

APPENDIX-H

POLICY FOR DRIVEWAY DESIGN & CONSTRUCTION



August 2019

Revised March 25, 2024

Revised January 5, 2026

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1 – INTRODUCTION

1.1 Purpose & Applicability

The primary purpose of the Town of Waxhaw’s Driveway Design & Construction Policy is to provide minimum driveway design standards to individuals that are engaged in the design, permitting, and construction of private land development projects. Town staff will use this policy as the primary guidance document to support a property owner’s rights of reasonable access to their site.

The driveway policy is intended to be used for, but not limited to; residential, industrial, mixed-use, and commercial site access to the public right-of-way. This document is also intended to be used in concert with other regulatory documents that have an influence for site access such as *The North Carolina Department of Transportation’s Policy on Access & Design*, the *Town of Waxhaw’s Land Development Code, Subdivision Regulations*, and the *Town of Waxhaw’s Engineering Design & Construction Standards Procedures Manual*.

From a procedural perspective, Town Staff will administer the regulations and guidance set forth in this policy document for all of the land development activities occurring within the Town Limits of Waxhaw that include, but may not be limited to:

- Commercial Site Plan Review
- Subdivision Plan Review
- Residential Improvements Review
- Conditional Rezoning Process

1.2 Objectives of this Manual

The objectives of the Driveway Manual are identified below;

1. Provide minimum driveway design and access management requirements and guidance to private landowners and/or developers that seek access to the public street
2. Create a tool that allows for the consistent administration of the driveway requirements and policies that govern access to the public street system

2 – PROCESS, PROCEDURES, APPROVALS

2.1 General Requirements

A property owner, developer, and/or public entity that seeks access to the public right-of-way can do so via Town Development Services commercial and subdivision commercial permitting processes. It is important to note that the approval of the development plan (commercial or subdivision) provides approval of each of the driveways/street connections proposed as a part of the subject development plan. This means that no separate driveway permit approval document will be issued as a part of the aforementioned land development plan approval(s) with the following exceptions. Individuals seeking new driveways to existing properties that are not being

developed will need to follow the procedures for obtaining a driveway permit as outlined in the Driveway Permit application in Appendix I. Additionally, the developer/design professional will need to obtain a physical driveway permit from the North Carolina Department of Transportation's District 3 Office (704-218-5100) when any of the previously mentioned access points connect to a public street maintained by the North Carolina Department of Transportation (NCDOT).

2.2 Town Requirements for Driveways

Expiration of Permit

Construction of a driveway must be completed within one year after the issuance of a driveway permit. An extension may be granted upon showing that valid reasons exist for the delay. A request for an extension must be submitted to the Town Engineer and/or designee in writing at least thirty (30) days prior to the permit expiration date to avoid full plan review requirements.

Permit Revocation

A driveway permit may be revoked for failure to comply with the Town's driveway design and construction policies and regulations, the Land Development Code (LDC), and/or the terms and conditions of the NCDOT driveway permit. If a driveway permit is revoked, the Town may require the permittee or property owner to physically eliminate the driveway and replace or repair any existing sidewalk, curb & gutter, and associated storm drainage. If the permittee or property owner does not physically eliminate the driveway and replace or repair the sidewalk, curb & gutter, and associated storm drainage within thirty days (30), the Town may do so and charge the expense to the permittee or property owner.

Driveway Abandonment

If a driveway connection is abandoned, the Town may require the permittee and/or property owner to physically eliminate the driveway and replace or repair any existing sidewalk, curb and gutter, and storm drainage. If the permittee and/or property owner does not physically eliminate the driveway and replace or repair the sidewalk within **60 days**, the Town may do so and charge the expense to the permittee or property owner.

Driveway Bond

The Town may, at its sole discretion, authorize the issuance of a certificate of occupancy or authorize the use of a driveway connection prior to completion of all work required in a driveway permit by requiring the permittee to post a bond to ensure the completion of required work.

Driveway Variance

The Town may, at its sole discretion, grant a variance from the driveway policy in order to preserve a tree within a public right-of-way and the granting of such a variance would not be inconsistent with the objectives and intent of the driveway policy.

Driveway Inspection

Each proposed driveway must be inspected by a representative of the Town's Development Services Staff and/or designee after concrete forms are set to final grade, but before any concrete or asphalt has been poured placed. The contractor is required to call the Engineering Department (704-843-2195) to schedule this inspection. Next day inspections are available and same-day inspections are possible if the Engineering Department receives

the telephone request between 8:00 a.m. and 9:00 a.m. Monday through Friday. No inspections will be scheduled if the proper approval has not been issued. In case of failure of the contractor or property owner constructing the driveway to conform to the requirements of this Policy, the inspector or other official of the Engineering Department exercising supervision over the work shall have the authority to stop the work immediately and cause the driveway to be barricaded. That official shall have authority to and shall require the removal or alteration of any driveway which does not conform to the requirements documented in this Policy. Both the property owner and the contractor shall be financially responsible for the removal or alteration and/or cost of removal or alteration of such defective driveway.

Driveway Construction

Additionally, the contractor shall obtain a temporary street closure permit from the Development Services Department prior to the closure, blockage, or construction activities in any public travel lanes or sidewalks. Any closure or blockage of any public travel lane shall be performed according to the standards set forth in the Federal Highway Administration's *Manual on Uniform Traffic Control Devices (MUTCD)*, and the latest revision of *The North Carolina Department of Transportations' Roadway Standard Drawings Manual*.

Driveway Maintenance

Maintenance of driveways and culvert piping under driveways are the responsibility of the property owner to repair and or maintain. CMP pipes deflect, clog and corrode over time unless caused by town owned street trees each property owner is responsible to maintain access to his or her property.

2.3 Submittal Requirements

For proposed driveways to existing properties, no driveway approval will be granted until two copies of the approved plans showing the location and dimensions of all proposed improvements are filed with the Engineering Department. Plans should identify the site by:

- address,
- adjacent properties,
- and the approximate distance to the nearest intersecting street or driveway.

Information required on the plans submitted shall include:

- A complete plan view of the site showing existing and proposed buildings with interior parking layout and traffic circulation patterns;
- Existing and proposed driveway locations and dimensions, including but not limited to:
 - a. Distance from other streets and driveways on both sides of the roadway
 - b. **Width at the property line**
 - c. Curb radii
- Profile of estimated entrance and exit grades when grades exceed 5%
- Proposed pavement markings
- Maintenance of traffic plans for proposed roadway improvement construction that requires overnight closures or lane shifts;
- Horizontal and vertical sight distance information;
- Existing and/or proposed sidewalks, bicycle paths, or other multi-modal features;

- Street names, primary or secondary road numbers (when applicable), right-of-way and pavement widths and location of street return on corner lots;
- Proposed location of off-street loading and unloading facilities; and
- Proposed Culvert Size and length and Existing ditch if applicable
- Retaining walls, drainage structures, utility poles, fire hydrants, traffic control cabinets, and other physical features which affect the driveway location and sight distance.
- Retaining walls shall not be designed or constructed within any easement or right-of-way

Non – Residential Change of Use

A new driveway permit will be required for non-residential change of use development plans if they meet either of the following criteria.

1. Current driveway is in disrepair and does not meet the Town’s minimum design criteria
2. Where the existing driveway does not meet ADA accessibility requirements

3– DRIVEWAY DESIGN CRITERIA

3.1 General Criteria

The final decisions regarding the appropriate driveway type, placement, and quantity of driveways per site are based on various factors including but not limited to the proposed land-use, traffic characteristics of the adjacent public street, existing site conditions, proposed density, and other environmental factors and considerations. In general, the Engineering Department will follow national design criteria identified in the latest version of the AASHTO Policy on Geometric Design when regulating the minimum requirements for driveway design and driveway placement.

To that end, the Town of Waxhaw has published a series of standard driveway designs provided in the *Engineering Design & Construction Standards Procedures Manual* that have a proven record of meeting the traffic demands for most land development projects seeking residential and commercial driveway access to the public street system. In cases where the standard driveway designs do not meet the development’s site-specific needs, the site designer can provide a non-standard driveway design to the Engineering Department for review and consideration.

The site designer is encouraged to do as much advanced coordination of such design as is practical before the construction documents are officially submitted for review to prevent the official permitting schedule for the site from being negatively impacted.

The following section of this document entitled “Standard Driveway Types” will provide a brief definition of each driveway type, its general applicability, and specific design considerations for each respective standard driveway type. The subsequent design considerations in each subsection should not be considered a comprehensive analysis of every aspect of the respective driveway type, but key considerations that should be noted during the site design. The Town Engineer or designee reserves the right to require a different driveway type than what a designer proposes based on safety, proper alignment of the specific driveway type to its appropriate geographic/land-use

context, coordination with the public street that the driveway accesses and the influence of the specific driveway on site design.

3.2 Standard Driveway Types

Driveway Type

- **Type I (111.1, 113.1, & 118.1)**

Definition:

Any driveway that provides access to a single-family residence, duplex, or triplex. This driveway has no radius returns and is either constructed as a drop-curb concrete ramp where standard 2'6" vertical curb-and-gutter is present, or constructed to the back of existing curb where valley curb is present. Sidewalks (unless located at back-of-curb) do not change grade when crossing a Type I driveway.

Applicability:

This driveway type should be used for all single-family, duplex, and tri-plex residential driveways.

Design Considerations:

Type I driveways must be designed with sufficient length to accommodate the anticipated number of vehicles such that no parked vehicles will overhang the sidewalk. The design must include at least 20 feet of pavement between the right-of-way and any structure. The minimum driveway width is 10 feet on a local or collector street and 15 feet on a thoroughfare. The maximum width for a Type I driveway is 30 feet.

Where multiple drives access the same lot, total driveway width shall not exceed 32 feet and drives shall not be less than 20 feet apart measured along the edge of pavement.

Type I driveways shall be offset a minimum of 5 feet from the property line.

Where a concrete drive is installed, 6-inch of concrete depth shall be provided within the Town Right of way per standard details.

- **Type II (108.1, 109.1, 110.1, 112.1, 114.1)**

Definition: A drop-curb concrete ramp driveway that provides access to small office, multi-family, retail, recreational, industrial, or institutional buildings. This driveway does not have radius returns. Sidewalks (unless located at back-of-curb) do not change grade when crossing a Type II driveway.

Applicability:

This driveway should be used for any facilities that generate a low to moderate number of vehicle trips (20 – 100 trips/day). Type II driveways are also preferred for urban or highly commercialized areas where high numbers of pedestrians can be expected to travel along the intersecting sidewalk and where too many driveways are present to allow for the spacing necessary to accommodate

Type III driveways. Type II driveways are also appropriate for sites with un-channelized vehicular circulation or where it is otherwise important that entering vehicles decelerate significantly to maneuver on site.

Design Considerations:

Type II driveways should always be designed to the minimum width that effectively accommodates the vehicles entering and exiting the site. Typically Type II driveways are designed to accommodate the single unit design vehicle (SU-30). Where larger vehicles are anticipated, the driveway apron should be designed to accommodate the actual wheel paths of the turning vehicle, rather than providing a uniform width, which is often unnecessarily large. Wherever possible, planting strips should be provided to separate the sidewalk from the driveway apron, thereby allowing a constant grade for the sidewalk. The minimum driveway width is 20 feet for one-way Type II Driveways. The maximum width for one-way Type II driveways is 30 feet. The minimum driveway width is 26 feet for two-way Type II Driveways. The maximum width for two-way Type II driveway is 50 feet.

Type II driveways shall be offset a minimum of 5 feet from the property line.

- **Type II - Modified (115.1)**

Definition:

A drop-curb concrete ramp driveway that serves land uses in urban zoning districts. This driveway has small radius returns. Sidewalks do not change grade when crossing a Type II driveway.

Applicability:

Type II-modified driveways can also be used where sufficient planting strips are present and there is an operational need to provide radius returns to accommodate larger turning vehicles while still using a drop-curb style driveway.

Design Considerations:

This driveway should be designed to the smallest width that will accommodate all anticipated turning vehicles. The radius should be equal to or no greater than the width of the planting strip.

- **Type III (120.1)**

Definition:

A street-type driveway with radius returns. Through sidewalks are interrupted across Type III driveways, but wheelchair-accessible ramps are present to provide continuous passage across the driveway. All proposed public street connections will be considered Type III driveways.

Applicability:

This driveway is suitable for facilities with a moderate to high number of vehicle turning movements, or where a substantial number of truck movements are expected to occur. Because type III driveways allow for higher capacity, they are ideal for consolidating access to multiple land uses. This is desirable as a means of increasing the efficiency of vehicles entering and exiting the roadway, and reducing the total number of driveways along a roadway. Type III driveways must be used wherever dedicated left-turn lanes are required in order to facilitate the turns.

Because of the higher vehicle entry and exit speeds and the interruptions they cause to pedestrians, proper spacing is critical for Type III driveways. Type III driveways are generally inappropriate in locations with high pedestrian activity.

Design Considerations:

Type III driveways should always be designed to the minimum width that effectively accommodates the vehicles entering and exiting the site. The overall driveway width and the radius returns should be designed to accommodate the actual wheel paths of the turning vehicle. Since larger radius returns increase the distance required for a pedestrian to cross, they should be designed to the smallest radius which still accommodates the anticipated entering and exiting traffic and which still allows for a reasonable turning speed. Type III driveways should be located on the site where the highest vehicular utilization can occur and where proper channelization can be provided. Since Type III driveways tend to serve higher volumes of entering and exiting traffic, the driveway stem must also be designed to provide an adequate amount of internal channelization, thereby reducing the potential for entering traffic to back-up into the public right-of-way.

See Section 4.1 below for property line offset requirements.

4 – DRIVEWAY LOCATION & SEPARATION REQUIREMENTS

Separation from Signalized Intersection

Traffic signals are a critical component of the transportation system, as they aide in alleviating congestion, metering traffic, and organizing the various transportation demands that motorists and pedestrians place on the public street system. Introducing driveways in close proximity to a signalized intersection can degrade the intersection’s capacity, safety, and operations. Therefore, special consideration will be given to driveways that are proposed in a location that could affect an existing or proposed traffic signal. 150ft from signalized intersections (approach and departure side) will be the minimum distance required permit a commercial driveway access. **Driveway placement will be evaluated on a site-specific basis when a site is adjacent to a traffic signal and its property frontage is less than 200’ or it is otherwise not possible to provide the minimum separation.**

4.1 Driveway Placement

Separation from Un-Signalized Intersection (Corner Clearance)

In general, 100’ is the minimum separation a commercial driveway should have from an un-signalized intersection. Engineering staff will evaluate the site specific conditions when the site property frontage is less than 100’ or if a spacing greater than 100’ creates safety and/or operational problems within the public street.

Where dual left turns are present at signalized intersections, any new driveway proposed within the functional area of the intersection will be restricted to right turn-in, and right turn-out (commonly referred to as “right-in/right-out”) vehicular movements. This will be accomplished via the installation of a raised concrete median island.

Separation from Adjacent Driveways

Driveways too closely spaced to one another have the ability to create sight distance problems, and introduce unnecessary conflicts within the public street network. In circumstances where access is proposed to a non-median divided public street that is classified as a Collector Street or higher, the minimum driveway separation will be 50 ft. This dimension can be reduced to 20 ft when access is proposed to a median-divided public street classified as a Collector Street or higher. ***Note that the previously mentioned driveway spacing will not accommodate every situation, and Engineering staff reserves the right to modify/adjust these dimensions based on the existing/proposed site and roadway conditions. Whenever possible adjacent properties should try to share an access drive.***

Separation from Property Line

In general, 10ft or the proposed driveway radius (whichever is greater) shall be the minimum driveway separation from a site's property line. This distance is measured from the property line to the radius point of the driveway. In cases where there is no radius for the driveway (Type II, and Type IV), the ten foot measurement will be taken from the tie-in location of the taper to the existing roadway pavement. The application of the ten foot property line separation requirement should ensure a minimum of 20ft between driveways. In cases where an existing driveway is located closer to the property line than ten feet, Town staff may require additional separation from the property line for the proposed driveway to ensure a minimum of twenty feet of driveway separation is provided.

Sight Distance

One of the most important criteria that is necessary to provide safe access to the public street system is the presence of adequate available Sight Distance. As such, all existing and proposed driveway entrances must conform to the latest version of "AASHTO'S POLICY OF GEOMETRIC DESIGN". To provide and maintain an adequate "window of visibility" for the motorist, no object, planting, structure, or sign shall be placed within this triangle at a height between 2.5 feet and 10 feet above the finished grade of the proposed driveway.

Figure 1 should be used as guidance information to assist developers and site designers in properly ensuring adequate approach and departure sight distance for the most common scenarios in Waxhaw. Please note additional sight distances cases are identified in the latest revision of "AASHTO'S POLICY OF GEOMETRIC DESIGN".

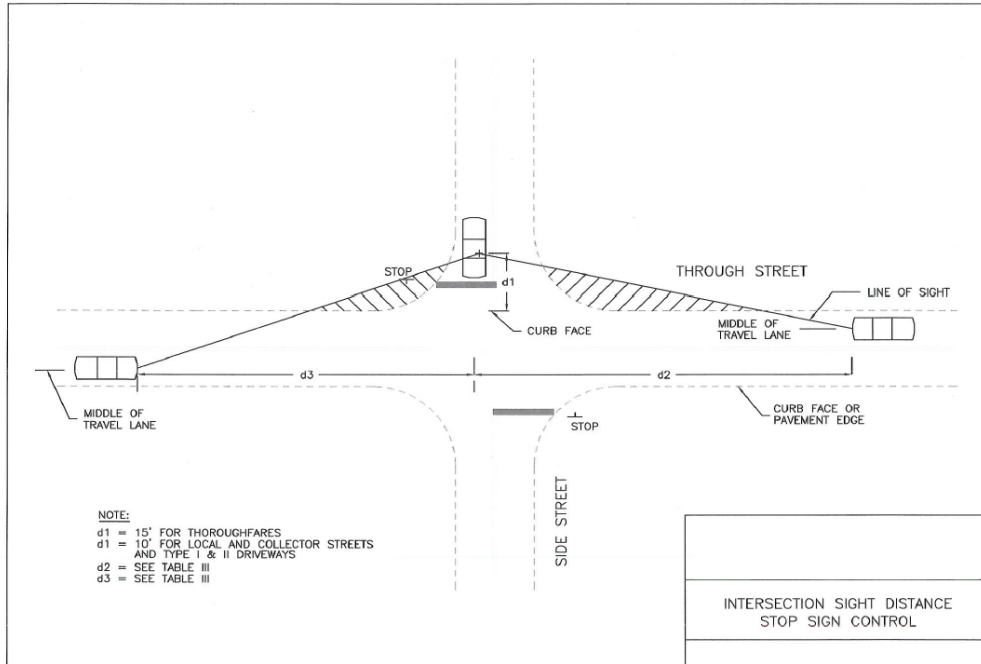


Figure 1: Intersection Sight Distance Stop Sign Control

| Design Speed (MPH) | Minimum Intersection Sight Distance for left-turn from stop (ft) | Minimum Intersection Sight Distance for Right Turn from Stop (ft) |
|--------------------|--|---|
| 15 | 170 | 145 |
| 20 | 225 | 195 |
| 25 | 280 | 240 |
| 30 | 335 | 290 |
| 35 | 390 | 335 |
| 40 | 445 | 385 |

Table 1: Intersection Sight Distance for stop-sign and signal-controlled intersections for passenger cars (Tables 9-7 & 9-9, 2018 AASHTO Policy on Geometric Design)

5 –TURN LANE WARRANTS & DESIGN

In general, Figure 2 will be used as the criteria to determine if/when either a left or right turn lane will be required to support the traffic generated by the proposed development. Figures 3, 4, and 5 should serve as design guidelines and criteria to assist project engineers when design left and right turn lanes on and/or for public streets within the Town limits.

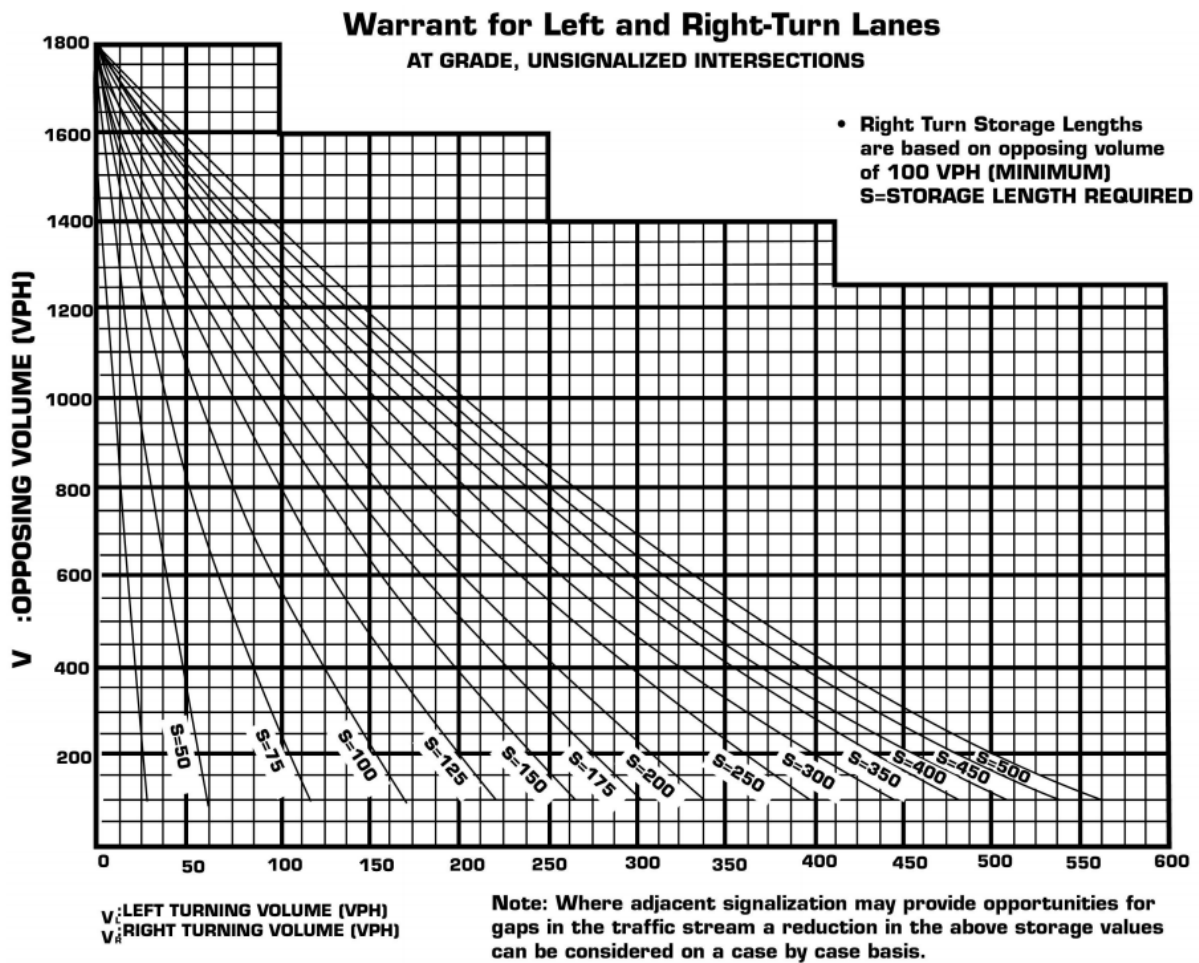


Figure 2: Left and Right Turn Lane Warrants (2003 NCDOT Policy on Street and Driveway Access to North Carolina Highways)

Recommended Treatment for Turn Lanes

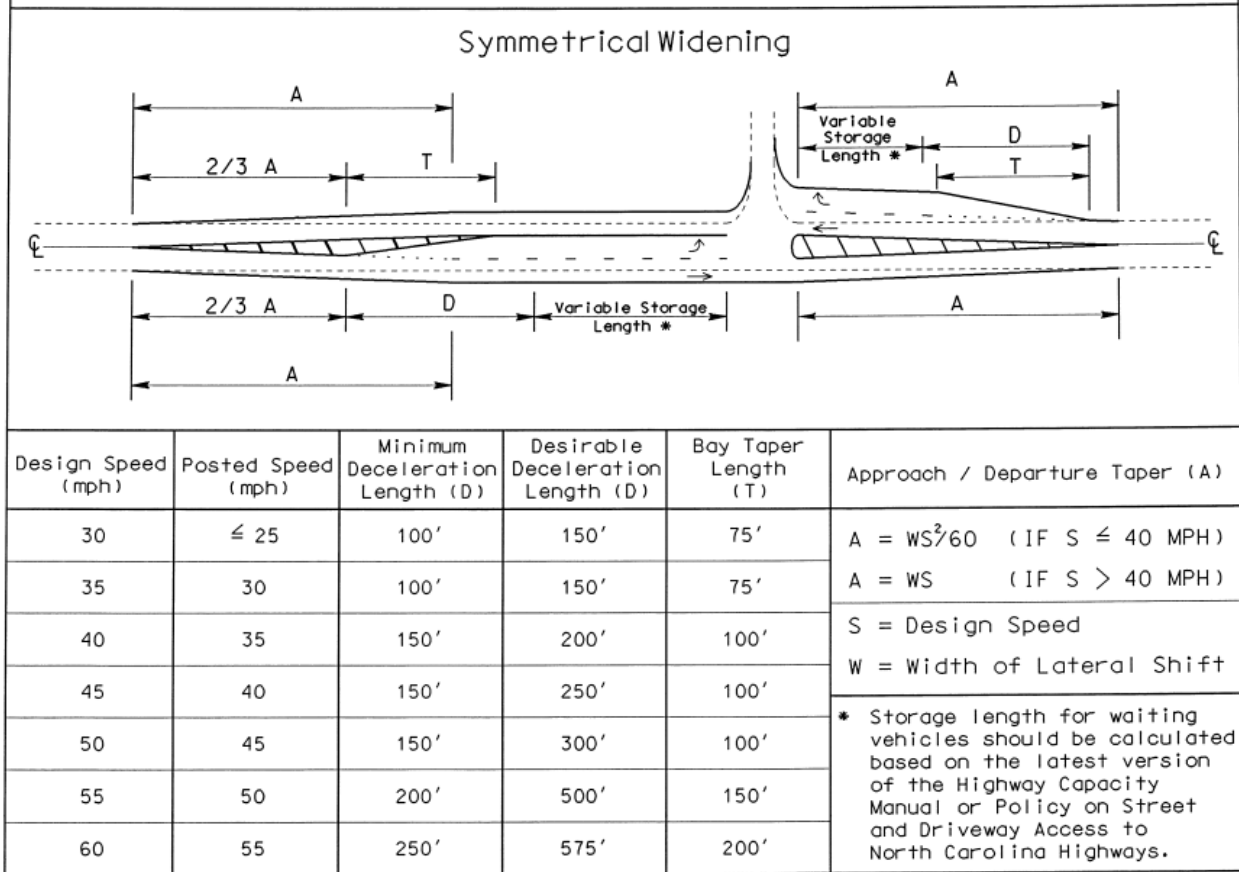


Figure 3: Recommended Treatment for Turn Lanes (2003 NCDOT Policy on Street and Driveway Access to North Carolina Highways)

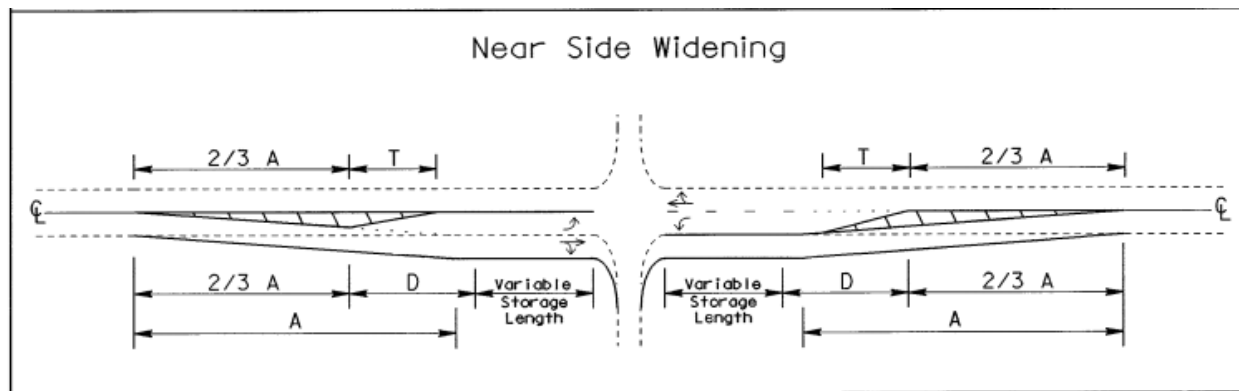


Figure 4: Near Side Widening (2003 NCDOT Policy on Street and Driveway Access to North Carolina Highways)

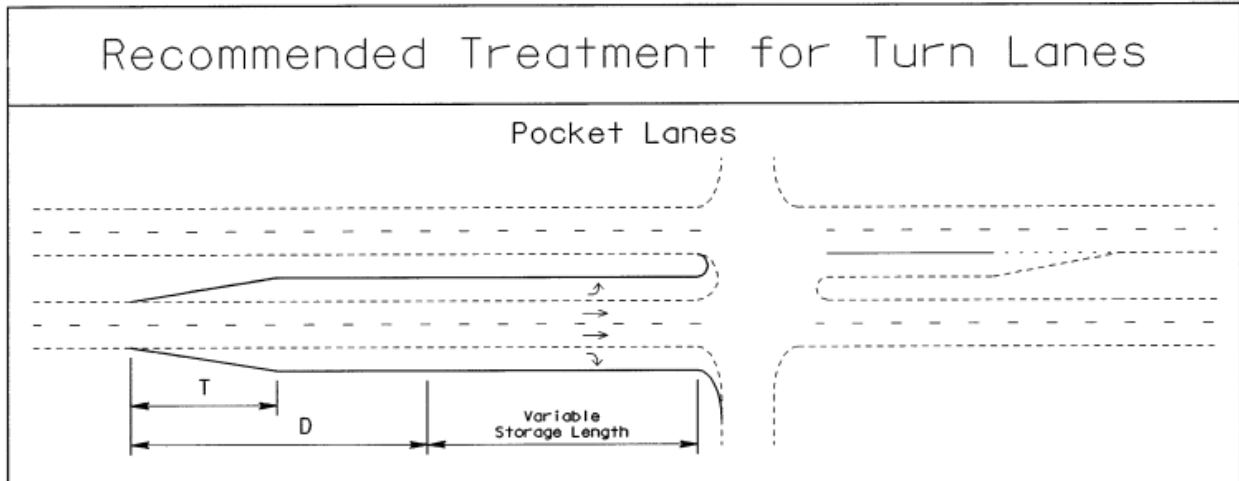


Figure 5: Right-turn Lane (2003 NCDOT Policy on Street and Driveway Access to North Carolina Highways)

Access Restrictions

While providing adequate public safety and ensuring efficient street operations will be the overarching criteria in determining whether or not the Town restricts site access, there are a few specific criteria where a property owner and/or private developer should expect for their respective site access to be restricted to vehicular movements less than full-movement.

1. When the site proposes access to an existing public street cross-section is four lanes or greater
2. Within 150ft (approach or departure) of a signalized intersection
3. Whenever site access is proposed where dual-left turns turn lanes are present
4. At locations where a known accident and/or street operations problems exists
5. Where available sight distance isn't present

The criteria above are not intended to represent a comprehensive list of every situation where Engineering staff will restrict site access; however, it provides a general framework of the most common situations where property owners and/or private developers should expect limited site access.

6 – TRAFFIC IMPACT ANALYSIS (TIA)

A Traffic Impact Analysis (TIA) may be required for developments that have the potential to create a significant impact to the adjacent or surrounding public street system. These include but are not limited to large or very intense developments that generate 1,000 daily trips and/or 100 peak hour total peak hour trips as specified in the [Town of Waxhaw's Traffic Impact \(TIA\) Policy](#). A TIA, and corresponding signal warrant analysis will be required for proposed developments that contemplate the need for a new traffic signal(s) or modifications to existing traffic signals.

A memorandum of understanding (MOU) may be required to identify proposed repairs for frontage road(s) damaged during construction. It shall be the developer's responsibility to replace roadway

damaged as a result of the development of a proposed site. Providing the MOU prior to construction operations is important to expedite project completion.

7 – PAVEMENT MARKINGS & SIGNAGE

All roadway signs and pavement markings placed on driveway entrances and within the public right-of-way must conform to the latest edition or revision of both the “Manual on Uniform Traffic Control Devices (MUTCD),” and NCDOT’s latest version of the “Roadway Standard Drawings Manual” and shall be located and maintained in accordance with the approved construction plan(s).

8 – TRAFFIC CONTROL DEVICES

All traffic control devices placed on driveway entrances, and within the public right-of-way must conform to the latest edition or revision of the “Manual on Uniform Traffic Control Devices (MUTCD),” and NCDOT’s latest version of the “[Roadway Standard Drawings Manual](#)” and shall be located and maintained in accordance with the approved construction plan(s).

9 – PUBLIC, PRIVATE, & CHARTER SCHOOLS

The regulations and design criteria provided within this document will be used by Waxhaw staff during the review of new school construction plans. In cases where a new public school is proposed, the Union County Public School System will be subject to the Traffic Impact Analysis (TIA) Policy, along with submitting a completed NCDOT [Municipal School Transportation Assistance \(MSTA\)](#) vehicular queue calculator.

Private and Charter Schools will be evaluated on a case-by-case basis to identify that on-site vehicular storage exists. These sites may be required to submit a Transportation Technical Memorandum (TTM) based on the number of students, adequacy of the existing public infrastructure to accommodate the increase in traffic volume, proposed bell times, and future student population growth potential. The TTM will be used to help identify changes in traffic patterns associated with the proposed school and to properly identify any required mitigations necessary to alleviate the increase in traffic caused by the new school construction. Additionally, each proposed school will be required to submit a completed NCDOT [Municipal School Transportation Assistance \(MSTA\)](#) vehicular queue calculator to insure adequate on-site vehicular stacking exists, and vehicular queuing does not spill onto the public right-of-way.