report date.

Each report shall have a **title page** containing all information on the cover and the applicant's address, telephone and fax numbers; the preparer's address, telephone and fax numbers; and preparer's engineering registration seal.

Each report shall have a **table of contents** which lists all major section headings by title and page number. A list of exhibits shall be included as well identifying all maps and tables by name and page number.

Each report shall contain an **executive summary** in its initial chapter. It generally should not exceed three single-spaced pages. It shall contain an introduction presenting the purpose of the report and issues addressed regarding the proposed development and the study area. The executive summary will also provide a synopsis of the principal sections of the report as described in the outline presented in the appendix to this Users' Guide. The final sections of the executive summary will describe the study conclusions and recommendations related to site characteristics, access, on- and off-site roadway improvements, and other factors related to the safety and efficiency of traffic operations on and near the site.

When revised reports are resubmitted for review, a summary of revisions shall immediately follow the executive summary. It shall summarize modifications to assumptions, data, analyses, findings, conclusions, and recommendations.

The appendix to this Users' Guide provides a typical outline for a complete traffic impact study. In addition to text material, reports shallcontainexhibits necessary to clearly present or describe conditions, conclusions,and recommendations associated with the study. The appendix lists potential maps and tables. In addition to exhibits listed, driveway studies shall include illustrations specifying locations of driveways, accident studies shall indicate high accident locations and include accident diagrams for such locations, signal warrant studies shall show the locations of the proposed traffic signals or signals to be removed/relocated, signal progression studies shall contain figures showing the locations of existing and proposed traffic signals and time space diagrams or the equivalent with and without the proposed signals. All exhibits are to be titled and numbered. Each exhibit is to be clearly legible and easily read without magnification.

VIII. Relationship of Traffic Standards to Other Municipal Codes and Publications

Unified Development Code

The city of Columbus' traffic standards are one component of a set of codes designed to provide consistent, predictable application of standards for development throughout the city. Along with the Zoning Code, Subdivision Regulations, Adequate Public Facilities Ordinance, and Parkland Dedication Ordinance, the Traffic Standards Code will foster planned, cost-effective development and redevelopment. It is anticipated that these codes will be incorporated into a comprehensive Unified Development Code serving as the one source for all development-related regulations.

Capital Improvements Program Process and Procedures

The Columbus Capital Improvements Program (CIP) is an annual publication identifying and describing all non-maintenance, physical improvements, including transportation projects, for which funding is identified or anticipated in the ensuing six-year period. It serves as a tool for setting priorities for public investment. In order for traffic standards to be equitably implemented, it is critical that the CIP be a reliable, consistent indicator of the city's priorities for transportation spending.

Adequate Public Facilities Ordinance

The Columbus Comprehensive Plan identifies areas for potential growth, not yet served by sanitary sewers, but within the area for which the city's regional sanitary sewer collection and treatment system was designed. An Adequate Public Facilities Ordinance (APFO) will condition sewer extension in these areas upon a finding that adequate public facilities and services are, or will within a reasonable time be, in place to serve proposed development. As in the remainder of the city, the Traffic Standards Code is applicable to development within these districts upon annexation to the city of Columbus.

IX. PublicRecord

Traffic impact studies, including both reports and data, become public record upon initial submittal to the city's study review team. Information contained in these submittals may be used by agency staffs or other study preparers in subsequent studies. The original sources of reused information should be cited when taken from prior submittals.

Appendix

Typical Outline - Traffic Impact Study Report

This outline contains topics to be included in a complete traffic impact study report, to the extent they are relevant to study issues and needs. Topics not relevant may be omitted. Whenever possible, agreement should be reached on topics to be included and omitted during the initial meeting between preparer and city staff.

Cover

A. Development's name
B. Development's location
C. Applicant's name
D. Preparer's name
E. Report date

Title Page

A. Development's name
B. Development loscation
C. Applicant's name, address, telephone and fax numbers
D. Preparer's name, address, telephone and fax numbers
E. Preparer's engineering registration seal
F. Report date

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C. Site traffic
   - Trip generation (including any adjustments)
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B. Improvements to accommodate site traffic
   - Physical
   - Operational
   - Travel demand reduction (if needed)
   - Other

C. Alternative improvements
D. Status of improvements already funded, programmed or planned
E. Evaluation

Conclusions

A. Impacts on roadway system and nearby development
B. Adequacy of proposed plan including recommended improvements
   - On-site
   - Off-site

C. Compliance with Traffic Standards Code requirements and requirements of other applicable Columbus City Code sections.
D. Other

Recommendations

A. Site access/circulation plan
   - Site access
   - On-site circulation and parking
   - Off-site circulation

B. Roadway improvements
   - On-site
   - Off-site
   - Phasing (if appropriate)

C. Transportation system management actions
   - On-site
   - Off-site

D. Other

Appendices as required by Division of Traffic Engineering and Parking staff [separate document(s)]

Typical Exhibits - Traffic Impact Study Report

Site Location Map

Area map showing site location and area of influence.

Existing Transportation System Map

Existing roadway systems serving site. Should show all major streets, minor streets adjacent to site, and site boundaries. Also show transit, bicycle, and major pedestrian routes, if applicable, along with right-of-way widths and signal locations.

Existing and Anticipated Study Area Land Uses/Developments Map

Map at same scale as "existing transportation system" map showing existing and proposed development.

Current Daily Traffic Volumes Map (Use only if relevant.)

Recent or existing daily volumes on roads in study area.

Existing Peak Hour Turning Volumes Map

Current peak hour turning volumes at each location critical to site access or serving major traffic volumes through study area.

Anticipated Transportation System Map

Area transportation system map showing committed and scheduled roadway, transit, bikeway, and pedestrian improvements affecting site accessor traffic flow through the study area.

Estimated Trip Generation for New Off-Site Development Table

Trips generated by off-site development within study area. Similar in format to "estimated site traffic generation"table.

Estimated Non-Site Traffic Map

Map similar to "directional distribution of site traffic map" showing peak hour turning volumes generated by off-site development within study area plus horizon year through traffic.

Directional Distribution of Site Traffic Map

Map showing (by percentages)the portion of site traffic approaching and departing the area on each roadway; may differ by land use within multi-usedevelopment.

Estimated Site Traffic Generation Table

Estimated peak hour (and daily if required)trips to be generated by each major component of the proposed development. Must be shown separately for inbound and outbound directions. Similar in format to "estimated trip generation for new off-site development" table. Map similar to "directional distribution of site traffic" map showing peak hour turning volumes generated by off-site development within study

Site Pass-ByTraffic Map

Map of anticipated study area roadway network showing peak hour pass-by traffic volumes.

Site Traffic Map

Map of anticipated study area roadway network showing peak hour turning volumes generated by site development.

Estimated Total Future Traffic Map

Map similar to "directional distribution of site traffic" map showing sum of traffic from "estimated non-site traffic" map and "site traffic" map.

Projected Levels of Service Map

Map showing levels of service computed for critical intersections in study area. Include existing, horizon year off-site, and total horizon year(with site development) conditions, as applicable.

Site Access and Recommended Improvements Map(s)

Map or maps showing recommended site access locations, off-site transportation improvements, and circulation and parking features, as appropriate. If phasing of improvements is anticipated, this should be demonstrated on separate maps.

Notes:

- Some maps may be combined so long as there is no loss of clarity.
- Additional exhibits may be needed for certain studies with additional complexities, issues and horizon years.

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