

Sec. 50-125. – Traffic Impact Analysis (TIA)

- (a) **All** proposed non-residential and mixed-use developments, all multi-family and single-family attached residential developments, and all other residential developments with six (6) or more total dwelling units will be required to submit a TIA.
- (b) All TIAs for future developments shall begin with initial communication between the Applicant, City Transportation staff, and NCDOT staff as necessary. This communication should be initiated by the Applicant as soon as a project concept is under consideration. The Applicant should not wait until the project has undergone a detailed design before discussing the potential project with City and NCDOT staff. Failure to do so could result in changes to site access locations and site circulation based upon initial review comments. The purpose of this communication is to provide Applicants with information on City and State site design, access, and traffic study analysis requirements. Site plans should be of a conceptual nature for this meeting to minimize Applicant efforts in the preparation of final plans for submittal to the City approval processes. The City’s Development Review Committee, which is administered by the Planning Department and includes City Transportation staff, holds pre-submittal meetings on a regular basis and the developer is encouraged to schedule a time slot to discuss the potential project in one of these meetings.
- (c) Article VIII of the City of Concord Technical Standards Manual should be referenced for more information about the City’s TIA requirements.
- (d) **TIA Level Determination** - The City and/or NCDOT shall determine the level of the TIA to be performed prior to or upon receipt of any development (by-right or rezoning) and/or driveway permit application (hereafter referred to as “Application” for the purposes of this Section only) in accordance with the minimum thresholds set forth below.

The content and level of analysis for each of the study types will increase as the potential impact of the development increases. Requirements for each level are outlined in Article VIII of the Technical Standards Manual (TSM). The following trip generation warrants shall be used to determine the level of analysis required for a TIA.

<u>Study Type</u>	<u>Peak-Hour Trips*</u>	<u>Daily Trips*</u>
1. Access Location and Design Review	<50	< 1000
2. Small Development	50 to 99	1000 to 1999
3. Medium Development	100 to 499	2000 to 9999
4. Large Development	> 500	> 9999

(*based on trip generation estimates prior to any proposed trip reductions being applied)

Trip generation should be based on the most recent edition of the Institute of Transportation Engineers *Trip Generation Manual*.

- (e) The City and/or NCDOT may also determine the need for a higher-level TIA based on special circumstances associated with the development, even if the gross trips fall below the warrants for each level. Such special circumstances may include, but are not limited to, one or more of the following:
 - 1. The location of the proposed new development presents unusual circumstances.
 - 2. The nature of the use presents unusual circumstances.

3. Traffic generated from a development having a likely impact on adjacent residential neighborhoods.
4. Traffic operation issues for current and/or future years on streets within the Impact Analysis Area are expected to be worsened by traffic generated from the proposed new development.
5. Traffic safety issues such as high accident intersections, inadequate sight distance, or other safety concerns exist at intersections or streets that would serve the proposed new development.
6. The proposed new development differs from the adopted Comprehensive Land Use Plan for the City.
7. The existing streets or access system is not anticipated to accommodate the expected traffic generation, is operating at or above capacity, or traffic near the site is experiencing unacceptable delays at the time of the application.
8. The proposed new development includes a drive-through facility, or other uses such that require significant on-site circulation that may have an off-site impact to adjoining roads and/or intersections.
9. The amount, behavior and/or assigned trip distribution of traffic is different from a previously approved TIA, or more than 12 months have passed since completion of a previous TIA.
10. The Transportation Director, Planning and Zoning Commission, City Council, or NCDOT representatives, may require a TIA or higher-level TIA beyond that which may otherwise be required by this ordinance and Article VIII of the TSM.

(f) **TIA Submittal Triggers** – All Applicants are encouraged to begin the TIA process as soon as a project concept is under consideration; however, TIAs should be submitted per the following:

1. Rezoning - The TIA process shall begin once an application is received. An approved TIA Report and subsequent Transportation Mitigation Agreement (TMA) is required prior to the approval of Rezoning applications.
2. Special Use Permits – The TIA process shall begin once an application is received. An approved TIA Report and subsequent TMA is required prior to the approval of Special Use Permit applications.
3. Subdivision Development – If not completed as part of a previous application process, the TIA process shall begin once a Preliminary Plat is submitted. An approved TIA Report and subsequent TMA is required prior to the approval of a Preliminary Plat.
4. Driveway Permit – If not completed as part of a previous application process, an approved TIA and subsequent TMA is required prior to the approval of Driveway Permits for all proposed non-residential and mixed-use developments, all multi-family and single-family attached residential developments, and all other residential developments with 5 or more total dwelling units.

(g) **TIA Scoping** - Following the scoping communication with City and NCDOT Staff, a TIA Scoping Document reflecting the understood scope and parameters of the TIA shall be prepared by the Applicant and/or the Applicant's TIA consultant. The Scoping Document shall be approved and signed by the Applicant, the City, and appropriate NCDOT staff (as applicable) before TIA preparation begins. Failure by the Applicant to provide accurate information or failure by the TIA consultant to follow the Scoping Document shall result in disapproval of the TIA until such failures are corrected. Any changes made to the parameters outlined in the approved Scoping Document made by the Applicant or the Applicant's TIA consultant will require approval from the City and the appropriate NCDOT Representative as applicable.

An approved TIA Scoping Document is valid for nine (9) months from the date of final approval. If a completed TIA is not submitted prior to the expiration of the nine (9) month period, the TIA Scoping Document shall be revised if necessary and resubmitted by the Applicant for approval.

- (h) **Preparation of the TIA** - The TIA **shall** be prepared in accordance with the City of Concord Technical Standards Article VIII.

The TIA *should* be conducted by a licensed professional engineer with experience in traffic engineering studies and is pre-qualified by the NCDOT Congestion Management Section to produce TIAs. The TIA **shall** be prepared by, or under the supervision of, a professional engineer (PE) who has a valid North Carolina PE license/registration and experience in traffic engineering operations and is pre-qualified by the NCDOT Congestion Management Section to produce TIAs. The responsible PE **shall** include their signature, PE seal, and the following statement of certification at the beginning of the TIA:

“I certify that this Traffic Impact Analysis has been prepared by me or under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering.”

(Signature)
John Q. Smith, P.E.
NC Registration #12345
Consulting Firm, Inc.

Preparation by a Professional Traffic Operations Engineer (PTOE) is preferred for Level 3 and Level 4 TIAs.

- (i) **Proposed Street Connections** - Street connections should be consistent with adopted plans. However, if proposed street connections are not consistent with adopted plans, an explanation or proposed transportation mitigation alternative that is equal to or better than the adopted plan shall be discussed in the TIA. NCDOT and the City will be responsible for determining whether the alternative mitigation plan meets and/or exceeds the performance standards of the proposed street connections in the adopted plans. If it is determined that the alternative mitigation plan does not meet the performance standards of the adopted plan then the Applicant is responsible for revising the mitigation plan or requesting an amendment to the adopted plan. Any request to amend an adopted plan must be approved by the highest-level authority which approved the adoption of said plan. One example would be the City’s Comprehensive Transportation Plan which would require Concord City Council to approve an amendment request.
- (j) **TIA Review** - Review of TIAs submitted to the City will be undertaken by City Transportation staff and may be reviewed jointly with, or solely by, a pre-selected consulting firm on behalf of the City. TIAs identified to be reviewed by a consultant will be reviewed by a PE at a consulting firm to be selected by the City. A list of consulting firms pre-selected by the City for TIA reviews will be identified by City staff following periodic Requests for Qualifications. TIA review consultants may not have a current contract or other agreement related to site design/development or transportation related consulting with the Applicant for which they are conducting the review. All TIAs requiring NCDOT review will also be reviewed by appropriate NCDOT staff.
- (1) ***Fees*** – The costs for TIA reviews will be based on review proposal costs requested by City staff of qualified engineering firms. If a TIA is identified to be reviewed by a consultant, the review will not begin until such time as the Applicant provides payment in full to the TIA

review consultant. After the scoping process and approval of a scoping document, the City will choose a consultant from the pre-selected list and request a statement of fees for the review of the subsequent TIA. If, in the review process, additional study revision reviews or meetings are required, supplemental fees may be required by the City/TIA review consultant.

- (2) Review Timelines – The City follows NC GS, Chp. 136, Transportation, § 136-93.1A to align with NCDOT timelines for TIAs.
- (3) The development of the TIA requirements for a specific development request is an iterative process starting with the initial staff communication through the final review. City, and NCDOT staff as appropriate, must give final approval before recommendations will be made to the Planning and Zoning Commission and/or City Council. Once the City and NCDOT have determined the TIA is acceptable the Applicant will be notified by letter that the TIA has been approved.

(k) Operation Requirements – System operation is defined to include motor vehicles, pedestrians, and bicycles. Typically, operation is cited in Levels of Service (LOS) that range from A to F. A LOS A represents excellent operating conditions while a LOS F represents very poor operating conditions. The methodology to determine motor vehicle operation is set forth in the *Highway Capacity Manual* published by the Transportation Research Board. The pedestrian and bicycle Level of Service operation is based on methodologies developed by the City of Charlotte, North Carolina, and is included in Appendix G of Article VIII of the City of Concord Technical Standards Manual.

(1) Motor Vehicle Level of Service

In order for the City transportation system to continue to operate safely and efficiently, it is the responsibility of Applicants to minimize and adequately mitigate the traffic impacts of new developments on the transportation system. The City goal is to have its transportation system operate at a minimum Level of Service (LOS) C. However, the City recognizes that at some locations throughout the transportation system, it may only be feasible to achieve Level of Service D. Therefore, the desirable operation for street segments, intersections and individual movements in the City's transportation system is LOS C and the minimum is LOS D. For analysis purposes, this LOS requirement includes each intersection movement, not just the overall average intersection operation. Time periods to be analyzed depend upon the development type and can include existing street morning and evening peak-traffic periods in addition to the peak hour of the generator such as movie theaters and Saturday midday time periods for commercial shopping corridors. The analysis periods should be discussed with City and NCDOT staff during the scoping process.

For developments, there are two basic conditions typically encountered that affect transportation operation. The first condition affects intersections that currently, or which will in the future horizon year, operate without development traffic at LOS C or better. Under this condition, new developments are expected to prevent degradation of LOS to a lower level and/or prevent an increase in delay by more than 25% while maintaining the same LOS at an intersection or an individual approach in order to ensure there is adequate infrastructure to serve the development. City Transportation and/or NCDOT staff will determine if LOS C is a feasible goal to maintain or if LOS D is a more appropriate operational goal. The City Transportation Director shall then make a recommendation to the Development Review

Committee (DRC) for consideration. These conditions shall be treated on a case by case basis.

The second condition affects intersections that currently, or which will in the horizon year, operate without development traffic at or below LOS D. Under this condition, new developments are expected to prevent any increase in delay and to maintain the base condition LOS for an intersection or individual approach in order to either ensure infrastructure remains adequate to serve the development or that the development does not further contribute to existing inadequate infrastructure.

The operation of the Transportation System beyond intersections should also be considered. The calculated existing capacity for many streets throughout Concord is provided in the Cabarrus Rowan Metropolitan Planning Organization's (CRMPO) Comprehensive Transportation Plan (CTP). The level of service based on capacity should be calculated for both the existing conditions and the build-out and horizon year conditions using Highway Capacity Manual methodologies. The same LOS thresholds apply to street segments as they do to intersections. Applicants are expected to ensure that the streets serving the development have enough capacity to adequately serve the additional traffic added by the development.

Where a new public street is proposed, the TIA should provide a LOS analysis for all individual movements where the proposed street(s) intersects an existing street. Proposed public streets indicated by the TIA to have an individual movement onto an existing street with a LOS D or lower may not be eligible for public street acceptance.

The Applicant is responsible for ensuring street segments, intersections and site access control maintain the stated LOS operation for all motor vehicle movements. Driveway permits for developments where transportation impacts are greater than permitted and LOS thresholds are not met may be denied due to inadequate infrastructure.

(2) Pedestrian Level of Service

Pedestrian Level of Service consistency with motor vehicle Level of Service is important. Intersection pedestrian Level of Service follows a similar grading system as used for motor vehicles, ranging from A through F. These service levels relate to the ability of a pedestrian to cross a signalized intersection. Principal pedestrian considerations include number of lanes to be crossed, crosswalk amenities, and traffic control operation. The pedestrian Level of Service goals recommended for different roadways or sections of roadway can vary depending on the adjacent land use context. Refer to Article VIII of the TSM for pedestrian Level of Service recommendations based on adjacent land use development.

Level of Service descriptions and methodology are contained in the TSM Article VIII, Appendix G. Pedestrian Levels of Service shall be calculated at signalized intersections where motor vehicle operation levels are being calculated. While this ordinance, nor TSM Article VIII, does not define LOS calculations or recommendations for mid-block pedestrian crossings, the need for mid-block crossings and any proposed mid-block crossings will be considered on a case by case basis.

(3) Bicycle Level of Service

Bicycle Level of Service consistency with motor vehicle and pedestrian Level of Service is important. Intersection bicyclist Level of Service follows a similar grading system as used for motor vehicles, ranging from A through F. The Level of Service criteria relate to the ability of a bicyclist to cross a signalized intersection. Principal bicycle considerations include number of lanes to be crossed, bicycle lane design, and traffic control operation. Similar to pedestrian Level of Service, the operational goals recommended for different roadways can vary depending on the context of adjacent land use and consideration of the City's bike route plan. It is noted that conflicts may exist between motor vehicle and bicycle Level of Service with priorities to be established by the City and/or NCDOT staff. Refer to Article VIII of the TSM for bicycle Level of Service recommendations based on adjacent land use development.

Level of Service descriptions and methodology are contained in Article VIII of the TSM, Appendix G. Bicycle Levels of Service shall be calculated at signalized intersections where motor vehicle operation levels are being calculated.

(l) **Transportation Mitigation Agreement (TMA)** – Upon completion and approval of the TIA, certain on-site transportation mitigation measures may be required as recommended by the TIA, or as required in accordance with the City's Technical Standards Manual. If so, the TIA consultant shall prepare a Transportation Mitigation Agreement (TMA) which will summarize the following:

- (1) Development plan,
- (2) Phasing and timing of development (if applicable),
- (3) Site access and points of ingress/egress,
- (4) All, on-site mitigation measures and/or improvements required to adequately mitigate the project impacts to the City's transportation system, including vehicular, pedestrian, and bicycle improvements,
- (5) All off-site mitigation measures (including pedestrian and bicycle improvements) identified by the TIA and/or City and NCDOT staff and determined to be necessary for the transportation system to adequately serve the development,
- (6) Trigger points and deadlines for construction of any improvements,

In the event Off-Site mitigation measures are indicated by the TIA, or determined by City or NCDOT staff as necessary to mitigate the traffic impacts of the development on the safety and general welfare of the traveling public, the Application or subsequent driveway permit may be denied by the City upon a determination that:

- (1) The specific improvements are not planned or are planned but not funded by the City (or NCDOT in the event such improvements are indicated for state roads) at the time of the Application and,
- (2) The City (or NCDOT in the event such improvements are indicated for state roads) determines, based on the TIA, that the proposed new development will create excessive delay, or hazards to the health, safety and general welfare of the traveling public without such mitigation measures.

If such a determination is made, the Applicant will be made aware that the transportation network is inadequate to serve the development as proposed and analyzed by the TIA and that a subsequent driveway permit will not be approved. The Applicant will have the option to revise the proposed development to reduce the traffic impacts to acceptable levels, volunteer agree to construct/implement the identified off-site mitigation measures as part of the TMA, or wait to resubmit until such time that sufficient improvements are constructed by other parties to adequately serve the proposed development.

The TMA must be signed by the Applicant, City and NCDOT (if mitigation involves a state roadway), must identify all on-site mitigation measures which the Applicant agrees to construct, install, or otherwise implement, and must also identify all off-site mitigation measures which the applicant voluntarily agrees to construct, install, or otherwise implement.

(m) Phasing of Mitigation Measures

All mitigation measures agreed to in the approved TMA must be constructed or implemented prior to approval of the first Final Plat, Zoning Permit, or final Certificate of Occupancy (CO) for a non-phased development. If the proposed development is planned to be completed in multiple phases all mitigation measures agreed to in the approved TMA must be constructed or implemented prior to approval of the first Final Plat, Zoning Permit, or final Certificate of Occupancy (CO) of the second phase, regardless of the total number of proposed phases unless otherwise agreed to in the TMA.

The TIA shall address the phasing of improvements for each phase of development and the Applicant shall provide a financial guarantee as outlined in the City's Land Development Guidelines in the amount of 125% of all deferred transportation improvements within City right-of-way prior to issuance of a City Driveway Permit and/or Prior to the City signing off on an NCDOT Driveway Permit for any phase beyond the first. The cost estimate will be provided by the Applicant for review and acceptance by the City. The cost estimate will include costs for planning/design, permitting, construction and right-of-way. Refer to Article 5 of the Concord Development Ordinance (CDO), section 5.7.4 for Construction Responsibilities and Performance Security for Improvements. All improvements within NCDOT right-of-way shall be bonded in accordance with NCDOT regulations. The need for bonds associated with undefined future development for subdivisions of large parcels will be determined on a case by case basis.

(n) Traffic Impact Analysis Relevance

Due to the ever-changing nature of traffic throughout the City it is necessary to establish appropriate lengths of time for which an approved TIA will be considered relevant. Assuming the amount, behavior and/or assigned trip distribution of traffic and all proposed accesses remain the same for a proposed development, an approved TIA will remain relevant for 3 years from the date of approval for a single-phase development and 4 years for a multi-phase development. If all phases of a proposed development have not received final site plan and/or construction document approval prior to the TIA being deemed irrelevant then a new or revised TIA and subsequent approved TMA will be required prior to site plan and/or construction document approval.

(o) Right-Of-Way

The Applicant is responsible for ensuring sufficient Right-Of-Way exists or is acquired prior to beginning construction of transportation improvements and mitigation measures agreed to by the Applicant in the approved TMA. If sufficient Right-Of-Way does not exist and the Applicant is unable to acquire Right-Of-Way necessary to construct the transportation improvements and mitigation measures agreed to in the approved TMA, then the TIA and/or site plan should be revised to account for any mitigation measures which cannot be constructed as planned.