

Traffic Impact Analysis Regulations

CHAPTER 155.

TRAFFIC IMPACT ANALYSIS REGULATIONS.

24VAC30-155-10. Definitions.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Connectivity index" means the number of links divided by the number of nodes.

"Link" means (i) a segment of roadway, alley, or rear lane that is between two nodes or (ii) a stub out or connection to an existing stub out.

"Locality" means any local government, pursuant to §15.2-2223 of the Code of Virginia, that must prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction.

"Node" means an intersection of three or more links or the terminus of a link, such as the end of a cul-de-sac or dead end. The terminus of a stub out shall not constitute a node for the purposes of this chapter. The intersection of a street with only a stub out and the intersection of a street with only a connection with an existing stub out shall not constitute a node for the purposes of this chapter unless such stub out provides service to lots within the development.

"Pedestrian facility coverage" means the ratio of: (length of pedestrian facilities, such as sidewalks, foot paths, and multiuse trails, along both sides of a roadway) divided by (length of roadway multiplied by two).

"Redevelopment site" means any existing use that generates traffic and is intended to be developed as a different or more dense land use.

"Service level" means a measure of the quality, level or comfort of a service calculated using methodologies approved by VDOT.

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"State-controlled highway" means a highway in Virginia that is part of the interstate, primary, or secondary systems of state highways and that is maintained by the state under the direction and supervision of the Commonwealth Transportation Commissioner. Highways for which localities receive maintenance payments pursuant to §§33.1-23.5:1 and 33.1-41.1 of the Code of Virginia and highways maintained by VDOT in accordance with §§ 33.1-31, 33.1-32, 33.1-33, and 33.1-68 of the Code of Virginia are not considered state-controlled highways for the purposes of determining whether a specific land development proposal package must be submitted to meet the requirements of this regulation.

"Stub out" means a transportation facility (i) whose right-of-way terminates at a parcel abutting the development, (ii) that consists of a short segment that is intended to serve current and future development by providing continuity and connectivity of the public street network, (iii) that based on the spacing between the stub out and other streets or stub outs, and the current terrain there is a reasonable expectation that connection with a future street is possible, and (iv) that is constructed to at least the end of the radius of the intersection with the adjoining street and the right of way is graded and dedicated to the property line.

"Traffic impact statement" means the document showing how a proposed development will relate to existing and future transportation facilities.

"VDOT" means the Virginia Department of Transportation, the Commonwealth Transportation Commissioner, or a designee.

24VAC30-155-20. Authority.

Section 15.2-2222.1 of the Code of Virginia requires localities to submit comprehensive plans and amendments to comprehensive plans that will substantially affect transportation on state-controlled highways to VDOT in order for the agency to review and provide comments on the impact of the item submitted. This section also requires localities to submit traffic impact statements along with proposed rezonings, site plans, subdivision plats, and subdivision development plans that will substantially affect

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transportation on state-controlled highways to VDOT for comment by the agency. Chapter 527 of the 2006 Acts of Assembly directs VDOT to promulgate regulations for the implementation of these requirements.

24VAC30-155-30. Comprehensive plan and comprehensive plan amendment.

A. Plan and amendment submittal. Prior to adoption of any comprehensive plan pursuant to §15.2-2223 of the Code of Virginia, any part of a comprehensive plan pursuant to §15.2-2228 of the Code of Virginia, or any amendment to any comprehensive plan as described in §15.2-2229 of the Code of Virginia, if required by this section of this chapter, the locality shall submit such plan or amendment to VDOT for review and comment, such submission should take place at least 100 days prior to anticipated final action by the locality. The Virginia Department of Transportation shall, upon request, provide localities with technical assistance in preparing the transportation plan of the comprehensive plan. The comprehensive plan or comprehensive plan amendment package shall be submitted to VDOT, if it is reasonably anticipated to result in substantial changes or impacts to the existing transportation network. For the purposes of this section, a substantial impact shall be defined as a change that would allow the generation of 5,000 additional vehicle trips per day on state-controlled highways assuming the highest density of permissible use in accordance with the Institute of Transportation Engineers Trip Generation Handbook (see 24VAC30-155-100) or, subject to the approval of VDOT, the regional model as adopted by the local Metropolitan Planning Organization, and substantial changes shall include those changes that materially alter future transportation infrastructure, travel patterns, or the ability to improve future transportation facilities on state-controlled highways.

B. Required elements. The submission by the locality to VDOT shall contain sufficient information so that VDOT may evaluate the system of new and expanded transportation facilities, outlined in the transportation plan, that are needed to support the current and planned development of the territory

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covered by the plan. In order to conduct this evaluation, the package submitted to VDOT shall contain the following items:

1. For a comprehensive plan or a transportation plan, the locality shall provide one copy of the following:

a. A cover sheet, containing:

(1) Contact information for the locality, and

(2) Summary of major changes made to the comprehensive plan or transportation plan;

b. The proposed comprehensive plan or transportation plan, and the following elements:

(1) Inventory – an inventory (written or graphic) of the existing transportation network, which shall include at a minimum all roadways within the Federal Aid system.

(2) Assumptions – planning assumptions shall be detailed, since these assumptions directly influence the demand placed on the transportation system. Population growth, employment growth, location of critical infrastructure such as water and sewer facilities, among others, are examples of planning assumptions that may be addressed.

(3) Needs assessment – written or graphic evaluation of the transportation system's current and projected performance and conditions. The needs assessment identifies specific deficiencies.

(4) Recommendations – proposed improvements or additions to the transportation infrastructure. Recommendations should be specific so that the need, location and nature of the proposed improvements are clear and understandable. Localities are encouraged to include pedestrian, bicycle, transit, rail and other multimodal recommendations as they deem appropriate. The transportation plan shall include a map showing road and transportation improvements, taking into account the current and future needs of residents in the locality

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while considering the current and future needs of the planning district within which the locality is situated. Recommended improvements shall include cost estimates as available from VDOT.

2. For an amendment to a comprehensive plan or transportation plan, the locality shall provide one copy of the following:

a. A cover sheet, containing:

(1) Contact information for the locality;

(2) Summary of proposed amendment or amendments to the comprehensive plan or transportation plan; and

(3) Overview of reasoning and purpose for amendments.

b. Application forms and documentation presented to or prepared by the local jurisdiction,

c. Associated maps or narratives that depict and detail the amendment under consideration,

d. Any changes to the planning assumptions associated with the amendment,

e. Local assessment of the potential impacts the amendment may have on the transportation system, and

f. Those elements identified in subdivision 1 b of this subsection that VDOT determines are needed in order to review and comment on impacts to state-controlled highways.

C. Review process. VDOT may, pursuant to §15.2-2222.1 of the Code of Virginia, request a meeting with the locality to discuss the plan or amendment. The request must be made within 30 days of receipt of the proposal. VDOT must provide written comments to the locality within 90 days of the receipt of the plan or plan amendment or by such later deadline as may be agreed to by the parties. VDOT will conduct its review and provide official comments to the locality for inclusion in the official public record of the locality. VDOT shall also make such comments available to the public. Nothing in this section shall

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prohibit a locality from acting on a comprehensive plan or plan amendment if VDOT's comments on the submission have not been received within the timelines in this section.

D. Concurrent consideration. For the purposes of this regulation, when a related comprehensive plan or comprehensive plan amendment and a rezoning proposal that cover the same geographical area are being considered concurrently by a locality, only a rezoning package as required under 24VAC30-155-40 shall be prepared and provided to VDOT for review.

24VAC30-155-40. Rezoning.

A. Proposal submittal. The locality shall submit a package to VDOT within 10 business days of receipt of a complete application for a rezoning proposal if the proposal substantially affects transportation on state-controlled highways. All trip generation calculations used for the purposes of determining if a proposal meets the criteria shall be based upon the rates or equations published in the Institute of Transportation Engineers Trip Generation (see 24VAC30-155-100), and shall not be reduced through internal capture rates. For redevelopment sites, trips currently generated by existing development that will be removed may be deducted from the total site trips that are generated by the proposed land use.

1. For the purposes of this section, a residential rezoning proposal shall substantially affect transportation on state-controlled highways if it meets or exceeds one or more of the following trip generation criteria.

a. Within a jurisdiction in which VDOT has maintenance responsibility for the secondary highway system, if the proposal generates more than 100 vehicle trips per peak hour of the generator at the site's connection to a state-controlled highway. For a site that does not have an entrance onto a state-controlled highway, the site's connection is assumed to be wherever the road network that the site connects with attaches to a state-controlled highway. In cases where the site has multiple entrances to highways volumes on all entrances shall be combined for the purposes of this determination; or

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- b. Within a jurisdiction in which VDOT does not have maintenance responsibility for the local highway system, if the proposal generates more than 100 vehicle trips per peak hour of the generator and whose nearest property line is within 3,000 feet, measured along public roads or streets, of a connection to a state-controlled highway; or
 - c. The proposal generates more than 200 daily vehicle trips on a state-controlled highway and once the site generated trips are distributed to the receiving highway, the proposal's vehicle trips on a highway exceeds the daily traffic volume such highway presently carries. For the purposes of determining whether a proposal must be submitted to VDOT, the traffic carried on the state-controlled highway shall be assumed to be the most recently published amount measured in the last traffic count conducted by VDOT or the locality on that highway. In cases where the site has access to multiple highways, each receiving highway shall be evaluated individually for the purposes of this determination.
- 2. For the purposes of this section, all other rezoning proposals shall substantially affect transportation on state-controlled highways if they meet or exceed one or more of the following trip generation criteria:
 - a. Within a jurisdiction in which VDOT has maintenance responsibility for the secondary highway system, if the proposal generates more than 250 vehicle trips per peak hour of the generator or 2,500 vehicle trips per day at the site's connection to a state-controlled highway. For a site that does not have an entrance onto a state-controlled highway, the site's connection is assumed to be wherever the road network that the site connects with attaches to a state-controlled highway. In cases where the site has multiple entrances to highways, volumes on all entrances shall be combined for the purposes of this determination; or
 - b. Within a jurisdiction in which VDOT does not have maintenance responsibility for the local highway system, if the proposal generates more than 250 vehicle trips per peak hour of

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the generator or 2,500 vehicle trips per day and whose nearest property line is within 3,000 feet, measured along public roads or streets, of a connection to a state-controlled highway.

B. Required proposal elements. The package submitted by the locality to VDOT shall contain sufficient information and data so that VDOT may determine the location of the rezoning, its size, its impact on state-controlled highways, and methodology and assumptions used in the analysis of the impact. Submittal of an incomplete package shall be considered deficient in meeting the submission requirements of §15.2-2222.1 of the Code of Virginia and shall be returned to the locality and the applicant, if applicable, identifying the deficiencies noted. A package submitted to VDOT shall contain the following items:

1. A cover sheet containing:
 - a. Contact information for locality and developer (or owner) if applicable;
 - b. Rezoning location, highways adjacent to site, and parcel number or numbers;
 - c. Proposal summary with development name, size, and proposed zoning; and
 - d. A statement regarding the proposal's compliance with the comprehensive plan.
2. A traffic impact statement prepared in accordance with 24VAC30-155-60.
3. A concept plan of the proposed development.

C. Review process. After formal submission of a rezoning proposal for review, VDOT may, pursuant to §15.2-2222.1 of the Code of Virginia, request a meeting with the locality and rezoning applicant to discuss potential modifications to the proposal to address any concerns or deficiencies. The request must be made within 45 days of receipt by VDOT of the proposal. VDOT must provide written comments to the locality within 45 days of VDOT's receipt of the proposal if no meeting is scheduled or has been requested or within 120 days of the receipt of the proposal otherwise. VDOT shall conduct its review and provide official comments to the locality for inclusion in the official public record. VDOT shall also make

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such comments available to the public. Nothing in this section shall prohibit a locality from acting on a rezoning proposal if VDOT's comments on the submission have not been received within the timelines in this section.

24VAC30-155-50. Subdivision plat, site plan, plan of development.

A. Proposal submittal. The locality shall submit a package to VDOT within 10 business days of receipt of a complete development proposal if the proposal substantially affects transportation on state-controlled highways. All trip generation calculations used for the purposes of determining if a proposal meets these requirements shall be based upon the rates or equations published in the Institute of Transportation Engineers Trip Generation (see 24VAC30-155-100), and shall not be reduced through internal capture rates. For redevelopment sites, trips currently generated by existing development that will be removed may be deducted from the total site trips that are generated by the proposed land use.

1. For the purposes of this section, a residential development proposal shall substantially affect transportation on state-controlled highways if it meets or exceeds one or more of the following trip generation criteria:

a. Within a jurisdiction in which VDOT has maintenance responsibility for the secondary highway system, if the proposal generates more than 100 vehicle trips per peak hour of the generator at the site's connection to a state-controlled highway. For a site that does not have an entrance onto a state-controlled highway, the site's connection is assumed to be wherever the road network that the site connects with attaches to a state-controlled highway. In cases where the site has multiple entrances to highways volumes on all entrances shall be combined for the purposes of this determination; or

b. Within a jurisdiction in which VDOT does not have maintenance responsibility for the local highway system, if the proposal generates more than 100 vehicle trips per peak hour of

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the generator and has an entrance that is within 3,000 feet, measured along public roads or streets, of a connection to a state-controlled highway; or

c. The proposal generates more than 200 daily vehicle trips on a state-controlled highway and once the site generated trips are distributed to the receiving highway, the proposal's vehicle trips on such highway exceeds the daily traffic volume the highway presently carries. For the purposes of determining whether a proposal must be submitted to VDOT, the traffic carried on the state-controlled highway shall be assumed to be the most recently published amount measured in the last traffic count conducted by VDOT or the locality on that highway. In cases where the site has access to multiple highways, each receiving highway shall be evaluated individually for the purposes of this determination.

2. For the purposes of this section, all other development proposals shall substantially affect transportation on state-controlled highways if they meet or exceed one or more of the following trip generation criteria:

a. Within a jurisdiction in which VDOT has maintenance responsibility for the secondary highway system, if the proposal generates more than 250 vehicle trips per peak hour of the generator or 2,500 vehicle trips per day at the site's connection to a state-controlled highway. For a site that does not have an entrance onto a state-controlled highway, the site's connection is assumed to be wherever the road network that the site connects with attaches to a state-controlled highway. In cases where the site has multiple entrances to highways, volumes on all entrances shall be combined for the purposes of this determination; or

b. Within a jurisdiction in which VDOT does not have maintenance responsibility for the local highway system, if the proposal generates more than 250 vehicle trips per peak hour of the generator or 2,500 vehicle trips per day and has an entrance that is within 3,000 feet, measured along public roads or streets, of a connection to a state-controlled highway.

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B. Required proposal elements.

1. The package submitted by the locality to VDOT shall contain sufficient information and data so that VDOT may determine the location of the development, its size, its impact on state-controlled highways, and methodology and assumptions used in the analysis of the impact. Submittal of an incomplete package shall be considered deficient in meeting the submission requirements of §15.2-2222.1 of the Code of Virginia and shall be returned to the locality and the applicant, if applicable, identifying the deficiencies noted. A package submitted to VDOT shall contain the following items.

a. A cover sheet containing:

- (1) Contact information for locality and developer (or owner);
- (2) Development location, highways connected to, and parcel number or numbers; and
- (3) Proposal summary with development name and size in acres.

b. A supplemental traffic analysis, as defined in 24VAC30-155-50 C.

c. A concept plan of the proposed development.

C. Supplemental traffic analysis. For the purposes of this subsection, a supplemental traffic analysis will be defined as follows:

1. In cases where a rezoning traffic impact statement has been submitted to VDOT in accordance with 24VAC30-155-40, if all assumptions made in the traffic impact statement prepared for the rezoning remain valid and if the submission of the subdivision plat, site plan, or plan of development to the locality occurs within two years of the locality's approval of the rezoning proposal, the supplemental traffic analysis shall be a letter that provides VDOT with the following information:

- a. A statement that the impacts analyzed in the development's rezoning traffic impact statement have not materially changed nor have the adverse impacts on state-controlled highways increased.

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b. The date of the VDOT letter providing the locality comments on the rezoning.

2. In cases where a rezoning traffic impact statement has been submitted to VDOT in accordance with 24VAC30-155-40, if all assumptions made in the traffic impact statement prepared for the rezoning have not materially changed, the adverse impacts of the proposal on state-controlled highways have not increased and if the submission of the subdivision plat, site plan, or plan of development to the locality occurs more than two years of the locality's approval of the rezoning, the supplemental traffic analysis shall be a letter that provides VDOT with the following information:

- a. A statement that the impacts analyzed in the development's rezoning traffic impact statement have not materially changed nor have the adverse impacts on state-controlled highways increased;
- b. The date of the VDOT letter providing the locality comments on the rezoning;
- c. Documentation supporting the statement that the development's rezoning traffic impact statement is still valid; and
- d. A copy of the original traffic impact statement.

After review of such letter, VDOT may require submission in accordance with subdivision 4 of this subsection.

3. In cases where the rezoning traffic impact statement has not been submitted to VDOT in accordance with 24VAC30-155-40, the supplemental traffic analysis shall contain the information required for rezoning traffic impact statements with 100 to 499 peak hour trips. If the subdivision plat, site plan, or plan of development will generate less than 100 peak hour trips then the lowest required elements for the rezoning traffic impact statement shall be used.

4. In cases where a rezoning traffic impact statement has been submitted to VDOT in accordance with 24VAC30-155-40 and the conditions analyzed in such traffic impact statement have materially changed such that the adverse impacts of the proposal on state-controlled highways have increased or

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if required pursuant to subdivision 2 of this subsection, the supplemental traffic analysis shall contain those elements required for rezoning traffic impact statements with 100 to 499 peak hour trips, as determined by VDOT. If the subdivision plat, site plan, or plan of development will generate less than 100 peak hour trips then the lowest required elements for the rezoning traffic impact statement shall be used.

5. In cases where rezoning occurred after January 1, 2002, but prior to the implementation of this regulation, VDOT, at its discretion, may evaluate traffic impact statements or studies performed as part of the rezoning action. If, in the opinion of VDOT staff with the concurrence of the locality, the traffic impact analysis work that was performed encompasses the major elements of work required by this regulation and the underlying assumptions of the study remain valid the previously prepared study may be deemed to meet the requirements of this regulation. VDOT staff may also, upon request of the submitter, allow a previously prepared study to be updated to incorporate additional areas of analysis or revisions to assumptions to enhance the accuracy of the study and may deem such updated study to encompass the major elements of work required by this regulation.

D. Review process. After formal submission of a subdivision plat, site plan, or plan of development to VDOT for review, VDOT may, pursuant to §15.2-2222.1 of the Code of Virginia, request a meeting with the locality to discuss potential modifications to the proposal to address any concerns or deficiencies. The request must be made within 30 days of receipt by VDOT of the proposal. The submission of the proposal to VDOT shall toll all times for local review set out in Chapter 22 of Title 15.2 of the Code of Virginia until the locality has received VDOT's final comments. VDOT must provide written comments to the locality within 30 days of VDOT's receipt of the proposal if no meeting is scheduled or within 90 days of the receipt of the proposal otherwise. VDOT will conduct its review and provide official comments to the locality for inclusion in the official public record. VDOT shall also make such comments available to the public. Nothing in this section shall prohibit a locality from acting on a subdivision plat, site plan, or plan

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of development if VDOT's comments on the submission have not been received within the timelines in this section.

24VAC30-155-60. Traffic impact statement.

A. A Traffic Impact Statement (TIS) assesses the impact of a proposed development on the transportation system and recommends improvements to lessen or negate those impacts. It shall (i) identify any traffic issues associated with access from the site to the existing transportation network, (ii) outline solutions to potential problems, (iii) address the sufficiency of the future transportation network, and (iv) present improvements to be incorporated into the proposed development.

If a TIS is required, data collection shall be by the locality, developer, or owner, as determined by the locality and the locality shall prepare or have the developer or owner prepare the TIS. If the locality prepares the TIS it shall provide a copy of the complete TIS to the applicant when one is provided to VDOT. The completed TIS shall be submitted to VDOT.

The data and analysis contained in the TIS shall be organized and presented in a manner acceptable to the department and consistent with this regulation. Submittal of an incomplete TIS or one prepared using unapproved methodology or assumptions shall be considered deficient in meeting the submission requirements of §15.2-2222.1 of the Code of Virginia and shall be returned to the locality and the applicant, if applicable, identifying the deficiencies noted by VDOT.

B. Scope of work meeting.

1. For proposals that generate less than 1,000 vehicle trips per peak hour of the generator representatives of the locality, the applicant, or the locality and the applicant may request a scope of work meeting with VDOT to discuss the required elements of a TIS for any project and VDOT shall reply to such request within 30 days of its receipt of such a request and provide a date, time and location for such a scope of work meeting to both the locality and the applicant, if applicable.

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2. For proposals that generate 1,000 or more vehicle trips per peak hour of the generator representatives of the locality and applicant, if applicable, shall hold a scope of work meeting with VDOT to discuss the required elements of a TIS. Once a locality or applicant has contacted VDOT regarding the scheduling of a scope of work meeting, VDOT shall reply to both the locality and the applicant, if applicable, and provide a date, time and location for such a meeting.

At a scope of work meeting pursuant to this section, the locality, the applicant and VDOT shall review the elements, methodology and assumptions to be used in the preparation of the TIS, and identify any other related local requirements adopted pursuant to law. The results of the initial scoping meeting may be adjusted in accordance with sound professional judgment and the requirements of this regulation if agreed upon by VDOT, the locality, and applicant, if applicable.

C. Required elements. The required elements and scope of a TIS are dependent upon the scale and potential impact of the specific development proposal being addressed by the TIS as determined by VDOT in its sole discretion.

1. At a minimum, the TIS shall include the elements shown in the table below. The site generated peak hour trips in the table below shall be based upon the gross vehicle trip generation of the site less internal capture and shall take into account bicycle, pedestrian, and transit reductions. When the type of development proposed would indicate significant potential for walking, bike or transit trips either on- or off-site, the TIS shall estimate multimodal trips. All distances in the table below shall be measured along roads or streets.

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Item	Site Generated Peak Hour Trips			
	Less than 100	100 to 499	500 to 999	1,000 or more
Background information				
List of all nonexistent transportation improvements assumed in the analysis	Required	Required	Required	Required
Map of site location, description of the parcel, general terrain features, and location within the jurisdiction and region.	Required	Required	Required	Required
Description of geographic scope/ limits of study area.	Within 1,000 ft of site	Within 2,000 feet of site and any roadway on which 50 or more of the new peak hour vehicle trips generated by the proposal are distributed – not to exceed one mile	Within 2,000 feet of site and any roadway on which 10% or more of the new vehicle trips generated by the proposal are distributed – not to exceed two miles	To be determined by VDOT in consultation with the locality
Plan at an engineering scale of the existing and proposed site uses.	Required	Required	Required	Required
Description and map or diagram of nearby uses, including parcel zoning.	Required	Required	Required	Required
Description and map or diagram of existing roadways.	Required	Required	Required	Required

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Item	Site Generated Peak Hour Trips			
	Less than 100	100 to 499	500 to 999	1,000 or more
Description and map or diagram of programmed improvements to roadways, intersections, and other transportation facilities within the study area.	Required	Required	Required	Required
Analysis of Existing Conditions				
Collected daily and peak hour of the generator traffic volumes, tabulated and presented on diagrams with counts provided in an appendix.	Only diagrams required	Required	Required	Required
Analyses for intersections and roadways identified by VDOT. Delay and Level of Service (LOS) are tabulated and LOS is presented on diagrams for each lane group.	Only diagrams required	Required	Required	Required
When the type of development proposed would indicate significant potential for walking, bike or transit trips either on - or off - site, analyses of pedestrian and bicycle facilities, and bus route or routes and segment or segments, tabulated and presented on diagrams, if facilities or routes exist	At frontage, only diagrams required	Within 2,000 feet of site	Within 2,000 feet of site	To be determined by VDOT in consultation with the locality
Speed Study	If requested by VDOT	If requested by VDOT	If requested by VDOT	If requested by VDOT
Crash history near site	If requested by VDOT	If requested by VDOT	If requested by VDOT	If requested by VDOT
Sight distance	If requested by VDOT	If requested by VDOT	If requested by VDOT	If requested by VDOT

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Item	Site Generated Peak Hour Trips			
	Less than 100	100 to 499	500 to 999	1,000 or more
Analysis of Future Conditions without Development				
Description of and justification for the method and assumptions used to forecast future traffic volumes.	Optional	Required	Required	Required
Analyses for intersections and roadways as identified by VDOT. Delay and Level of Service (LOS) are tabulated and LOS is presented on diagrams for each lane group.	Optional	Required	Required	Required
When the type of development proposed would indicate significant potential for walking, bike or transit trips either on - or off - site, analyses of pedestrian and bicycle facilities, and bus route or routes and segment or segments tabulated and presented on diagrams, if facilities or routes exist or are planned.	At frontage, only diagrams required	Within 2,000 feet of site	Within 2,000 feet of site	To be determined by VDOT in consultation with the locality at the scope of work meeting
Trip Generation				
Site trip generation, with tabulated data, broken out by analysis year for multi-phase developments, and including justification for deviations from ITE rates, if appropriate.	Required	Required	Required	Required
Description and justification of internal capture reductions for mixed use developments and pass-by trip reductions, if appropriate, including table of calculations used.	Required	Required	Required	Required

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Item	Site Generated Peak Hour Trips			
	Less than 100	100 to 499	500 to 999	1,000 or more
Site Traffic Distribution and Assignment				
Description of methodology used to distribute trips, with supporting data.	Required	Required	Required	Required
Description of the direction of approach for site generated traffic and diagrams showing the traffic assignment to the road network serving the site for the appropriate time periods.	Required	Required	Required	Required
Analysis of Future Conditions With Development				
Forecast daily and peak hour of the generator traffic volumes on the highway network in the study area, site entrances and internal roadways, tabulated and presented on diagrams.	Current traffic + site generated traffic	Future background + site generated traffic, at each expected phase and at build - out or six years after start, whichever is later	Future background + site generated traffic, at each expected phase, at build - out, and six years after build - out, which may be extended or reduced by VDOT in consultation with the locality	At a minimum the future background + site generated traffic, at each expected phase, at build - out, and six years after build - out; may be extended by VDOT in consultation with the locality

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Item	Site Generated Peak Hour Trips			
	Less than 100	100 to 499	500 to 999	1,000 or more
Analyses for intersections and roadways identified by VDOT. Delay and Level of Service (LOS) are tabulated and LOS presented on diagrams for each lane group.	Only diagrams required	Required	Required	Required
When the type of development proposed would indicate significant potential for walking, bike or transit trips either on - or off - site, analyses of pedestrian and bicycle facilities, and bus route or routes and segment or segments tabulated and presented on diagrams, if facilities or routes exist or are planned.	At frontage, only diagrams required	Within 2,000 feet of site	Within 2,000 feet of site	To be determined by VDOT in consultation with the locality
Recommended Improvements				
Description and diagram of the location, nature, and extent of proposed improvements, with preliminary cost estimates as available from VDOT.	Required	Required	Required	Required
Description of methodology used to calculate the effects of travel demand management (TDM) measures, if proposed, with supporting data.	Required if TDM proposed	Required if TDM proposed	Required if TDM proposed	Required if TDM proposed

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Item	Site Generated Peak Hour Trips			
	Less than 100	100 to 499	500 to 999	1,000 or more
Analyses for all proposed and modified intersections in the study area under the forecast and site traffic. Delay, and Level of Service (LOS) are tabulated and LOS presented on diagrams for each lane group. For intersections expected to be signalized, MUTCD Signal Warrant analysis or ITE Manual for Traffic Signal Design, as determined by VDOT, presented in tabular form.	Only diagrams required	Required	Required	Required
When the type of development proposed would indicate significant potential for walking, bike or transit trips either on - or off - site, analyses of pedestrian and bicycle facilities, and bus route or routes and segment or segments tabulated and presented on diagrams, if facilities or routes exist or are planned.	At frontage, only diagrams required	Within 2,000 feet of site	Within 2,000 feet of site	To be determined by VDOT in consultation with the locality
Conclusions				
Clear, concise description of the study findings.	Required	Required	Required	Required

Notwithstanding the geographic scope noted above, the geographic scope of the study noted above may be reduced or enlarged based upon layout of the local transportation network, the geographical size of the development, and the traffic volume on the existing network, as determined by VDOT in consultation with the locality and the applicant, if applicable. Typically, analysis will be conducted for any roadway on which the additional trips generated by the proposal have a materially detrimental

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impact on traffic conditions. The analysis presented in the TIS need not include all roadway and roadway segments located within the geographic scope of the study as determined by VDOT.

2. A TIS for a development proposal that only meets the low volume road submission criterion (24 VAC 30-155-40 (A.1.c) and -50 (A.1.c)) shall, at a minimum, consist of the following elements, unless otherwise directed by VDOT.

- a. All elements contained in the Background Information portion of the above table, except the geographic scope/limits of study area is limited to the highway fronting the proposed development and the closest intersection, in each direction if applicable, of that highway with a highway that has an average daily traffic volume higher than the fronting highway.
- b. A roadway safety inventory study of the roadway segment or segments between the site entrance to the nearest intersections with the higher traffic volume highways, to include such elements as, but not limited to, speed limit, existing warning signs, pavement and shoulder type, pavement and shoulder width, intersection sight distances, and safe horizontal curve speeds.
- c. Daily and peak hour traffic volumes presented on diagrams, with counts provided in an appendix, for the fronting highway at the site, at the highway's intersections with the higher volume highway, and for the higher volume highways at their intersection with the fronting highway.
- d. All relevant elements contained in the Trip Generation portion of the above table.
- e. Projected daily and peak hour of the generator traffic volumes assuming build-out of the proposal, presented on diagrams for the receiving highway at the site, at the highway's intersection with the higher volume highways, and for the higher volume highways at their intersections with the receiving highway.

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f. Delay and level of service analysis for the intersections of the receiving highway with the higher volume highways.

g. A comparison of the existing geometrics of the fronting highway under proposed build-out traffic conditions with the geometric standards, based upon functional classification and volume, contained in the Road Design Manual (see 24 VAC 30-155-100).

D. Methodology and standard assumptions. A TIS shall be prepared based upon methodology and assumptions noted below or as may be agreed upon by VDOT based upon the results of a scope of work meeting held by VDOT pursuant to this section.

1. Data collection. Preparers shall collect traffic data in accordance with the identified study area. The count data shall include at a minimum, weekday 24-hour counts, and directional turning movement counts during AM and PM peak times of the day. The 24-hour counts shall include vehicle classification counts. With approval of VDOT, data collected by the transportation professional preparer within the last 24 months may be used, likewise for data from the VDOT count program.

The preparer shall monitor traffic operations during data collection to ensure extraneous events such as vehicle crashes or special event traffic do not affect integrity of count data. Preparers collecting data for utilization in traffic impact studies shall normally avoid data collection during the following instances:

- a. Holidays or times of the year when the traffic patterns are deemed to be unrepresentative of typical conditions, unless required by VDOT or the locality, or both.
- b. Summer months if school or schools in proximity.
- c. Fridays and weekends unless required by VDOT or the locality, or both.
- d. Other times of the year contingent upon existing adjacent land use activities.
- e. During times of inclement weather.

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2. Trip generation. Estimates of trip generation by a proposed development shall be prepared using the Institute of Transportation Engineers Trip Generation (see 24VAC30-155-100), unless VDOT agrees to allow the use of alternate trip generation rates based upon alternate published guides or local trip generation studies. Rezoning proposals shall assume the highest vehicle trip generating use allowable under the proposed zoning classification. In determining which trip generation process (equation or rate) may be used, the preparer shall follow the guidance presented in the Trip Generation Handbook – an ITE Proposed Recommended Practice (see 24VAC30-155-100), which is summarized here. Regression equations to calculate trips as a result of development shall be utilized, provided the following is true:

- a. Independent variable falls within range of data; and
- b. Either the data plot has at least 20 points; or
- c. R^2 greater than 0.75, equation falls within data cluster in plot and standard deviation greater than 110% of weighted average rate.

If the above criteria are not met, then the preparer can use average trip rates, provided at least one of the following applies:

- d. At least three data points exist;
- e. Standard deviation less than 110% of weighted average rate;
- f. R^2 less than 0.75 or no regression equation provided; or
- g. Weighted average rate falls within data cluster in plot.

3. Internal capture and pass-by trips.

- a. Internal capture rates consider site trips "captured" within a multiuse development, recognizing that trips from one land use can access another land use within a site development without having to access the adjacent street system. Multiuse developments

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include a combination of residential and nonresidential uses or a combination of nonresidential uses only. Internal capture allows reduction of site trips from adjacent intersections and roadways. Unless otherwise approved by VDOT, the following internal capture rates should be used if appropriate:

(1) Residential with a mix of nonresidential components - use the smaller of 15% of residential or 15% nonresidential trips generated.

(2) Residential with office use - use the smaller of 5.0% of residential or 5.0% of office trips generated.

(3) Residential with retail use - for AM peak hour, use the smaller of 5.0% residential or 5.0% retail trips generated; for PM peak hour, use the smaller of 10% residential or 10% retail trips generated; for 24-hour traffic, use the smaller of 15% residential or 15% retail trips generated.

(4) Hotel/motel with office use - use 15% of hotel/motel trips, unless the overall volume of the office traffic is more than the overall volume of hotel/motel traffic use in which case use the smaller of 10% of the hotel/motel traffic or the office traffic.

(5) Multiuse development with more than five million square feet of office and retail - internal capture rate should be determined in consultation with and approval of VDOT.

(6) Some combination of the above, if approved by VDOT.

b. Pass-by trip reductions consider site trips drawn from the existing traffic stream on an adjacent street, recognizing that trips drawn to a site would otherwise already traverse the adjacent street regardless of existence of the site. Pass-by trip reductions allow a percentage reduction in the forecast of trips otherwise added to the adjacent street from the proposed development. The reduction applies only to volumes on adjacent streets, not to ingress or

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egress volumes at entrances serving the proposed site. Unless otherwise approved by VDOT, the following pass-by trip reductions may be used:

(1) Shopping center - 25% of trips generated may be considered pass-by.

(2) Convenience stores, service stations, fast food restaurants, and similar land uses - 40% of trip generated may be considered pass-by.

4. Trip distribution. In the absence of more detailed information, trip distribution shall be in accordance with logical regional travel patterns as suggested by existing highway directional split and intersection movements or population and destination site distribution. If more detailed information is available from trip origin/destination studies, marketing studies, or regional planning models, this may be used to distribute trips upon approval of VDOT.

5. Planning horizon. In general, the analysis years shall be related to (i) the opening date of the proposed development, (ii) build-out of major phases of a multiyear development, (iii) long-range transportation plans, and (iv) other significant transportation network changes. The preparer should establish the planning horizon in consultation with and subject to the acceptance of VDOT.

6. Background traffic growth. Unless directed by VDOT, geometric growth (or compound growth), based upon historical growth rates, shall generally be used for determining future background traffic levels where extensive traffic-count history is available and capacity constraint is not appropriate. This growth rate replicates "natural growth" and is typical for projecting urban growth.

7. Future conditions. For the purpose of the TIS, future conditions shall include background traffic and additional vehicle trips anticipated to be generated by approved but not yet constructed or improved projects.

8. Level of service calculation. Level of service (LOS) analysis for highways shall utilize the techniques described in the Highway Capacity Manual (see 24VAC30-155-100). Neither the intersection capacity utilization method nor the percentile delay method may be used in the traffic

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impact calculations of delay and level of service. Preparers shall consult with VDOT on which traffic analysis software package is to be used to conduct the LOS calculations. The results shall be tabulated and displayed graphically, with levels of service provided for each lane group for each peak period. All data used in the calculations must be provided along with the results of the capacity analysis. Any assumptions made that deviate from the programmed defaults must be documented and an explanation provided as to why there was a deviation. Electronic files used for the analysis shall be provided to VDOT as a digital submission (e.g..hcs,.sy6,.inp,.trf files), along with the printed report. If intersections analyzed are in close proximity to each other so that queuing may be a factor, VDOT may require the inclusion of an analysis with a micro simulation model. Unless actual on-ground conditions dictate otherwise, preparers should use the following defaults when utilizing the Highway Capacity Software (HCS) or other approved programs when evaluating roadway components:

- a. Terrain – choose the appropriate terrain type. Most of the state will be level or rolling, but some areas may qualify for consideration as mountainous.
- b. Twelve-foot wide lanes.
- c. No parking or bus activity unless field conditions include such parking or bus activity or unless the locality has provided VDOT with a written statement of intent for the services to be provided.
- d. Peak hour factor by approach – calculate from collected traffic counts (requires at least a peak hour count in 15-minute increments).
- e. Heavy vehicle factor – calculate from collected traffic (classification) counts or obtain from VDOT count publications.
- f. Area type – noncenter of business district.

The TIS shall identify any existing or proposed bicycle and pedestrian accommodation that would be affected by the proposal. For the purposes of this subsection, a bicycle accommodation is defined as

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on-street bike lanes, paved shoulders of roadways that are not part of the designated traveled way for vehicles, or exclusive and shared off-street bicycle paths.

For the purposes of this subsection, a pedestrian accommodation is defined as sidewalks, intersection treatments and exclusive or shared off-street trails or paths. If significant potential for bicycle or pedestrian trips exists, the TIS shall include current and future service level analyses at build-out for existing or proposed bicycle and pedestrian accommodations. When the proposal requires or includes improvements or modifications to the roadway, bicycle or pedestrian accommodations, the TIS shall analyze the impacts of such improvements and modifications on bicycle and pedestrian accommodations and service levels, and provide recommendations for mitigation of adverse impacts.

The TIS shall provide analysis for all bus service with routes that have, or will have a station or stop within 2,000 feet of the proposal. The TIS shall evaluate and discuss potential for increased demand for bus use due to the proposal, addressing whether such increases will demand longer dwell time at stops or more buses on a route. The quality of service analysis for bus service shall be determined in accordance with the Transit Capacity and Quality of Service Manual (see 24VAC30-155-100). The TIS shall provide both route and segment quality of service. The TIS shall provide recommendations for mitigation of adverse impacts where adverse impacts are expected to the quality of service to bus service. If an analysis of pedestrian quality or level of service is required for calculation of the bus quality of service, the preparer shall use a methodology approved by VDOT.

9. Trip reduction, and pedestrian and bicycle accommodations. When a proposal meets the criteria listed below, the preparer of the TIS may reduce the number of vehicle trips generated by the proposal in the TIS analysis in accordance with this subsection. Notwithstanding the percentages below, the total number of reductions used by a preparer in accordance with this subsection shall never exceed 500 vehicle trips per peak hour of the generator unless otherwise approved by VDOT.

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a. Pedestrian accommodations. For the purposes of this subsection, a pedestrian accommodation is defined as a sidewalk, pedestrian path, or multiuse trail. Where a pedestrian service level of A exists, vehicle trips per peak hour of the generator may be reduced by 4.0% for those portions of the development within a 2,000-foot radius of the connections between the proposed development and the adjoining network. Where a pedestrian service level of B exists, vehicle trips per peak hour of the generator may be reduced by 3.0%; where a pedestrian service level of C exists, vehicle trips per peak hour of the generator may be reduced by 1.5% for the portion of the development noted above. These reductions may only be taken if:

- (1) Pedestrian facility coverage in a 2,000-foot radius of the connections to the proposed development is on or along at least 80% of the road network;
- (2) The connectivity index within the 2,000-foot radius is equal to or higher than 1.4; and
- (3) There are at least two of the 10 major land use classifications, as defined in ITE Trip Generation (see 24VAC30-155-100), within the 2,000-foot radius.

b. Bicycle accommodations. For the purposes of this subsection, a bicycle accommodation is defined as a street with a design speed of 25 MPH or less that carries 400 vehicles per day or less, on-street bike lanes, a pedestrian accommodation, paved shoulders of roadways that are not part of the designated traveled way for vehicles and are at least two feet wide, or exclusive and shared off-street bicycle paths. Where a bicycle service level of A exists, vehicle trips per day may be reduced by 3.0%. Where a bicycle service level of B exists, vehicle trips per day may be reduced by 2.0%. Where a bicycle service level of C exists, vehicle trips per day may be reduced by 1.0%. These reductions may only be taken if:

- (1) Bicycle accommodations within a 2,000-foot radius of the connections to the proposed development exist on or along at least 80% of the road network;

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(2) The connectivity index within the 2,000-foot radius is equal to or higher than 1.4; and

(3) There are at least two of the 10 major land use classifications as defined in ITE Trip Generation (see 24VAC30-155-100), within the 2,000-foot radius.

10. Modal split and trip reduction. All vehicle trip reductions used in the TIS pursuant to this subsection are subject to the approval of VDOT.

a. If a proposal is located within 1/2 mile along roadways, pedestrian or bicycle accommodations of a transit station, excluding bus stops and stations, reasonable vehicle trip reductions of vehicle trips generated by the proposal may be made with approval of VDOT. The preparer shall submit documentation to justify any such vehicle trip reductions used with the TIS. When a proposal is located more than 1/2 mile but less than two miles from a transit stop, excluding bus stops and stations, with parking accommodations transit modal split vehicle trip reductions may be utilized. The analysis of capacity of the parking accommodations shall be included in the TIS when such trip reductions are used.

b. If a proposal is located within 1/4 mile along roadways, pedestrian or bicycle accommodations of a bus stop or station where the segment and route service levels are C or higher, reasonable vehicle trip reductions of vehicle trips generated by the proposal may be made with the approval of VDOT. The preparer shall submit documentation to justify any such vehicle trip reductions used with the TIS.

c. Transit and bus modal split data from similar developments within the geographic scope of the TIS or one mile of the proposal, whichever is greater, shall be collected if the TIS vehicle trip reductions are used pursuant to this subsection and similar developments exist within the geographic scope of the TIS or one mile of the proposal, whichever is greater.

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11. Signal warrant analysis. Traffic signal warrant analysis shall be performed in accordance with the procedures set out in the Manual on Uniform Traffic Control Devices (see 24VAC30-155-100) or ITE Manual of Traffic Signal Design as determined by VDOT.

12. Recommended improvements. Recommendations made in the TIS for improvements to transportation facilities shall be in accordance with the geometric standards contained within the Road Design Manual (see 24VAC30-155-100).

24VAC30-155-70. Departmental analysis.

After concluding its review of a proposed comprehensive plan or transportation plan or plan amendment, rezoning, or site or subdivision plan, VDOT shall provide the locality and applicant, if applicable, with a written report detailing its analysis and when appropriate recommending transportation improvements to mitigate any potential adverse impacts on state-controlled highways. VDOT shall provide recommendations for facilitating other modes of transportation including but not limited to transit, bus, bicycle and pedestrian facilities or accommodations where such facilities or accommodations are planned or exist, or where such facilities have a significant potential for use. In addition, VDOT shall provide the locality and the applicant, if applicable, with preliminary recommendations regarding compliance with other VDOT regulations.

24VAC30-155-80. Fees.

A. Locality initiated proposals. No fee shall be charged for review of any comprehensive plan, comprehensive plan amendment, rezoning proposal, subdivision plat, site plan, or plan of development initiated by a locality or other public agency.

B. Proposals containing supplemental traffic analysis as described in subdivisions C 1, 2, and 5 of 24VAC30-155-50. No fee shall be charged for the review of a subdivision plat, site plan, or plan of development submission that properly includes a supplemental traffic analysis submitted under subdivisions C 1, 2, and 5 of 24VAC30-155-50.

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C. All other proposals. Any package submitted to a locality by an applicant that will be subject to VDOT review pursuant to this chapter shall include any required payment in a form payable directly to VDOT.

1. For initial or second review of all comprehensive plans, comprehensive plan amendments, and transportation plans submitted to VDOT for review, not initiated on behalf of the locality, there shall be a fee of \$1,000 charged to the applicant. This fee shall be paid upon submission of a plan to VDOT for review.

2. For initial or second review of rezoning proposals, subdivision plats, site plans, or plans of development accompanied by a traffic impact statement or supplemental traffic analysis, not initiated on behalf of the locality, there shall be a single fee for both reviews determined by the number of adjusted vehicle trips generated per peak hour, as follows:

Low volume road criterion only - \$250

Less than 100 vehicles per peak hour - \$ 500

100 or more vehicles per peak hour - \$1,000

The fee shall be paid upon submission of a package to VDOT for review.

3. For a third or subsequent submission pursuant to subdivisions 1 or 2 of this subsection, that is requested by VDOT on the basis of the failure of the applicant to address deficiencies previously identified by VDOT, the applicant shall be required to pay an additional fee as though the third or subsequent submission were an initial submission and requiring the fees identified above. An applicant or locality may appeal to the district administrator a determination by VDOT that a submitted package failed to address deficiencies previously identified by VDOT.

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24VAC30-155-90. Implementation.

A. VDOT shall implement this chapter in phases beginning on July 1, 2007, so that it is in full effect by January 1, 2009.

B. Implementation by VDOT district. For the purposes of this chapter, the nine VDOT construction districts have been divided into three groups.

1. Group 1 consists of Northern Virginia, Richmond, and Salem Districts. Implementation will begin on July 1, 2007, for this group.

2. Group 2 consists of Culpeper, Fredericksburg, and Staunton Districts. Implementation will begin on January 1, 2008, for this group.

3. Group 3 consists of Bristol, Hampton Roads, and Lynchburg Districts. Implementation will begin on July 1, 2008, for this group.

C. Phasing by submission type and trip generation. Within each group of construction districts, implementation will be phased by the type of submission and the trip generation that each proposal is expected to generate.

1. Proposal submission that will be required at the start of each group's implementation:

a. All comprehensive plan and plan amendments submittals described in 24VAC30-155-30.

b. Rezoning, subdivision plat, site plan, and plan of development proposals as described in 24VAC30-155-40 and 24VAC30-155-50 for sites generating 500 vehicle trips per peak hour or more as described in 24VAC30-155-60.

2. All remaining proposal submissions subject to this chapter shall be required to be submitted beginning six months after the start of each group's implementation.

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24VAC30-155-100. Listing of documents incorporated by reference.

Requests for information pertaining to the availability and cost of any of these publications should be directed to the address indicated below the specific document. Requests for documents available from VDOT may be obtained from VDOT's division and representative indicated; however, VDOT documents may be available over the Internet at www.vdot.virginia.gov.

1. Trip Generation (effective November, 2003)

Institute of Transportation Engineers

1099 14th Street NW

Suite 300 West

Washington, DC 20005

2. Trip Generation Handbook – an ITE Proposed Recommended Practice (effective 2004)

Institute of Transportation Engineers

1099 14th Street NW

Suite 300 West

Washington, DC 20005

3. Road Design Manual (effective January 1, 2005)

Location and Design Division (VDOT)

1401 E. Broad Street

Richmond, Virginia 23219

4. Highway Capacity Manual (effective 2000)

Transportation Research Board

500 Fifth Street NW

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Washington, DC 20001

5. Manual on Uniform Traffic Control Devices (effective December 22, 2003)

Federal Highway Administration

Superintendent of Documents

U.S. Government Printing Office

P.O. Box 371954

Pittsburgh, Pennsylvania 15250

6. ITE Manual of Traffic Signal Design (effective 1998)

Institute of Transportation Engineers

1099 14th Street NW

Suite 300 West

Washington, DC 20005

7. Transit Capacity and Quality of Service Manual, 2nd Edition (effective 2003)

Transportation Research Board of the National Academies

Keck Center of the National Academies

Transportation Research Board

500 Fifth Street, NW

Washington, DC 20001

CERTIFICATION

I certify that this regulation is full, true, and correctly dated.

Chief of Policy and Environment
Richard L. Walton, Jr.

Date