

# STREET DESIGN STANDARDS MANUAL

Department of Transportation  
City of Greensboro, North Carolina



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Adopted: October 16, 2007  
Effective: January 1, 2008

## A. PURPOSE FOR STREET DESIGN STANDARDS

The purpose for the Street Design Standards is to provide flexible design guidelines that establish a framework by which individual modes of transportation function as an integrated system, thus providing functional connections within the transportation system and choices for citizens to move about Greensboro and the region.

The transportation system is one of the most visible components of Greensboro's infrastructure system. The City of Greensboro (the City) has the responsibility to ensure that the transportation system is designed in a manner that is safe and efficient and fits the context of the community, within reasonable and prudent expectations. These Street Design Standards have been developed in a manner that balances the rights and interests of property owners and the needs of the traveling public for safe and efficient streets. The policy and standards included herein meet the following objectives:

1. To provide street designs that enhance the safety of vehicles and pedestrians
2. To provide street designs that are consistent with the context of the surrounding environment
3. To provide street design and construction criteria that accommodate pedestrian, bicycle, and transit activities
4. To provide access management to and from streets in a manner consistent with their classification

## B. PROCESS OF STREET PLANNING AND DESIGN APPROVAL

### i. General Requirements

The street network is the foundation for Greensboro's transportation system. The Comprehensive Plan, Connections 2025, establishes a series of goals related to transportation. The primary goal is to integrate motor vehicle, transit, pedestrian, and bicycle facilities in a well-balanced network that provides connections and choices for citizens to move about Greensboro and the region. To accomplish this goal, the Street Design Standards have been developed to guide the design and construction of roadway improvements for all classifications of the street system.

There are several methods by which streets are designed and constructed within the City. These methods include:

- ◆ Private developers building public streets
- ◆ Private developers building private streets
- ◆ The City designing and constructing new streets or improving existing streets
- ◆ The North Carolina Department of Transportation designing and building new streets or improving existing streets

The design standards set forth in this Manual are intended to be used by any entity, public or private, and shall be designed and constructed in conformance with the standards set forth in this Manual.

Streets constructed or improved within the City of Greensboro and its jurisdictional boundaries on public rights-of-way shall be designed and constructed in conformance with the standards set forth in this Manual.

It shall be unlawful for any person to construct or improve a public street or construct a new private street except as authorized by provisions of this Manual.

All streets to be constructed or improved on City rights-of-way shall be reviewed and approved by the Director of the Greensboro Department of Transportation (GDOT), or a designated representative, and the City Engineer, or a designated representative, prior to the issuance of a permit to undertake such construction or improvement.

Any street constructed or improved on a state maintained roadway must also conform to the specifications of the North Carolina Department of Transportation (NCDOT). Where it is more restrictive, the NCDOT design specifications will take precedence on these state maintained roadways.

ii. Street Improvement Defined

These standards are not intended to be applied to maintenance projects that preserve and extend the service life of existing streets. For the purpose of this Manual, an improvement to an existing street shall include adding capacity at an intersection or along a street or reconstructing a street. In addition, these standards may be used to complement projects when minor retrofits are needed.

iii. Permits and Fees

No person, firm, or corporation shall remove, alter, or construct any street or perform any other improvement on any public street or dedicated street right-of-way without permits authorizing such improvements.

iv. Submittal Requirements

Construction plans shall be submitted to the City as outlined in the Code of Ordinance for the City of Greensboro. Construction plans shall adhere to the specifications set forth by the City.

v. Protecting the Public from Injury

Whenever any person shall do or undertake to do any of the activities set forth in this Manual, it shall be the responsibility of such person to protect from harm and damage all persons who may be using any street or sidewalk or other public place where such activity is in progress. To that end, such person shall erect and maintain suitable signs, lights, barricades, and other traffic control devices at the proper location where such work is in progress. These safeguards shall be applied in accordance with the current **Work Area Traffic Control Handbook** (WATCH) available from the Greensboro Department of Transportation.

vi. Administrative Controls

The Greensboro Department of Transportation recognizes that not all streets will be able to conform to every standard set forth in this Manual. Any street needing special attention due to exceptional conditions will be handled on a case-by-case basis. GDOT reserves the right to override the standards set forth in this Manual should the street necessitate such action. If, based on sound engineering judgment, there is a question as to whether or not a site will qualify for a variance in any standard documented in this Manual, GDOT should be contacted to discuss that potential variance.

## C. STREET DESIGN

### i. General Requirements

All streets shall be constructed in conformance with the construction plans and specifications approved by the Director of Transportation, or a designated representative, and the City Engineer, or a designated representative. When applicable, streets must conform to watershed regulations and any conditional uses or zoning restrictions placed on the property during the zoning or subdivision process.

### ii. Design Standards

The Street Design Standards manual establishes set methods for the modification, construction, and/or enhancement for the following street classifications:

1. Private Drives—for condominiums and townhomes with residential driveways
2. Local Streets—private and public
3. Collector Streets
4. Minor Thoroughfares
5. Major Thoroughfares

Tables 5-1 through 5-6 provide the specific design standards to be applied for the five classifications listed above plus standards for Traditional Neighborhood Development local and collector streets.

**Table 5.1 - Private Drive Design Standards**

**Greensboro Street Design Standards**

DESIGN ELEMENT	Private Drives (for townhouse and residential condominium developments)	
	CRITERIA	NOTES
MINIMUM ROADWAY WIDTH	24-ft	Roadway width is measured from face-of-curb to face-of-curb. Asphalt pavement and standard curb and gutter may be considered for maintenance by the City of Greensboro.
PAVEMENT DESIGN	S9.5A 1-in S9.5B 2-in ABC 7-in	
MINIMUM COMMON ELEMENTS WIDTH	34-ft	
MINIMUM RADIUS OF CENTERLINE CURVATURE	125-ft	A 90-ft radius may be used if a continuous 26-ft wide curb and gutter section is provided in order to accommodate emergency and solid waste vehicle maneuvers. A 90-ft radius may be used for streets that are no more than 1,000-ft in length, with both ends of the street terminating at either a T-intersection or a permanent dead-end.
CURB TYPE	any	
CURB AND GUTTER SECTION WIDTH	24-in	
SIDEWALK WIDTH (When Installed)	Not Required (Minimum 4-ft)	Sidewalk installation, as required by the local street design standards, should be considered to insure that adequate pedestrian infrastructure is provided. The Technical Review Committee members will evaluate and make recommendations on sidewalk installation.
SIDEWALK LOCATION (When Installed)	Not Required (Back of Curb)	Sidewalk installation, as required by the local street design standards, should be considered to insure that adequate pedestrian infrastructure is provided. The Technical Review Committee members will evaluate and make recommendations on sidewalk installation.
MAXIMUM CUL-DE-SAC LENGTH	N/A	Approved turn-a-round accommodations must be provided at the end of each cul-de-sac to accommodate emergency and solid waste service vehicle maneuvers.
DRIVEWAYS	1 / unit	Each unit must have a driveway. Garages count as off-street parking spaces.
PUBLIC STREET CONNECTIONS	N/A	A public street may be required to be built in order to provide access to adjoining properties or to make the subdivision compatible with existing or proposed streets.

*GENERAL NOTE #1: Private drive standards shall only be used for townhomes and condominiums with individual residential driveways.*

*GENERAL NOTE #2: If the existing or proposed roadway is part of an adopted plan, the design criteria identified in the plan shall take precedence.*

**Table 5.2a - Local Street Design Standards**  
**Greensboro Street Design Standards**

DESIGN ELEMENT	Public and Private Low Density Local Streets (≤ 5 units/acre)	
	CRITERIA	NOTES
MINIMUM ROADWAY WIDTH	26-ft	Roadway width is measured from face-of-curb to face-of-curb. Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance. A 22-ft roadway width may be used with a 50-ft right-of-way in Watershed Critical Area only.
MINIMUM RIGHT-OF-WAY OR COMMON ELEMENTS WIDTH	45-ft	Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance. A 22-ft roadway width may be used with a 50-ft right-of-way in Watershed Critical Area only.
DESIGN SPEED/ POSTED SPEED	30 mph 25 mph	
SUPERELEVATION, e	None	
MINIMUM RADIUS OF CENTERLINE CURVATURE	180-ft	A 90-ft radius may be used for streets that are no more than 1,000-ft in length, with both ends of the street terminating at either a T-intersection or a permanent dead-end. A 90-ft radius shall not be an option utilized in the Watershed Critical Area.
VERTICAL ALIGNMENT, G	G <sub>min</sub> = 0.8% G <sub>max</sub> = 10%	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM STOPPING SIGHT DISTANCE	200-ft	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>1</sub>	150-ft	S <sub>1</sub> = Intersection sight distance on drivers' left for right turns, left turns, and through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>2</sub>	150-ft	S <sub>2</sub> = Intersection sight distance on drivers' right for left turns or through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION CURB RADIUS	20-ft	When a street with a higher classification intersects with a residential street, the intersection curb radii for the residential street is controlled by the standards set for the street with the higher classification.
ON-STREET BIKE LANES	shared lanes	
CURB TYPE	6-in vertical	See City of Greensboro Roadway Standard Drawing 501. Ribbon curb may be used in Watershed Critical Area only.
CURB AND GUTTER SECTION WIDTH	24-in	See City of Greensboro Roadway Standard Drawing 501.
SIDEWALK WIDTH	min. 5-ft	
SIDEWALK LOCATION	min. one side	Sidewalk and the Sidewalk Buffer may increase or decrease as needed (meander) where obstructions, topography, or restricted rights-of-way are present.
SIDEWALK BUFFER	min. 3-ft	Sidewalk and the Sidewalk Buffer may increase or decrease as needed (meander) where obstructions, topography, or restricted rights-of-way are present.
ON-STREET PARKING WIDTH	7-ft, permitted on both sides	
MAXIMUM CUL-DE-SAC LENGTH / PAVEMENT RADIUS/ RIGHT-OF-WAY RADIUS	800-ft 45-ft 55-ft	Maximum cul-de-sac length in Watershed Critical Area shall be 1,600-ft.
MAXIMUM BLOCK LENGTH	1,200-ft	Maximum block length may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by the Department of Transportation. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles.
MAXIMUM BLOCK PERIMETER	4,800-ft	Maximum block perimeter may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by the Department of Transportation. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles.

*General Note #1: If the existing or proposed roadway is part of an adopted plan, the design criteria identified in the plan shall take precedence.*

**Table 5.2b Local Street Design Standards**  
**Greensboro Street Design Standards**

DESIGN ELEMENT	Public and Private Medium Density Local Streets (5 < units/acre ≤ 12)	
	CRITERIA	NOTES
MINIMUM ROADWAY WIDTH	26-ft or 30-ft	Roadway width is measured from face-of-curb to face-of-curb. A 26-ft pavement section is allowed if parking is prohibited on one side. Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance. A 22-ft roadway width may be used with a 50-ft right-of-way in Watershed Critical Area only.
MINIMUM RIGHT-OF-WAY OR COMMON ELEMENTS WIDTH	45-ft or 50-ft	Use 45-ft right-of-way for 26-ft roadway width; parking is prohibited on one side for 45-ft right-of-way. Use 50-ft right-of-way for 30-ft roadway width. Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance. A 22-ft roadway width may be used with a 50-ft right-of-way in Watershed Critical Area only.
DESIGN SPEED/ POSTED SPEED	30 mph 25 mph	
SUPERELEVATION, e	None	
MINIMUM RADIUS OF CENTERLINE CURVATURE	180-ft	A 90-ft radius may be used for streets that are no more than 1,000-ft in length, with both ends of the street terminating at either a T-intersection or a permanent dead-end. A 90-ft radius shall not be an option utilized in the Watershed Critical Area.
VERTICAL ALIGNMENT, G	G <sub>min</sub> = 0.8% G <sub>max</sub> = 10%	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM STOPPING SIGHT DISTANCE	200-ft	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>1</sub>	150-ft	S <sub>1</sub> = Intersection sight distance on drivers' left for right turns, left turns, and through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>2</sub>	150-ft	S <sub>2</sub> = Intersection sight distance on drivers' right for left turns or through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION CURB RADIUS	20-ft	When a street with a higher classification intersects with a residential street, the intersection curb radii for the residential street is controlled by the standards set for the street with the higher classification.
ON-STREET BIKE LANES	shared lanes	
CURB TYPE	6-in vertical	See City of Greensboro Roadway Standard Drawing 501. Ribbon curb may be used in Watershed Critical Area only.
CURB AND GUTTER SECTION WIDTH	24-in	See City of Greensboro Roadway Standard Drawing 501.
SIDEWALK WIDTH	min. 5-ft	
SIDEWALK LOCATION	min. one side	Sidewalk and the Sidewalk Buffer may increase or decrease as needed (meander) where obstructions, topography, or restricted rights-of-way are present.
SIDEWALK BUFFER	min. 3-ft	Sidewalk and the Sidewalk Buffer may increase or decrease as needed (meander) where obstructions, topography, or restricted rights-of-way are present.
ON-STREET PARKING WIDTH	7-ft, permitted on both sides	Parking is prohibited on one side if 26-ft roadway width is used.
MAXIMUM CUL-DE-SAC LENGTH / PAVEMENT RADIUS / RIGHT OF WAY RADIUS	650-ft 45-ft 55-ft	Maximum cul-de-sac length in Watershed Critical Area shall be 1,300-ft.
MAXIMUM BLOCK LENGTH	1,200-ft	Maximum block length may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by the Department of Transportation. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles.
MAXIMUM BLOCK PERIMETER	4,800-ft	Maximum block perimeter may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by the Department of Transportation. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles.

*General Note#1: If the existing or proposed roadway is part of an adopted plan, the design criteria identified in the plan shall take precedence.*



**Table 5.2c Local Street Design Standards  
Greensboro Street Design Guidelines**

DESIGN ELEMENT	Public and Private High Density Local Street Design Standards ( > 12 units/acre)		
	RESIDENTIAL CRITERIA	NON-RESIDENTIAL CRITERIA	NOTES
MINIMUM ROADWAY WIDTH	26-ft or 30-ft	30-ft	Roadway width is measured from face-of-curb to face-of-curb. A 26-ft pavement section is allowed if parking is prohibited on one side. Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance. A 22-ft roadway width may be used with a 50-ft right-of-way in Watershed Critical Area only.
MINIMUM RIGHT-OF-WAY OR COMMON ELEMENTS WIDTH	45-ft or 50-ft	50-ft	Use 45-ft right-of-way for 26-ft roadway width; parking is prohibited on one side for 45-ft right-of-way. Use 50-ft right-of-way for 30-ft roadway width. Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance. A 22-ft roadway width may be used with a 50-ft right-of-way in Watershed Critical Area only.
DESIGN SPEED / POSTED SPEED	30 mph 25 mph	30 mph 25 mph	
SUPER ELEVATION, e	None	None	
MINIMUM RADIUS CENTERLINE CURVATURE	180-ft	180-ft	A 90-ft radius may be used for streets that are no more than 1,000- ft in length, with both ends of the street terminating at either a T-intersection or a permanent dead-end. The 90-ft radius option is not available for non-residential local streets. A 90-ft radius shall not be an option utilized in the Watershed Critical Area.
VERTICAL ALIGNMENT, G	G <sub>min</sub> = 0.8% G <sub>max</sub> = 10%	G <sub>min</sub> = 0.8% G <sub>max</sub> = 10%	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM STOPPING SIGHT DISTANCE	200-ft	200-ft	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>1</sub>	150-ft	150-ft	S <sub>1</sub> = Intersection sight distance on drivers' left for right turns, left turns, and through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>2</sub>	150-ft	150-ft	S <sub>2</sub> = Intersection sight distance on drivers' right for left turns or through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION CURB RADIUS	20-ft	30-ft	When a street with a higher classification intersects with a high-density residential street, the intersection curb radii for the high-density residential street is controlled by the standards set for the higher classification street.
ON-STREET BIKE LANES	shared lanes	shared lanes	
CURB TYPE	6-in vertical	6-in vertical	See City of Greensboro Roadway Standard Drawing 501. Ribbon curb may be used in Watershed Critical Area only.
CURB AND GUTTER SECTION WIDTH	24-in	24-in	See City of Greensboro Roadway Standard Drawing 501.
SIDEWALK WIDTH	min. 5-ft	min. 5-ft	
SIDEWALK LOCATION	both sides	both sides	Sidewalk and the Sidewalk Buffer may increase or decrease as needed (meander) where obstructions, topography, or restricted rights-of-way are present.
SIDEWALK BUFFER	min. 3-ft	min. 3-ft	Sidewalk and the Sidewalk Buffer may increase or decrease as needed (meander) where obstructions, topography, or restricted rights-of-way are present.
ON-STREET PARKING WIDTH	7-ft, permitted on both sides	7-ft, permitted on both sides	Parking is prohibited on one side if 26-ft roadway width is used.
MAXIMUM CUL-DE-SAC LENGTH/ PAVEMENT RADIUS/ RIGHT OF WAY RADIUS	650-ft 45-ft 55-ft	650-ft 45-ft 55-ft	Maximum cul-de-sac length in Watershed Critical Area shall be 1,300-ft.
MAXIMUM BLOCK LENGTH	1,200-ft	1,200-ft	Maximum block length or block perimeter may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by the Department of Transportation. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles.
MAXIMUM BLOCK PERIMETER	4,800-ft	4,800-ft	Maximum block length or block perimeter may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by the Department of Transportation. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles.

*General Note #1: If the existing or proposed roadway is part of an adopted plan, the design criteria identified in the plan shall take precedence.*

**Table 5.3 - Collector Street Design Standards**  
Greensboro Street Design Guidelines

DESIGN ELEMENT	Residential and Non-Residential Collector Streets		
	RESIDENTIAL CRITERIA	NON-RESIDENTIAL CRITERIA	NOTES
MINIMUM ROADWAY WIDTH	36-ft	40-ft	Roadway width is measured from face-of-curb to face-of-curb (curb section) or edge-of-pavement to edge-of-pavement (ribbon or swale section). Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance.
MINIMUM RIGHT-OF-WAY WIDTH	60-ft	60-ft	Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance.
DESIGN SPEED / POSTED SPEED	35 mph 30 mph	40 mph 35 mph	
SUPER ELEVATION, e	e <sub>max</sub> = .04	e <sub>max</sub> = .04	Engineering policy typically calls for no superelevation; superelevation up to 4% will be evaluated and approved by the City Engineer or a designated representative.
MINIMUM RADIUS CENTERLINE CURVATURE	375-ft	525-ft	Design criteria based on design speeds listed above and e = 4%; centerline curvature varies with superelevation. Multiple curves require minimum tangent lengths between curves.
VERTICAL ALIGNMENT, G	G <sub>min</sub> = 0.8% G <sub>max</sub> = 9%	G <sub>min</sub> = 0.8% G <sub>max</sub> = 9%	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM STOPPING SIGHT DISTANCE	250-ft	300-ft	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>1</sub>	200-ft	250-ft	S <sub>1</sub> = Intersection sight distance on drivers' left for right turns, left turns, and through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>2</sub>	200-ft	250-ft	S <sub>2</sub> = Intersection sight distance on drivers' right for left turns or through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION CURB RADIUS	30-ft	30-ft	When a street with a higher classification intersects with a collector street, the intersection curb radii for the collector street is controlled by the standards set for the street with the higher classification.
DESIGNATED ON-STREET BIKE LANES	min. 4-ft, both sides where permitted	min. 4-ft, both sides where permitted	Designated bicycle lanes permitted as noted in the Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan.
CURB TYPE (Outside / Inside with median)	6-in vertical mountable	6-in vertical mountable	See City of Greensboro Roadway Standard Drawing 501.
CURB & GUTTER SECTION WIDTH (Outside / Inside with median)	30-in 18-in	30-in 18-in	See City of Greensboro Roadway Standard Drawing 501.
SIDEWALK WIDTH	min. 5-ft	min. 5-ft	
SIDEWALK LOCATION	min. one side	min. one side	See City of Greensboro's Sidewalk Ordinance 02-239. Sidewalk and the Sidewalk Buffer may increase or decrease as needed (meander) where obstructions, topography, or restricted rights of way are present.
SIDEWALK BUFFER FROM BACK OF CURB	min. 3-ft	min. 3-ft	Sidewalk and the Sidewalk Buffer may increase or decrease as needed (meander) where obstructions, topography, or restricted rights of way are present.
ON-STREET PARKING WIDTH	7-ft, both sides where permitted	7-ft, both sides where permitted	Parking may be allowed with approval from the City. Parking may be prohibited when a median is constructed.
COMMERCIAL DRIVEWAY SPACING	75-ft	75-ft	See GDOT Driveway Manual or NCDOT Specifications.
INTERSECTION TURNING LANE (Left turns)			See GDOT Driveway Manual or NCDOT Specifications.
INTERSECTION TURNING LANE (Right turns)			See GDOT Driveway Manual or NCDOT Specifications.
MEDIAN WIDTH and TYPE	min. 8-ft raised	min. 8-ft raised	
BUILT-IN TRAFFIC CALMING DEVICES	as needed	not required	Maximum 1,500-ft block length or 4,800-ft block perimeter may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by GDOT. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles.

*General Note #1: If the existing or proposed roadway is part of an adopted plan, the design criteria identified in the plan shall take precedence.*

**Table 5.4 - Minor Thoroughfare Design Standards**  
**Greensboro Street Design Standards**

DESIGN ELEMENT	Minor Thoroughfare Design Standards	
	CRITERIA	NOTES
MINIMUM ROADWAY WIDTH	36-ft – 60-ft	Roadway width is measured from face-of-curb to face-of-curb (curb section) or edge-of-pavement to edge-of-pavement (ribbon or swale section). Additional width may be required under Section 30-6-13.3 (B) of the Code of Ordinance.
MINIMUM RIGHT-OF-WAY WIDTH	80-ft	Additional width may be required under Section 30-6-13.3 (B) of the Code of Ordinance.
DESIGN SPEED / POSTED SPEED	45 mph 40 mph	
SUPERELEVATION, e	$e_{max} = .04$	Engineering policy typically calls for no superelevation; superelevation up to 4% will be evaluated and approved by the City Engineer or a designated representative.
MINIMUM RADIUS CENTERLINE CURVATURE	710-ft	Criteria for design element based design speed = 45, e = 4%; centerline curvature varies with superelevation. Multiple curves require minimum tangent lengths between curves.
VERTICAL ALIGNMENT, G	$G_{min} = 0.8\%$ $G_{max} = 6\%$	See <i>A Policy on Geometric Design of Highways and Streets 2004</i> , Chapter 7. Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM STOPPING SIGHT DISTANCE	360-ft	See <i>A Policy on Geometric Design of Highways and Streets 2004</i> , Chapter 3. Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>1</sub>	300-ft	S <sub>1</sub> = Intersection sight distance on drivers' left for right turns, left turns, and through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>2</sub>	300-ft	S <sub>2</sub> = Intersection sight distance on drivers' right for left turns or through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION CURB RADIUS	30-ft	When a street with a higher classification intersects with a minor thoroughfare, the intersection curve radii for the minor thoroughfare is controlled by the standards set for the higher classification street.
DESIGNATED ON-STREET BIKE LANES	6-ft where permitted	Designated bicycle lanes permitted as noted in the Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan. The addition of a bike lane and/or wider sidewalk may reduce the width of buffer strip from back of curb.
CURB TYPE (Outside / Inside with Median)	6-in vertical mountable	Outside curb type for use on roadways with curb sections.
CURB & GUTTER SECTION WIDTH (Outside / Inside with median)	30-in 18-in	Outside curb width for use on roadways with curb sections.
SIDEWALK WIDTH	min 5-ft (6-ft desirable)	The addition of a bike lane and/or wider sidewalk may reduce the width of buffer strip from back of curb.
SIDEWALK LOCATION	both sides	See City of Greensboro's Sidewalk Ordinance 02-239.
SIDEWALK BUFFER FROM BACK OF CURB	min. 5-ft	The addition of a bike lane and/or wider sidewalk may reduce the width of buffer strip from back of curb.
ON-STREET PARKING WIDTH	8-ft, both sides where permitted	Parking may be allowed with approval from the City. Parking may be prohibited when a median is constructed.
COMMERCIAL DRIVEWAY SPACING	100-ft	See GDOT Driveway Manual or NCDOT Specifications.
INTERSECTION TURNING LANE (Left turns)		See GDOT Driveway Manual or NCDOT Specifications.
INTERSECTION TURNING LANE (Right turns)		See GDOT Driveway Manual or NCDOT Specifications.
MEDIAN WIDTH and TYPE	20-ft raised	
BUS PULL-OUTS		Please consult Greensboro Transit Authority (GTA) and/or adopted Mobility Greensboro Transportation Plan. See also <i>A Policy on Geometric Design of Highways and Streets 2004</i> , Chapters 4 and 7.

*General Note #1: If the existing or proposed roadway is part of an adopted plan, the design criteria identified in the plan shall take precedence.*

**Figure 5.5 - Major Thoroughfare Design Standards**  
**Greensboro Street Design Standards**

DESIGN ELEMENT	Major Thoroughfare Design Standards	
	CRITERIA	NOTES
MINIMUM ROADWAY WIDTH	min. 48-ft	Roadway width is measured from face-of-curb to face-of-curb (curb section) or edge-of-pavement to edge-of-pavement (ribbon or swale section). Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance.
MINIMUM RIGHT-OF-WAY WIDTH	min. 110-ft	Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance.
DESIGN SPEED / POSTED SPEED	50 mph 45 mph	
SUPER ELEVATION, e	e <sub>max</sub> = .04	Engineering policy typically calls for no superelevation; superelevation up to 4% will be evaluated and approved by the City Engineer or a designated representative.
MINIMUM RADIUS CENTERLINE CURVATURE	925-ft	Criteria for design element based on design speed = 50 mph, e = 4%; centerline curvature varies with superelevation. Multiple curves require minimum tangent lengths between curves.
VERTICAL ALIGNMENT, G	C <sub>max</sub> = 5%	See <i>A Policy on Geometric Design of Highways and Streets 2004</i> , Chapter 7. Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM STOPPING SIGHT DISTANCE	425-ft	See <i>A Policy on Geometric Design of Highways and Streets 2004</i> , Chapter 3. Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>1</sub>	350-ft	S <sub>1</sub> = Intersection sight distance on drivers' left for right turns, left turns, and through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>2</sub>	350-ft	S <sub>2</sub> = Intersection sight distance on drivers' right for left turns or through traffic. See City of Greensboro Visibility Ordinance 16-8.
MINIMUM INTERSECTION CURB RADIUS	30-ft	50-ft intersection curb radius recommended for transit routes.
DESIGNATED ON-STREET BIKE LANES	6-ft, where permitted	Designated bicycle lanes permitted as noted in the Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan. The addition of a bike lane and/or wider sidewalk may reduce the width of buffer strip from back of curb.
CURB TYPE (Outside/Inside with Median)	6-in vertical mountable	Outside curb type for use on roadways with curb sections.
CURB & GUTTER SECTION WIDTH (Outside/Inside with Median)	30-in 18-in	Outside curb width for use on roadways with curb sections.
SIDEWALK WIDTH	min. 5-ft (6-ft desirable)	The addition of a bicycle lane and/or wider sidewalk may reduce the width of buffer strip from back of curb.
SIDEWALK LOCATION	both sides	
SIDEWALK BUFFER FROM BACK OF CURB	min. 5-ft	The addition of a bicycle lane and/or wider sidewalk may reduce the width of buffer strip from back of curb.
ON-STREET PARKING WIDTH COMMERCIAL DRIVEWAY SPACING	8-ft, where permitted	Parking may be allowed with approval from the City. Parking may be prohibited when a median is constructed.
INTERSECTION TURNING LANE (Left turns)		See GDOT Driveway Manual or NCDOT Specifications.
INTERSECTION TURNING LANE (Right turns)		See GDOT Driveway Manual or NCDOT Specifications.
MEDIAN WIDTH and TYPE	20-ft raised	
BUS PULL-OUTS		Please consult Greensboro Transit Authority (GTA) and/or adopted Mobility Greensboro Transportation Plan. See also <i>A Policy on Geometric Design of Highways and Streets 2004</i> , Chapters 4 and 7.

*General Note #1: If the existing or proposed roadway is part of an adopted plan, the design criteria identified in the plan shall take precedence.*

**Table 5.6 Traditional Neighborhood Development Street Design Standards**

**Greensboro Street Design Guidelines**

DESIGN ELEMENT					NOTES
	RESIDENTIAL CRITERIA	NON-RESIDENTIAL CRITERIA	COLLECTOR CRITERIA	ALLEY	
MINIMUM ROADWAY WIDTH	20-ft (1-side parking) 26-ft (2-side parking)	30-ft	26-ft (1-side parking) 34-ft (2-sides parking)	15-ft	Roadway width is measured from face-of-curb to face-of-curb or edge-of-pavement to edge-of-pavement (ribbon or swale section). Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance. A 22-foot roadway width may be used with a 50-foot right-of-way in Watershed Critical Area only when using residential or non-residential criteria; All alleys shall be maintained by the Homeowners' Association (HOA).
MINIMUM RIGHT-OF-WAY WIDTH	46-ft (1-side parking) 50-ft (2-sides parking)	60-ft	50-ft (1-side parking) 60-ft (2-sides parking)	20-ft	Additional width may be required under Section 30-6-13.3(B) of the Code of Ordinance.
DESIGN SPEED / POSTED SPEED	30 mph 25 mph	30 mph 25 mph	35 mph 30 mph		
SUPER ELEVATION, e	None	None	None	None	Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM RADIUS CENTERLINE CURVATURE	90-ft	195-ft	765-ft	50-ft	For residential criteria, the radius centerline curvature must reflect an unimpeded distance of 300-ft before and after curve.
VERTICAL ALIGNMENT, G	G <sub>min</sub> = 0.8% G <sub>max</sub> = 10%	G <sub>min</sub> = 0.8% G <sub>max</sub> = 10%	G <sub>min</sub> = 0.8% G <sub>max</sub> = 9%		Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM STOPPING SIGHT DISTANCE	110-ft	200-ft	400-ft	75-ft	For residential streets, the stopping sight distance must reflect an unimpeded distance of 300-ft before and after curve. Exceptions may occur as determined by the City Engineer or a designated representative.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>1</sub>	150-ft	150-ft	200-ft		S <sub>1</sub> = Intersection sight distance on drivers' left for right turns, left turns, and through traffic.
MINIMUM INTERSECTION SIGHT DISTANCE, S <sub>2</sub>	150-ft	150-ft	200-ft		S <sub>2</sub> = Intersection sight distance on drivers' right for left turns or through traffic.
MINIMUM INTERSECTION CURB RADIUS	20-ft	30-ft	30-ft		When a street with a higher classification intersects with a residential street, the intersection curb radii for the residential street is controlled by the standards set for the higher classification street. A 50-ft intersection curb radius is recommended when using collector criteria on a designated transit route.
ON-STREET BIKE LANES	shared lanes	shared lanes	6 ft, where permitted		Measured from face of curb; designated bicycle lanes permitted as noted in the Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan. The addition of a bike lane and/or wider sidewalk may reduce the width of buffer strip from back of curb.
CURB TYPE	6-in vertical	6-in vertical	6-in vertical mountable		See City of Greensboro Roadway Standard Drawing 501. Ribbon pavement may be used in Watershed Critical Area only.
CURB AND GUTTER SECTION WIDTH	24 -in	24 -in	30 -in / 18-in (used in median)		See City of Greensboro Roadway Standard Drawing 501.
MINIMUM SIDEWALK WIDTH	5-ft	6-ft	6-ft		
SIDEWALK LOCATION	both sides	both sides	both sides		
MINIMUM SIDEWALK BUFFER	4-ft	4-ft	5-ft		When using collector criteria the addition of a bicycle lane and/or wider sidewalk may reduce the width of buffer strip from back of curb.
ON-STREET PARKING WIDTH	7-ft, permitted on both sides	7-ft, permitted on both sides	8-ft, where permitted		Parking may be allowed with approval from the City. Parking will be prohibited when a median is constructed.
MAXIMUM CUL-DE-SAC LENGTH/ PAVEMENT RADIUS/RIGHT OF WAY RADIUS	Not Allowed	Not Allowed	Not Allowed	Not Allowed	
COMMERCIAL DRIVEWAY SPACING					See GDOT/NCDOT Driveway Manual
MAXIMUM BLOCK LENGTH	600-ft	600-ft	600-ft	N/A	Maximum block length may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by the Department of Transportation. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles. In the TN1 Traditional Neighborhood District the length of a new block shall not exceed 600-ft. For reasons of topography, block length in the TN1 Traditional Neighborhood District may be a maximum of 800-ft as long as a pedestrian pathway traverses the block near its midpoint.
MAXIMUM BLOCK PERIMETER	2,400-ft	2,400-ft	2,400-ft	N/A	Maximum block perimeter may exceed the design standards if appropriate traffic calming devices are implemented every 600-ft. Traffic calming devices must be approved by the Department of Transportation. Typical examples of traffic calming devices are curb extensions, entry medians, mid-block median/islands, and traffic circles.
INTERSECTION TURNING LANE (Left/Right turns)					See GDOT/NCDOT Driveway Manual.
MEDIAN WIDTH and TYPE			20-ft raised		This could affect some of the other street design standards, and therefore, they may need to be modified accordingly.
BUS PULL-OUTS					Please consult Greensboro Transit Authority (GTA) and/or adopted Mobility Greensboro Transportation Plan. See also A Policy on Geometric Design of Highways and Streets 2004, Chapters 4 and 7.

General Note #1: If the existing or proposed roadway is part of an adopted plan, the design criteria identified in the plan shall take precedence

## D. Definitions

Alley - A roadway set aside primarily for vehicular service access to the back or side of properties otherwise abutting on a street. An alley is designed to have a pavement width narrower than that required for a street with no parking allowed. An alley shall only be utilized as outlined in the Traditional Neighborhood Design standards.

Average Daily Traffic (ADT) – The average number of vehicles that pass a defined point during a 24-hour period.

Bicycle Lane - A portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists.

Bicycle Path - A bikeway physically separated from motorized vehicular traffic and either within the highway right-of-way or with an independent right-of-way.

Bicycle Route - A segment of a system of bikeways designated by the jurisdiction having authority with appropriate direction and information marker, with or without a specific bicycle route number.

Bikeway - A thoroughfare suitable for bicycles; may either exist within the right-of-way of other modes of transportation, such as highways, or along a separate and independent corridor.

Block – The land lying within an area bounded on all sides by streets.

Block Length – The distance, measured along each side of a street, between on (1) intersecting through street (not a cul-de-sac or loop street) and the next intersecting through street.

Block Perimeter – The sum total of the linear street frontage around a block.

The City - City of Greensboro, North Carolina.

Clearance – The distance from the roadway to an object or feature.

- ◆ Horizontal Clearance - Lateral distance from edge of traveled way to a roadside object or feature.
- ◆ Vertical Clearance - The vertical distance between the roadway surface and an overhead object or feature.

Connectivity - The ability to enter and exit each parcel in more than one direction.

Connections 2025 - City of Greensboro's Connections 2025 Comprehensive Plan, also known as "Comprehensive Plan" or "the Plan".

Continuity - The quality of uninterrupted connections both within the neighborhood network and between the neighborhood and the major street system.

The County - Guilford County.

Cul-de-sac - A short local street having one end open to traffic and the other end permanently terminated by a vehicular turnaround. Its length is measured from the center of the through street to the center of the vehicular turnaround.

Desirable - A condition that should be met when attainable. Desirable values will normally be used where the social, economic, or environmental impacts are not critical.

Development Ordinance – The City of Greensboro's Unified Development Ordinance (UDO) as of 2007. The City is currently working on the entire development ordinance rewrite. This development ordinance will be called the Land Development Ordinance (LDO).

Driveway Approach – An approach designed and intended to serve as access from a roadway to a lot or parcel of land that is adjacent to the roadway.

Easement – A grant of one or more of the property rights by the property owner to, or for use by, the public, a corporation, or other entity.

Frontage - All property on one side of a street between two intersecting streets (crossing to terminating) measured along the line of the street; or if the street is dead-ended, then all of the property abutting one side between an intersecting street and the dead-end of the street.

GDOT - City of Greensboro Department of Transportation.

Grade - The change in elevation between two points along the vertical alignment of a roadway; usually expressed as the change per 100-feet or percent.

Gutter - A generally shallow waterway adjacent to a curb used, or suitable for, drainage of water.

Intersection - A point at which two (or more) streets join another street at an angle, whether or not the streets cross the other.

Local Street - A street whose primary function is to provide access to abutting properties.

NCDOT - North Carolina Department of Transportation.

Pedestrian Way - A travel route designed primarily for pedestrian travel.

Permanent Dead-end Street - A street open to traffic at one (1) end and, due to physical or environmental constraints, impracticable to extend beyond its present terminus at the other end.

Private drive - A vehicular travelway not dedicated or offered for dedication as a public street but resembling a cul-de-sac or a local street by carrying traffic from a series of individual residential driveways for townhouses or condominiums to the public street system. The designation of private drive **shall only** be utilized for townhomes or condominium developments. A private drive may be considered for public maintenance.

Private Driveway - A vehicular travelway not dedicated or offered for dedication as a public street, providing access to parking lot(s) for two (2) or more principal buildings in a group housing, group nonresidential development, manufactured dwelling parks, or recreational vehicle parks. A private driveway **shall not** be considered for public maintenance.

Private street - A vehicular travelway not dedicated or offered for dedication as a public street but resembling a cul-de-sac or a local street by carrying traffic from a series of driveways to the public street system. Private streets shall be designed and constructed to City of Greensboro public street standards. (Reference - Street Standards Design Manual, Roadway and Utility Design Manuals, Sidewalk Manual) A private street may be considered for public maintenance.

Public street - A dedicated and accepted public right-of-way for vehicular traffic, and in Guilford County jurisdiction and extraterritorial jurisdiction of municipalities, public streets also include street rights-of-way offered for dedication, but not yet accepted, in which the roadway design and construction have been approved under public standards for vehicular traffic. Alleys are specifically excluded.

Right-of-Way – A strip of land occupied or intended to be occupied by a travelway for vehicles and also available, with the consent of the appropriate governmental agency, for installation and maintenance of sidewalks, traffic control devices, street name signs,

historical marker signs, water lines, sanitary sewer lines, storm sewer lines, gas lines, power lines, and communication lines.

Right-of-Way Width - The shortest horizontal distance between the lines which delineate the right-of-way of a street.

Road - See "street".

Shared Parking - Parking that can be used to serve two or more individual land uses without conflict or encroachment.

Shared Roadway - Any roadway upon which a bicycle lane is not designated and which may be legally used by bicycles regardless of whether such facility is specifically designated as a bikeway.

Shared-Use Path - A path or trail that is physically separated from the motorized vehicular traffic of a roadway. It is designed for the exclusive use of non-motorized uses, including bicycle riders, pedestrians, and other non-motorized recreational uses. This shared-use path may be either within the roadway right-of-way or within an independent right-of-way.

Sidewalk - An improved surface intended to facilitate pedestrian access to or along adjacent streets, properties, or structures, and which is located within the right-of-way of a public street, within the common elements (common area) of a private street or private drive, within a sidewalk easement, or along the length of any façade abutting parking areas.

Sight Distance - The distance visible to the driver of a passenger automobile, measured along the normal path of roadway. The minimum sight distance available on a road should be sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path.

Street - A general term used to describe a right-of-way within the urban service. This right-of-way provides a channel for vehicular and pedestrian movement between certain points in the community and which may provide for vehicular and pedestrian access to properties adjacent to it, and which may also provide space for the location of underground and above ground utilities. A street shall include a right-of way, the street pavement, curb, and gutter. A street is primarily used as a channel for vehicular movement and secondarily as a drainage channel for stormwater.

Street Classification - The grouping of highways by major geometric features and/or the character of service they provide. Streets may also be classified based on the level of government responsible for the facilities, the method of financing the facilities, and/or the route numbering.

- ♦ Expressway/Freeway - A multilane, controlled or limited access major road connecting this region, major activity centers or major roads with other regions, major activity centers or major roads. It is designed to accommodate large traffic volumes at high speeds. Such facilities may be part of the interstate, federal, or state primary highway system.
- ♦ Major Thoroughfare - Consist of interstate, other freeway, expressway, or parkway links, and major streets that provide for the expeditious movement of high volumes of traffic within and through urban areas.
- ♦ Minor Thoroughfare - Collect traffic from collector and local streets, and carry it to the major thoroughfare system. Minor thoroughfares may be used to supplement the major thoroughfare system by facilitation movement of moderate volumes of traffic within and through urban areas and may also serve abutting property.
- ♦ Collector - A street whose principal function is to carry traffic between cul-de-sac, local, private streets, private drives, and streets of higher classification but which may also provide direct access to abutting properties.



- ♦ Local – A street whose primary function is to provide access to abutting properties.
- ♦ Residential - A local street that serves as access to residentially zoned properties exclusively.
- ♦ Private Street – A street not dedicated or offered for dedication as a public street but functions like a local or residential street.
- ♦ Private Drive - A street not dedicated or offered for dedication as a public street but functions like a local or residential street. This classification shall only be utilized for townhome or condominium developments where each unit has an individual residential driveway.

Traditional Neighborhood Development (TND) – A human scale, pedestrian-friendly community with moderate to high residential densities and a mixed use core.

Through Street – A street that is not a cul-de-sac street and which intersects with at least two (2) other streets that are not cul-de-sac streets.

Travelway - The portion of the roadway for the movement of vehicles, exclusive of the shoulder and auxiliary lanes.

#### E. Greensboro Code of Ordinances

Some of the information and specifications are contained in Chapter 30 of the City of Greensboro Code of Ordinances and is reproduced herein for the information of those concerned with this type of design and construction. The requirements of these specifications must be met in addition to all provisions of the City of Greensboro Code of Ordinances, as described in Section 30-6-13.