

Chapter 7. Public Improvement Standards

155.701. Streets [formerly § 152.30]

A. RIGHT-OF-WAY.

1. A proposed street right-of-way must be of sufficient width to accommodate the required cross section. However, the right-of-way shall not be less than the standards listed below unless allowed through Flexible Design Provisions at § 155.401.7 or through a public improvement variance outlined at § 155.712.



TABLE OF MINIMUM RIGHT-OF-WAY REQUIREMENTS

Street Type	Feet
Freeway or Expressway (Class I)	350 ¹
Limited Access Arterial (Class II)	200 ¹
Commercial Arterial (Class III-C)	150 ¹
Major Arterial (Class III)	100 ¹
Minor Arterial (Class IV)	70 ¹
Collector (Class V)	60 ²
Local (Class VI)	50 ³
Local Limited (Class VI-L)	44 ³
Alley	30 ⁴

¹ See § 155.701.B. and § 155.707.A.

² See § 155.701.C.3. and § 155.707.A.6.

³ See § 155.707.A.7.

⁴ See § 155.707.A.8.

2. The Town Public Works Director, after consulting applicable plans and programs, and after consulting with appropriate county, state and/or federal officials will be responsible for the determination of the classifications of streets or segments of streets. These standards represent the normally required rights-of-way. Additional right-of-way may be necessary in the area of interchanges, intersections, cut/fill areas or areas where horizontal or vertical alignments must be improved and will be determined on a case by case basis.
3. When a subdivider or developer elects to establish a roadway divided with a center strip or median, the right-of way must be increased over the width given in the table above by the width of the median and any curb and gutter adjacent to the median. See also § 155.701.D.
4. The Class VI-L street may only be used subject to the following conditions:
 - a. It serves no more than ten (10) dwelling units and does not exceed five hundred feet (500') in length.
 - b. All land which touches the street must be subdivided into lots or is otherwise platted so that a further extension is not possible. **[Formerly § 152.30(A)]**

B. ARTERIAL STREET RIGHT-OF-WAY (CLASS I, II, III, III-C, OR IV). Whenever a tract of land to be subdivided or developed includes any part of an arterial street shown on the Comprehensive Transportation Plan and

whenever such a right-of-way has been further defined by acceptable locational procedures sufficient to identify properties to be affected, a right-of-way for the arterial street must be platted in the location and to the width specified in the plan. The subdivider or developer is responsible for the dedication of the right-of-way up to one hundred feet (100') (fifty feet (50') on either side of the centerline) and the reservation of greater right-of-way in accordance with the provision of § 155.707.A. The remainder of the minimum required right-of-way over one hundred feet (100') must be reserved and may be dedicated for future rights-of-way use and must be shown as such on the final plat. All measurements involving minimum lot standards under these regulations shall be made at the edge of the right-of-way whether dedicated or reserved and must be shown as such on the final plat. (Am. Ord. 2231, passed 6-12-17)

1. **FREEWAYS AND EXPRESSWAYS.** Whenever a tract of land to be subdivided or developed includes any part of the proposed right-of-way as shown on Comprehensive Transportation Plan adopted by CRTPO or adopted by the North Carolina Board of Transportation, and whenever those proposed rights-of-way have been further defined by acceptable locational procedures sufficient to identify property to be affected, the right-of-way for the freeway or expressway shall be reserved and remain undeveloped pending future acquisition by the State of North Carolina or other governmental unit. The subdivider or developer shall reserve the proposed right-of-way for a period not to exceed three years from the date of obtaining the approval of the preliminary subdivision plat, after which the land shall be considered as free of reservation. (Am. Ord. 2231, passed 6-12-17)
 2. **ADDITIONAL ROADWAYS.** The provision of this section shall also apply to additional roadways that are specifically approved for right-of-way protection by the Board of Commissioners. **[Formerly § 152.30(B)]**
- C. **DESIGN CRITERIA.** The following criteria shall be followed for all improvements within or adjacent to public streets in conjunction with any proposed rezoning, preliminary subdivision, expansion of an existing development (40% or more increase in building square footage or outdoor use area), any new development, or any redevelopment project. The provisions listed at § 155.405.4. shall also be utilized for these types of projects, unless they clearly do not apply. (Am. Ord. 2059, passed 12-8-14)
1. **STREET CONNECTIVITY.** The purpose of this section is to support the creation of a highly connected transportation system within the Town in order to provide choices for drivers, bicyclists, and pedestrians; promote walking and bicycling; connect neighborhoods to each other and to local destinations such as schools, parks, shopping, and service/employment centers; reduce vehicle miles of travel and travel times; increase effectiveness of municipal service delivery; to reduce response times for first responders; and free up arterial capacity to better serve regional long distance travel needs. It is the intent of this Title to build streets that are integral components of community design. Streets shall be detailed to complement neighborhoods and commercial centers and shall be pedestrian in scale. In addition to these standards, streets shall conform to the provisions in this Chapter 7. In certain situations, streets are encouraged to be designed with on-street parking. Specific care shall be taken to buffer existing developments from substantial changes in street classification. When existing Class VI streets are extended by new development, traffic calming methods such as speed humps shall be considered to reduce potential increases in traffic speeds and volumes.
 2. **COMPLIANCE WITH ADOPTED STREET PLANS.** The street layout shall conform to the arrangement, width and location of public streets indicated on the adopted Comprehensive Transportation Plan (CTP), and/or small area plan that includes a street network layout, when one or more exists for the area. Whenever a tract of land included within any proposed development plan embraces any part of the street system as designated on the CTP or small area plan, the development shall be required to dedicate and plat the right-of-way, and shall be responsible for the cost and the installation of the improvements in accordance with the Town's standards for roadways. Developments which embrace only one (1) side of an existing or planned arterial or collector right-of-way will only be required to dedicate and plat additional right-of-way for that portion of roadway on which the development has frontage, and shall be responsible for the cost and the installation of the improvements in accordance with the Town's standards for roadways. When this Chapter calls for reservation rather than dedication of larger arterial road rights-of-way, then reservation is required. (Am. Ord. 2231, passed 6-12-17)
 3. **COLLECTOR (CLASS V) STREETS.** The determination for, and the designation of, a collector street shall be based on the criteria below. New developments will be required to provide a collector street

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to or at the outer perimeter boundaries of the development based on the criteria below. If the street in question meets at least two (2) of the criteria, then the street must be built to an appropriate collector street standard:

- a. The street intersects directly with an arterial street (Class IV or higher) and provides access to an area with an overall density of ten (10) dwelling units per acre, or provides access to more than one hundred fifty (150) dwelling units.
- b. The street by its general configuration, in relationship to the existing development of the area, in effect serves a collector function.
- c. The street extends into an undeveloped area in such a manner as to serve a future collector function.
- d. The street serves as primary access to a significant nonresidential, institutional, or recreational land, as well as an access to a residential area of twenty (20) or more acres.**[Formerly § 152.30(H)]**

4. VEHICULAR CONNECTIVITY.

- a. **STREET ARRANGEMENT.** Streets should be designed and located so that they relate to the topography, preserve natural features such as streams and tree growth and provide for adequate public safety and convenience, and shall adhere to the approved CTP or small area plan that includes a street network layout. Vehicular connections from adjacent property (street stub-outs, temporary dead-ends) must be utilized unless the Public Works Director deems the connection impractical due to topographic conditions, environmental constraints, property shape or property accessibility.

Where a through street or a series of streets establishes a connection between two (2) public streets, such street shall be a public street. A developer may submit written justification that such connecting street(s) can appropriately function as a private street, including a provision for funding and implementation of ongoing maintenance to be recorded at the Mecklenburg County Register of Deeds (at time of final plat approval or prior to issuance of grading permit where no plat is involved). This written documentation shall be reviewed, and if it is found to be accurate and that no public access may be impeded if such street segment(s) are not public, then it may be accepted by the Public Works Director, in consultation with the Planning Director. Local public and private streets may incorporate traffic calming devices. Streets should be designed so pedestrians have convenient and safe means to cross streets. Allowable treatments may include, but are not limited to, roundabouts, raised pedestrian cross walks, multi-way stops, bulb-outs, alternative pavement treatments, and signals at cross walks when warranted. (Am. Ord. 2231, passed 6-12-17)

- b. **BLOCK LENGTH.** Maximum block lengths inside proposed developments should be in accordance with lengths shown in the following table. Short block lengths are strongly encouraged in order to create a better pedestrian-scaled environment. The Public Works Director may waive this requirement if it is determined that this requirement is impractical due to topographic conditions, environmental constraints, property shape, or property accessibility.

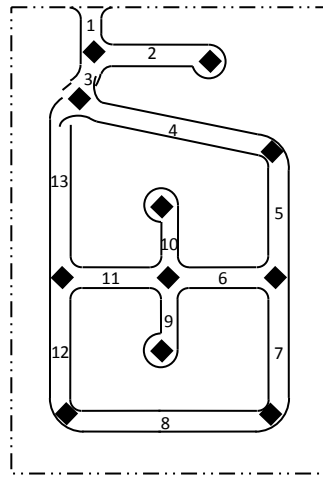
Block widths within neighborhoods should be sufficient to allow two (2) tiers of lots except where single tiers of lots will facilitate nonresidential development and the separation of residential and nonresidential developments or the separation of residential developments from arterials, railroad rights-of-way, linear greenways or parks.

MAXIMUM BLOCK LENGTH BY ZONING DISTRICT				
R-20	R-15	O, B-3, I-1, I-2, B-1SCD	R-12	R-9, R-MH, R-15MF, R-12MF, R/I, R-VS, CrC, B-1, B-H, B-D, SRN, C-MF, MUD, TS, ENT
1100 FT	900 FT	800 FT	700 FT	660FT
HUC, AU				

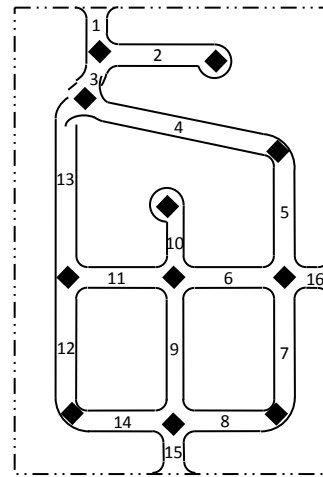
NA

NA = Not Applicable [Formerly 152.30(D)]

- c. CONNECTIVITY INDEX. Within any new development project that includes new public and/or private streets, a Connectivity Index shall be used to determine the adequacy of street layout design. This is calculated as the ratio of the number of street links (road sections between intersections) in the project's street layout divided by the number of street nodes (intersections and cul-de-sac heads). For comparison purposes, a perfect grid has a Connectivity Index of 2.0 or higher. The Connectivity Index for a conventional cul-de-sac



EXAMPLE 1
 (13 LINKS/11 NODES) = 1.18 CONNECTIVITY RATIO
 WHERE ◆ = NODE



EXAMPLE 2
 (16 LINKS/11 NODES) = 1.45 CONNECTIVITY RATIO
 WHERE ◆ = NODE

subdivision is often 1.0 or less.

Example 1 in the accompanying illustration exhibits a connectivity index of 1.18 (13 links and 11 nodes). With minor additions to adjoining property, Example 2 in the accompanying illustration exhibits a connectivity index of 1.45 (16 links and 11 nodes).

Any development shall be required to achieve a connectivity index as shown in the following Table of Minimum Street Connectivity Index.

The Public Works Director in consultation with the Planning Director may assign connectivity index reductions or bonuses for certain site-specific criteria. A reduction as indicated in the table below may be granted if it is determined that more than sixty (60) percent of any “side” of a development (4 sides total) faces impracticalities for connectivity to adjacent properties due to the presence of controlled-access highways, railroad rights-of-way, stream buffers, existing developments that have not provided street stub-outs for connection purposes, or similar significant physical limitations. A bonus as indicated in the table below may be granted where pedestrian and/or bicycle pathways/trails are constructed to link any cul-de-sac to another street or cul-de-sac within the development or to another pedestrian or bicycle facility at the exterior edge of the development. Street links on existing adjacent streets that are not part of the proposed development are not included in the connectivity index calculation.

Table of Minimum Street Connectivity Index.

MINIMUM CONNECTIVITY INDEX BY ZONING DISTRICT		
R-20, R-15, R/I, I-1, I-2, B-3, B-D, B-H, B-1SCD	R-12, R-9, R-MH, R-15MF, R-12MF, O, B-1, C-MF	HUC, R-VS, CrC, SRN, MUD, TS, ENT
0.85	0.95	1.3

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NA

NA = Not Applicable

INDEX REDUCTIONS	REDUCTION VALUE	INDEX BONUSES	BONUS VALUE
Controlled-access highway, railroad right-of-way, gated street, or adjacent developments with no street stub-outs (temporary dead-ends)	-0.05	Pedestrian or bicycle path (a minimum of 20 FT easement with 8 FT path)	+0.025
McAlpine Creek, Four Mile Creek, or North Fork of Crooked Creek stream buffer/any SWIM buffer 50' or wider	-0.025	Pedestrian or bicycle access to other improved public use amenity (park, plaza, etc.)	+0.05
Extra-long street segment without any intersecting street: >1,000ft in residential area; >800ft in nonresidential or mixed use area	-0.025		

- d. **CUL-DE-SACS.** In general, permanent cul-de-sac streets and permanent dead-end streets are discouraged in the design of street network systems, and they should be used only when topography, the presence of natural features, and/or vehicular safety factors make a vehicular connection impractical. Where cul-de-sacs or dead-end streets are unavoidable, developments shall incorporate provisions for future vehicular connections to adjacent, undeveloped properties, and to existing adjacent developments where existing connections are poor. No system of multiple branching cul-de-sacs from a single junction within a connected street network is permitted, unless the Public Works Director in consultation with the Planning Director deems it unavoidable due to environmental constraints.

Any permanent dead-end streets or cul-de-sac shall comply with the length limits shown in the following table, and shall be provided with a turnaround at the closed end of the street as set forth in § 155.707.C.5.

MAXIMUM CUL-DE-SAC LENGTH (1)		
R-20, R-15, R-12, R-15MF, R-12MF, R/I, B-1SCD	R-9, R-MH, I-1, I-2	R-VS, CrC, SRN, C-MF
800 FT	700 FT	400 FT
O, B-1, B-3, B-D, B-H, MUD, ENT	HUC, TS, AU	
250 FT	NA	

(1) Measured from center point of closest intersection to center point of turnaround
NA = Not Allowed

Reference to a “cul-de-sac” does not restrict design to the use of a fully-paved circular turnaround area. See also §155.707.C.5. The design of a permanent turnaround may be a circular area with or without a center island, a hammerhead or “Y” design, or other alternative that will allow a typical motor vehicle using such dead-end roadway to make a curved movement or multiple-point back and forth angles to turn the vehicle around. The specific design of the turnaround area shall be approved by the County and Town Engineer. When lots along a proposed cul-de-sac are adjacent to an undeveloped parcel, a pedestrian/bike easement at least twenty feet (20’) in width shall be created from the cul-de-sac to the adjacent property line for future connection. **[Formerly § 152.30(E)]**

- e. CLOSURES AND OTHER ALTERNATIVES TO CUL-DE-SACS. Alternative designs, such as closes, hammerhead turn arounds, and other configurations that allow vehicles to maneuver at the end point to reverse direction may be approved on a case by case basis.
- f. CROSS ACCESS. Traffic studies have shown that highly connected street networks provide much greater traffic throughput and mobility for a community, at less cost. A high degree of connectivity should occur not only at the level of arterials, but also on collector, local and other secondary roads. Such connectivity vastly improves a street network's performance. The street pattern should not force short trips of one (1) or two (2) miles onto Class I or II roads; it should be possible to make trips of this sort by using collector or other secondary streets. With a highly connected street network, cross-town trips should be possible using fairly direct secondary roads.

All development in nonresidential and mixed use zoning districts shall be designed to allow for cross-access to adjacent properties within these zoning districts to encourage shared parking and shared access points on public and private streets. When cross access is deemed impractical by the Public Works Director on the basis of severe topography, environmental constraints or vehicular safety factors, and is not detailed by the CTP or any small area plan which includes a street network layout, the requirement may be waived provided that appropriate bicycle and pedestrian connections are provided between adjacent developments or land uses. Development plans should provide a cross-access easement and complete the connection if completing the link can derive an immediate benefit. If no immediate benefit can be derived, development plans should provide cross access and construction easements and arrange the site design so when the adjoining property owner extends the connection to the property line, the link will be completed, and a financial guarantee equivalent to the cost of construction on a per lineal foot basis in current dollar value shall be provided to the Town. If the link is to be completed in the future, the grade and angle of the connection, as well as the location of parking, landscaping, and other improvements must be set at the time of development of the premises to allow for reasonable and feasible extension into the adjacent property. (Am. Ord. 2231, passed 6-12-17)

- g. SECOND AND ADDITIONAL POINTS OF ACCESS REQUIRED FOR RESIDENTIAL DEVELOPMENTS. At a minimum, a second point of open and functioning vehicular access from the existing public street system (not a stub-out or a temporary dead-end) is required for developments that exceed one hundred (100) residential units, and a third shall be required for developments that exceed three hundred fifty (350) residential units. These second and third points shall be open and functioning prior to the issuance of the 101st and 351st Certificate of Occupancy respectively for the development. The number of further open and functioning vehicular access points shall be controlled and determined by the development's Town-approved Traffic Impact Analysis, described in § 155.701.C.9. If a Traffic Impact Analysis should establish a higher standard for the number of open and functioning vehicular access points from the existing public street system, the requirement of the Traffic Impact Analysis shall prevail. These requirements shall not preclude a development from also meeting the connectivity index required in § 155.701.C.4.c. For purposes of this Section, a median-divided vehicular access point counts as a single vehicular access point. This Section does not preclude any development from connecting to existing street stubs and/or street stub right-of-ways abutting their property.

- 5. PEDESTRIAN CONNECTIVITY. Pedestrian circulation and connectivity should be placed adjacent to planned streets. All sidewalks and pedestrian pathways shall be designed to comply with the standards in § 155.707.D. Pedestrian crossings shall be made safer for pedestrians whenever possible by shortening crosswalk distance with curb extensions, reducing curb radii, and eliminating free right-turn lanes. Traffic calming devices may be installed to help facilitate safer pedestrian crossings.

Pedestrian walkways shall form an on-site circulation system that minimizes conflict between pedestrians and traffic at all points of pedestrian access to on-site parking and building entrances. Pedestrian walkways shall connect building entrances to one another and from building entrances to public sidewalk connections and existing or planned transit stops. All developments that contain

more than one building shall provide walkways between the principal entrances of the buildings and to adjoining streets.

Multi-purpose paths may be used to enhance pedestrian and bicycle travel where the existing vehicular circulation system does not serve these patrons well. The paths shall connect to the street system in a safe and convenient manner. See also § 155.707.D.6.

- 6. **BICYCLE CONNECTIVITY.** Bicycle accommodations in the form of bike lanes, wide outside lanes or shared lane markings should be incorporated in the design of all arterials and collector streets. Sidewalks are not encouraged as substitutes for bike lanes, although multi-use paths at least ten feet (10') in width may replace standard sidewalk adjacent to streets. In addition, streets with bicycle routes must incorporate a marked bike lane that shall be a minimum four feet (4') in width (excluding curb and gutter), or may utilize shared lanes with motorized vehicles when a Class VI Local or Class V residential Collector street.

Nonresidential and mixed use developments shall provide appropriate bicycle amenities to encourage cyclists. Signage indicating the presence of such amenities shall be scaled for easy reading by bicyclists, pedestrians and motorists. Bicycle parking shall be provided according to the requirements established in § 155.607.D.

Bicycle connections within and through all developments are encouraged and may also be designed separate from on-street improvements. Off-street bicycle facilities may include bicycle-only pathways or multi-use trails, and shall comply with the standards in §155.707.D.

- 7. **DRIVEWAY ACCESS MANAGEMENT.** Guidelines for driveway access points along non-local streets and thoroughfares (Classes I and II when allowed, and Classes III through V) are as follows:

- a. **NUMBER OF DRIVEWAY ACCESS POINTS.** While all lots or parcels are entitled to at least one driveway on an adjacent public street, new development should minimize or eliminate individual curb cuts along arterials. Where possible, vehicular access should be shared with adjacent properties and/or alleys should be utilized for access. The artificial division of a single parcel or development site to increase the number of access points is not permitted.

All lots, parcels, or any other division of land adjacent to non-local streets may be allowed driveways or street connections in accordance with the following, except where access is otherwise limited or controlled.

PARCEL FRONTAGE	NUMBER OF DRIVEWAYS ALLOWED
< 350 ft	1
351 – 600 ft	2
>601 ft	3

- b. **Special Provisions for Wide Street Frontage.** Additional driveways may be possible on properties with six hundred feet (600') or more of street frontage, when there is a clear need to provide separate access points for different types of traffic, such as emergency vehicles, large tractor trailers, buses, and private passenger vehicles, to the same property, and/or when topography or street configuration cause an insufficient sight distance for the design speed of the roadway. When additional driveway locations are requested the following elements shall be submitted jointly to the Town Planning Office, Town Public Works Department, Mecklenburg County LUESA, and NCDOT (if applicable):

- i. A written explanation of the need to separate different types of vehicular traffic as it enters the site, including a description and anticipated number of different types of vehicles entering and exiting the site, and the time of day any conflicts may be anticipated;
- ii. A written explanation with accompanying scaled drawing of the current road configuration, outlining the design speed of the road, all public or private vehicular access pints within three hundred feet (300') of the proposed new driveway location, any curve that creates a reduction in sight distance for drivers,

any topographic changes, any groves of trees, buildings, signs, other structures, or other visual impairments for traffic either entering or exiting the site which would indicate the need for additional driveways;

- iii. A description of the pavement material and cross section for construction of each existing and proposed driveway;
- iv. A site plan, drawn to scale, showing the location of all existing and proposed improvements to the site (building footprints, parking lots, curb lines, trash dumpster location, signs, landscaping, detention facilities, etc.); any public or private driveways, streets or curb cuts (used or unused) within three hundred feet (300') of the site; location of any off-site structures, landscaping, etc., that may cause a reduction in sight distance; and topography lines at ten foot (10') intervals minimum, or four foot (4') intervals if visibility is indicated as restricted due to existing land contours or proposed grading.

A request for any additional driveway shall be jointly submitted to the Town Public Works and Planning offices, Mecklenburg County LUESA, and NCDOT (if applicable). If all involved agencies determine the need has been accurately defined, then a driveway permit for such additional driveways will be allowed. **[Formerly §153.096(A).]**

c. LOCATION OF DRIVEWAY ACCESS POINTS ON NONLOCAL (CLASS V OR HIGHER) ROADWAYS.

- i. No driveway may be located within fifty feet (50') of the corner of two intersecting streets.
- ii. No driveway may be located at the road right-of-way within twenty feet (20') of any property line for any nonresidential or multi-family uses.
- iii. For any nonresidential or multi-family uses, if a driveway exists on an adjoining lot, no new driveway may be located at the road right-of-way within forty feet (40') of the existing driveway either on that lot or an adjoining lot except where both property owners agree to have a single driveway for joint usage.
- iv. Driveways for detached single-family, two-family/duplex, or single-family attached uses shall be located at least ten feet (10') from a property line at the road right-of-way.
- v. Within the Downtown Overlay, the twenty foot (20') distance from a property line may be reduced when a parcel's lot width is insufficient for a driveway to be placed completely to the side of a building (existing, expanded, or new) when the building's front wall dimension parallel to the street is at least forty five percent (45%) of the lot width, and the lot width is less than one hundred feet (100'). Any request for reduction of this provision shall be written on the parcel's Downtown Overlay compliance site plan, and shall be approved as a part of the Downtown Overlay plan, subject to approval by the Town Engineer, Mecklenburg LUESA and NCDOT (if applicable). **[Formerly §153.096(C)]**

d. EMERGENCY ACCESS DRIVEWAYS. Emergency access driveways may be created when such locations will allow for a necessary alternate access into a site specifically included as part of approved zoning conditions in a Parallel Traditional or Conditional-Only zoning district. Emergency access driveways may be paved within the right-of-way, when required by NCDOT on state maintained roads. Emergency access driveways shall primarily use a solid subsurface with natural cover, such as concrete porous blocks subsurface and grass cover, and may be crossed with a removable or breakaway barricade, gate, bollards, or other method to prevent general public use. Where a gate is employed, it shall meet the Town's Gated Communities Ordinance. **[Formerly § 153.096(D)]**

e. DRIVEWAY PERMIT REQUIRED. Any person desiring to construct a driveway or other connection within the right-of-way of a public street must secure a permit prior to start of construction. Failure to secure a permit prior to construction may result in the removal of the improvements at the expense of the property owner and/or developer, and may result in the denial of access at that location. All driveways must conform to design and construction standards established by the Town and NCDOT if applicable. Nothing in this section exempts any person from complying with any regulations or requirements of the

state regarding driveway connections to state maintained roads, nor does compliance with all state regulations exempt any person from the provisions of this section. In cases where these regulations may overlap or conflict, the more restrictive provision shall control. The granting of a driveway permit by the Town Public Works Department does not insure the granting of a state permit; however Mecklenburg LUESA will evaluate all applications under both sets of regulations and advise the applicant if a problem exists which may result in the rejection of the request. **[Formerly § 153.096 initial paragraph and § 153.096(F)]**

8. **MEDIAN CROSS-OVER SPACING.** Crossovers along median divided streets Class IV and higher should be spaced no closer than one thousand two hundred feet (1,200'). For all other streets, the spacing should be no closer than six hundred sixty feet (660'). In general, if the left turn lane storage requirements for adjacent intersections overlap, the minimum spacing shall be increased to provide adequate left turn lane storage in both directions. Where the NCDOT Driveway Manual or Median Crossover Guide conflicts, the stricter of the two standards should prevail.
9. **TRAFFIC IMPACT ANALYSIS.** The Traffic Impact Analysis (TIA) is a specialized study that evaluates the effects of a development's traffic on the surrounding transportation infrastructure. It is an essential part of the development review process to assist developers and government agencies in making land use decisions involving subdivisions, rezoning, site plan reviews, expansions of existing development, and other development reviews. The TIA helps identify where the development may have a significant impact on safety, traffic and transportation operations, and provides a means for the developer and government agencies to mitigate these impacts. Ultimately, the TIA can be used to evaluate if the scale of development is appropriate for a particular site and what improvements may be necessary, on and off the site, to provide safe and efficient access and traffic flow.
 - a. **THRESHOLD FOR TRAFFIC IMPACT ANALYSIS.** A Traffic Impact Analysis (TIA) is required for any proposed rezoning, preliminary subdivision, expansion of an existing development, or site plan, if the nature of the proposed rezoning or development is such that the number of trips it can be expected to generate equals or exceed one hundred fifty (150) new peak hour trips. Trips are those occurring on peak days on the adjacent roadway(s). Trip generation shall be measured based on the current edition of the Institute for Transportation Engineers (ITE) Trip Generation Manual. In the case of a plan review submittal where the uses are not known, trip generation calculations shall assume the permitted use that generates the highest number of peak hour trips or a likely mix of uses as identified by the applicant and accepted as appropriate by the Public Works Director.

A TIA shall also be required if the proposed development activity is for, or could accommodate, fifty (50) or more dwelling units, or for any nonresidential use meeting one or more of the following: covering more than two (2) acres; including more than three (3) building lots; providing an assembly area for more than four hundred (400) persons; involving office or sales floor area over twenty thousand (20,000) square feet; within one hundred fifty (150) lineal feet of any intersection of two (2) designated thoroughfares; within five hundred (500) lineal feet of any public road intersection currently operating as a Level of Service D or E; and/or involving service or delivery vehicles in excess of one (1) ton. Where a proposed development site undergoing review does not identify specific proposed uses and/or buildings, the applicant must identify the capacity of the property to be used for any of the above situations. It is determined that a new project's traffic will substantially affect an intersection or a roadway segment already identified as operating at a failing level of service, that a project may create a hazard to public safety, or that a project will substantially change the off-site transportation system or connections to it.
 - b. A multimodal analysis may also be allowed or required, when a proposed development meets any of the following: includes one or more uses that complement each other and could be commonly expected to generate cross use, such as residential uses and daily commercial activities, or offices and food services, etc.; has development site(s) totaling two (2) acres or more which may be developed; is located along one or more nonlocal streets (Class V or higher) where sidewalk and/or bike facilities are or are planned to be located; is located adjacent to one or more parcels which are designated on an approved pedestrian or bicycle plan or CTP for some pedestrian or bicycle improvements; if any

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portion of the development site is located within one quarter (1/4) mile of a bus or transit stop; if the development site will connect to an existing or planned residential development. A multimodal analysis shall at a minimum include an estimate of the persons which could logically be assumed to walk or bicycle internally in the development site and from within the development site to a location beyond the boundary of the development site. This estimated count may be broken down into appropriate age groups and between modes of nonmotorized transit. The Plan Review Committee, at the Presubmittal Conference, shall determine if a multimodal analysis is desirable or required.

- c. **DETERMINATION OF SCOPE.** The applicant shall arrange for a Presubmittal Conference, which may be in person or via conference call with digital connection for display and delivery of documents, to discuss the rezoning or development project with the Plan Review Committee, and NCDOT when appropriate, and the developer’s traffic engineering consultant. The applicant shall supply the following information for consideration and discussion at or prior to the Conference: traffic analysis base information, site location map and all intersections within one quarter (1/4) mile of the site, any bus or transit stops or daily bus routes within one quarter (1/4) mile of the site, site layout, data on existing and proposed land uses, projected timing of construction and build-out year, and description of project. The Presubmittal Conference will determine the appropriateness and extent of the individual TIA and/or multimodal analysis requirements as outlined here for each project.

An applicant may request a waiver of the TIA by providing documentation at the Presubmittal Conference that the amount of newly generated traffic would not be of sufficient volume to warrant a full traffic study. If all participants at the Conference concur, the TIA may be waived.

- 10. **PUBLIC STREETS.** The criteria listed in the following table shall be the minimum requirements for streets intended to be dedicated to the Town for maintenance. Where streets may be accepted for maintenance by NCDOT, and NCDOT has adopted different criteria, the more restrictive standards shall be utilized.

	CLASSES VI & VI-L			CLASS V		
	Level*	Rolling	Hilly*	Level*	Rolling	Hilly*
a. Terrain Classification	0-8%	8.1-15%	15%+	0-8%	8.1-15%	15%+
b. Minimum Sight Distance (ft.)	200	150	110	250	200	150
c. Maximum Grade	6%	10%	12%	4%	8%	10%
d. Minimum Radius (ft.)	250	150	90	350	250	175
e. Minimum Tangent Between Reverse Curves	50	50	50	100	100	100
f. K Values (crest/sag)	28/35	20/20	15/20	45/45	28/35	20/20

- 11. **INTERSECTIONS:** The criteria listed in the following table shall be the minimum requirements for streets intended to be dedicated to the Town for maintenance. Where streets may be accepted for maintenance by NCDOT, or would intersect NCDOT streets, and NCDOT has adopted different criteria, the more restrictive standards shall be utilized.

	Level*	Rolling	Hilly*
a. Terrain Classification	0-8%	8.1-15%	15%+
b. Clear Sight Distance (feet)	35	35	35
c. Vertical Alignment within 50 feet of intersection	1%	3%	4%
d. Minimum Angle of Intersection	75°	75°	75°
e. Minimum Curb and			

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Right-of-way radius (ft.)				
i.	Classes VI & VI-L	20	20	20
ii.	Class V	30	30	30
f. Minimum Street Offsets for				
Adjacent Intersections (ft.)				
i.	Classes VI & VI-L	125	125	125
ii.	Classes V	200	200	200

*Use of level or hilly terrain criteria not permitted without prior approval of the Town Engineer and Mecklenburg County LUESA. **[Formerly § 152.30(C)]**

- 12. ARTERIAL STREET (CLASS IV AND HIGHER) DESIGN CRITERIA. Design Criteria for arterial streets shall be established by Mecklenburg County LUESA on a case by case basis using the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets and/or NCDOT Roadway Design Manual and any local design policies. **[Formerly § 152.30(C)(3)]**
- 13. INTERSECTION CORNER. A minimum thirty five feet (35') by thirty five feet (35') sight triangle (measured along right-of-way lines) shall be provided at each intersection corner. An additional ten feet (10') by seventy feet (70') sight triangle shall be provided at intersections connecting to NCDOT maintained roadways. Additional sight distance requirements may be required by the NCDOT or the Town of Matthews. Commercial drives connecting to public streets shall be designed in accordance with the NCDOT "Policy on street and driveway access to N.C. Highways" and/or the Town of Matthews requirements as provided in the Mecklenburg County Land Development Standards Manual, as applicable. **[Formerly § 152.30(C)(4)]**

D. ROADWAY DIVIDED BY A CENTER STRIP.

- 1. Where a subdivider or developer elects to establish a roadway divided with a planted center strip, the median shall be at least five feet (5') wide when intended to be permeable and may accommodate storm water detention facilities. The roadway on either side of the median may incorporate curb and gutter with occasional breaks for storm water inlets, or may be designed without interior raised curbs, when approved by Mecklenburg LUESA and the Town Engineer as necessary for proper flow of storm water. Streets with planted center medians may be designed to direct surface water runoff to the center median. The roadway pavement, width, outside curbs, bicycle and pedestrian facilities adjacent to a center median shall be at least equal to the required cross section design for the designated street type from centerline out. (See the Mecklenburg County Land Development Standards Manual for details.)
- 2. A subdivider or developer may elect to incorporate a narrow center strip which serves to limit or prohibit crossover traffic movement through employment of a raised barrier (curb) or paved median of any width. The center median shall not have any permeable materials, planting beds, or surface drainage improvements. Inlets and subsurface drainage facilities may be allowed. **[Formerly § 152.30(A)(4)]**

155.702. Lots [formerly §152.31]

- A. FRONTAGE ON STREETS. Each lot shall have frontage on a street except where allowed by this Title. However, lots designed for one-family attached dwellings need not front on a street provided that all portions of the dwelling unit proposed for those lots shall be located within three hundred feet (300') of a public street that furnishes direct access to the property and that access to each lot be made available via either a public right-of-way or a private vehicular or pedestrian way owned by the individual lot owner in fee or in common ownership. Lots designed for cottage cluster housing developments need not front on a street, provided that the overall development site has frontage on a street and that access to each dwelling unit is made available via either a public right-of-way or a private vehicular or pedestrian way owned by the individual lot owner in fee or in common ownership.

- B. SIDE LINES. Side lot lines shall, as nearly as practicable, be at right angles to or radial to street lines. Where side lot lines intersect at the rear of the lot, the angle of intersection shall not be less than sixty degrees (60°).
- C. MINIMUM SIZES. Lots shall meet the required widths, depth and area requirements of this Title when they are provided for the applicable zoning district.
- D. LOTS SUBJECT TO FLOODING. In addition to the provisions of Chapter 9 Floodplain Regulations, lots that are subject to flooding shall not be established in subdivisions for the purpose of creating building sites except as provided in this paragraph. Lots shall be construed to be subject to flooding when a flood crest recurring with a probable frequency of one (1) time in one hundred (100) years would inundate any part of a proposed lot. If any part of a proposed lot is subject to flooding, the subdivider shall make a determination of the crest elevation of the flood expected to be equaled or exceeded, on the average, of one (1) time in one hundred years (the "100 year flood") in accordance with generally accepted engineering practice, which is to be submitted with the seal and signature of a professional engineer to Mecklenburg County LUESA. This determination must reflect the actual conditions imposed by the completed subdivision, and must give due consideration to the effects of urbanization and obstructions. No proposed building lot that is subject to flooding shall be approved unless there is established on the final plat a line representing an actual contour as determined by field survey, at an elevation one foot above the one hundred (100) year flood crest. Such line shall be known and identified on the final plat as the "Building Restriction Flood Line." All habitable buildings or structures shall be located outside the Building Restriction Flood Line. All lots subject to flooding as defined here may be approved only if there will be available for building a usable lot area of not less than two thousand (2,000) square feet. The usable lot area shall be determined by deducting from the total lot area the area of all yards and setbacks required by the applicable zoning district regulations and any remaining area of the lot lying below the building restriction flood line. During the construction of a subdivision, the developer shall maintain the stream bed of each stream, creek or backwash channel contiguous to the subdivision in an unobstructed state and shall remove from the channel and banks of the stream all debris, logs, timber, junk and other accumulations of a nature that would, in time of flood, clog or dam the passage of waters in their downstream course. Installation of appropriately sized storm water drains, culverts, bridges or erosion control devices will not be construed as obstructions in the stream. The developer shall take all necessary measures to stabilize the stream bed at end of construction.

155.703. Street Name Signs and Barricades [formerly § 152.32]

- A. Standard street name signs shall be installed at a minimum at one corner of all street intersections. The design, material, location, and installation of the signs shall be in accordance with standards specified by the Town Public Works Department.
- B. Barricades shall be installed at the end of all dead-end streets, except cul-de-sacs which have been improved with permanent turnaround as required by this Chapter 7. These barricades shall have a minimum length of twenty-five (25) feet, plus end sections. Design, material and installation of the barricades shall be in accordance with standards as specified in the Mecklenburg County Land Development Standards Manual. ReflectORIZED material shall be placed on the barricade in accordance with the standards.

155.704. Design Standards for Storm Water Collection and Drainage

155.704.1 Design Standards for Storm Water Provisions on All Development Projects

- A. PURPOSE. The purpose of this section is to control the peak flow of less-common storm events and should be used in conjunction with Chapter 8, the Post Construction Ordinance, and/or SWIM buffer provisions in § 155.704.2, when they also apply, to any parcel of land.
- B. PLAN REQUIRED. No development or use of land that involves or would create more than twenty thousand (20,000) square feet of impervious groundcover shall be permitted without the submission and approval of a storm water management plan. Division of a parcel on or after July 10, 2000 into two (2) or more parcels that, when combined, would create impervious surface areas of twenty thousand (20,000) or more square feet shall be required to provide a storm water management plan for the combined total built-upon surface. No certificates of occupancy or building permits for such development shall be issued until the storm water management plan is approved by the County Engineer and/or Town Engineer, whichever is appropriate.

Built-upon ground cover in existence prior to July 10, 2000, and not altered or removed after that date, shall not be used in measuring the twenty thousand (20,000) square feet.

- C. CONTENTS OF A STORM WATER MANAGEMENT PLAN. The storm water management plan shall include: a site plan showing existing and proposed buildings or other built-upon impervious surfaces; existing on-site and adjacent storm water drainage facilities; site construction plans, grading plans, and proposed storm water management system; and any other appropriate information requested by the Town Engineer or Mecklenburg LUESA. Storm water facilities shall be required to control the peak runoff release rate for both the two (2) year and ten (10) year six (6) hour storms, with an emergency overflow capable of safely discharging flow from the fifty (50) year twenty four (24) hour storm event. All storm water management systems shall conform to the standards and specifications as provided in the Charlotte-Mecklenburg Storm Water Design Manual (latest revision), Charlotte-Mecklenburg BMP Design Manual (latest revision), Mecklenburg County Land Development Standards Manual (latest revision), or the more restrictive of any standards that conflict.
- D. PLAN APPROVALS. Neither the Town Engineer nor Mecklenburg LUESA shall approve a storm water management plan if the built-upon ground cover proposed in the plan would increase the peak level of the storm water runoff from the site for both the two (2) year and ten (10) year six (6) hour storms, unless the storm water management plan identifies measures to control and limit runoff to peak levels as detailed in § 155.704.1.C. no greater than would occur from the site if left in its existing condition. Furthermore, if documented downstream flooding concerns exist, the storm water management plan shall not be approved if the built-upon ground cover proposed in the plan would increase the peak level of the storm water runoff from the site for both the two (2) year and ten (10) year six (6) hour storms, or less common storms at the discretion of the Town Engineer or Mecklenburg LUESA, unless the storm water management plan identifies measures to control and limit runoff to peak levels for such storms no greater than would occur from the site if left in its natural, undeveloped, good condition; or, if currently undeveloped, its existing condition.
- E. Requirement waiver. The Town Engineer may waive any requirements under this section when storm water from the site would drain via an approved, permanent easement recorded at the Mecklenburg County Register of Deeds, or directly to a FEMA flood plain when within the same parcel of land. A written request for waiver shall be submitted to the Town Engineer which must be supported by a downstream flood analysis using the criteria specified in Chapter 3, Section 5 of the Charlotte-Mecklenburg BMP Design Manual (latest revision). In order to grant a waiver, the Town Engineer shall determine that the supplied flood analysis provides sufficient documentation that a waiver of storm water detention will not create increased flooding potential at, above, or below the subject location.
- F. Conflict of Laws. This section is not intended to modify or repeal any other ordinance, rule, regulation, or other provision of law, including the Post Construction Ordinance. The requirements of this section are in addition to the requirements of any other ordinance, rule, regulation, or other provision of law, and where any provision of this section imposes restrictions different from those imposed by any other ordinance, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human or environmental health, safety, and welfare shall control.
- G. Inspections. Inspections shall be in accordance with the procedures outlined in § 155.710. **[Formerly § 153.101]**

155.704.2 Design Standards for Surface Water Improvement and Management (SWIM) Buffers [formerly § 152.33]

- A. PURPOSE. The purpose of a stream buffer network is to ensure that the stream and adjacent lands will fulfill their natural functions. Stream systems are comprised of the stream and their drainage basins. Streams have the primary natural functions of conveying storm and ground water, storing floodwater and supporting aquatic and other life. Vegetated lands adjacent to the stream channel in the drainage basin serve as a "buffer" to protect the stream system's ability to fulfill its natural functions. Primary natural functions of the buffer include:
 - 1. Protect water quality by filtering pollutants;
 - 2. Provide storage for floodwaters;
 - 3. Allow channels to meander naturally; and
 - 4. Provide suitable habitats for wildlife.

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B. APPLICABILITY.

1. All properties shall comply with the buffer requirements of this Section except those which, as of the effective date February 14, 2000, have previously secured a right to proceed by:
 - a. Being subject to a recorded subdivision plat;
 - b. Being subject to a preliminary subdivision plan approved by the Board of Commissioners prior to the effective date of this Section;
 - c. Having otherwise secured a vested property right under state law.
2. Redevelopment or expansion of structures, uses, or other development projects included in § 155.704.2.B.1 above, shall comply with the buffer requirements of this Section; however uses and structures previously approved and constructed in a buffer may remain.
3. A site specific development plan amended by action of the Board of Commissioners subsequent to adoption of this Section shall comply, in its amended form, with the SWIM buffer requirements, however uses and structures previously approved for construction in a buffer may remain.

C. BUFFER STANDARDS

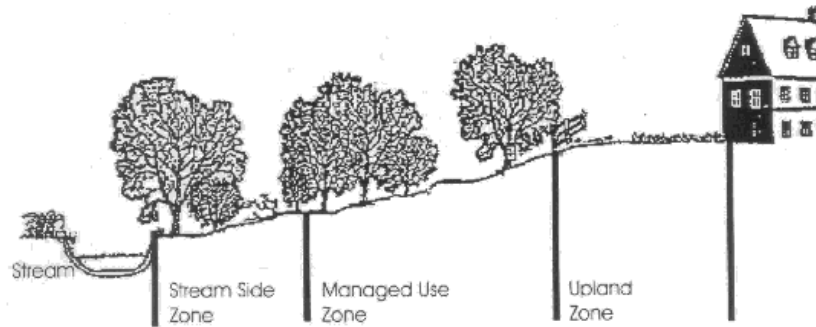
1. **BUFFER DESCRIPTION.** Buffer function, vegetation and use vary according to the different buffer zones and are described in the following table.

TABLE OF BUFFER TREATMENT BY BUFFER ZONE				
	Stream Side Zone	Managed Use Zone	Upland Zone	Notes
Function	Protect the integrity of the ecosystems	Provide natural filter; provide distance between upland development and the streamside zone	Prevent encroachment and filter run-off	-----
Land Disturbance/ Vegetative Requirements	UNDISTURBED (no cutting, clearing or grading). If existing tree density is inadequate reforestation is required.	Limited clearing (no grading). Existing tree density must be retained to a minimum of 8 healthy trees of a minimum 6-inch caliper per 1,000 square feet. If existing tree density is inadequate, reforestation is encouraged.	Herbaceous ground cover, including grass, is allowed; maintenance of existing forest or reforestation is encouraged	(1) -----
Uses	VERY RESTRICTED Permitted uses limited to flood control structures and bank stabilization (where permitted) as well as installation of parallel or near parallel ($\geq 75^\circ$) water and sewer utilities and near perpendicular road crossings ($\geq 75^\circ$) with stabilization of disturbed areas as specified in § 155.704.2.E.	RESTRICTED Permitted uses limited to those allowed in the Stream Side Zone, as well as bike paths and greenway trails up to 10 feet in width	RESTRICTED Permitted uses limited to those allowed in Stream Side Zone and Managed Use Zone, as well as gazebos, non-commercial storage buildings less than 150 square feet, limited grading that does not change the functionality or extent of the floodplain, and storm water structural best management practices (BMPs) if approved in accordance with §	(2)(3) -----

155.704.2.F.2. as a condition of a buffer width variance

Notes:

- (1) When reforestation of disturbed buffers is required, tree planting shall be as specified in the Mecklenburg County Land Development Standards Manual (§s 40.01, 40.02, and 40.03 or as revised).
- (2) Fill material cannot be brought into any required buffer. In the Upland Zone only, limited grading that does not change the extent or functional characteristics of the floodplain is permitted. Uses permitted in the buffer zones should be coordinated to ensure minimal disturbance of the buffer system. For example, if it is necessary to install utilities within the buffer, then if greenway trails are built they should follow these cleared areas instead of necessitating additional clearing.
- (3) Notwithstanding the uses and structures permitted in the "Upland Zone", the stricter standards of floodway regulations, if applicable, shall apply.



- 2. **MINIMUM BUFFER WIDTHS.** Minimum stream buffer widths vary based on the size of the upstream drainage basin, as described in the following table. Mecklenburg County's Geographic Information System will locate streams and delineate the size of drainage basins associated with each.

TABLE OF MINIMUM BUFFER WIDTHS BY BASIN SIZE AND BUFFER ZONE

Area Designation	Stream Side Zone	Managed Use Zone	Upland Zone	Total Buffer Width each Side of Stream	Notes
≥640 acres	30 feet	45 feet	Balance of floodway PLUS 100% of flood fringe, but no less than 25 feet	Floodway PLUS 100% of flood fringe, but no less than 100 feet	(1)(2)
≥300 acres	20 feet	20 feet	10 feet	50 feet	(1)
≥50 acres	20 feet	None	15 feet	35 feet	(1)

Notes:

- (1) Buffer widths are measured horizontally on a line perpendicular to the surface water, landward from the top of the bank on each side of the stream.
 - (2) Floodplain and buffer calculations will be based upon the flood fringe and floodway encroachment lines, as locally adopted and as may be amended from time to time.
- 3. **DIFFUSE FLOW REQUIREMENT.** Diffuse flow of runoff shall be maintained in the buffer by dispersing concentrated flow and reestablishing vegetation. Techniques for providing diffuse flow are specified in the Mecklenburg County Land Development Standards Manual.

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- a. Concentrated runoff from ditches or other manmade conveyances shall be diverted to diffuse flow before the runoff enters the buffer.
 - b. Periodic corrective action to restore diffuse flow shall be taken by the property owner as necessary to impede the formation of erosion gullies.
4. PONDS. Ponds that intersect the stream channel shall have the same buffers as the original stream measured from the top of the bank of the pond. Buffer requirements do not apply to wet ponds used as structural BMPs.
5. BUFFER DELINEATION. The following buffer delineations are required:
- a. Stream and buffer boundaries including all buffer zones must be clearly delineated on all site specific plans for Board of Commissioner approval, on all construction plans, including grading and clearing plans, erosion and sediment control plans, and site plans.
 - b. Buffer boundaries including all buffer zones must be clearly marked on-site prior to any land disturbing activities. Where existing trees are to be preserved in a buffer zone, limits of grading shall maintain a minimum twenty foot (20') separation from the base of each tree of eight inch (8") DBH or larger on the upland side of the buffer.
 - c. The outside boundary of the buffer must be permanently marked on each parcel following the completion of grading activities and prior to occupancy.
 - d. Separate buffer zones must be permanently marked at highway stream crossings.
 - e. Buffer boundaries including the delineation of each buffer zone as well as all buffer requirements must be specified on all surveys and record plats, on individual deeds, and in property association documents for lands held in common.
- E. BUFFER IMPACTS ALLOWED. The following buffer impacts are permitted, but design and construction shall comply with the specifications provided in the Mecklenburg County Land Development Standards Manual for stabilization of disturbed areas to minimize negative effects on the quality of surface waters.
1. Near perpendicular (seventy five degrees (75°) or greater) road crossings for connectivity or transportation links.
 2. Near perpendicular (seventy five degrees (75°) or greater) utility crossings as approved by Charlotte-Mecklenburg Utilities.
 3. Parallel water and sewer utility installation as approved by Charlotte-Mecklenburg Utilities, where a logical and appropriate basis for the impact is demonstrated, where disturbance of the Stream Side Zone is minimized to the maximum extent practicable, and where guidelines for restoring vegetation within buffers disturbed as a result of parallel utility installation are met. These guidelines are specified in the Mecklenburg County Land Development Standards Manual.
 4. Public paths and trails parallel to the creek outside the Stream Side Zone and near perpendicular stream crossings in any zone. Pathways must use existing and proposed utility alignments or previously cleared areas and minimize tree cutting to the maximum extent practicable. To the extent possible, pathways shall preserve existing drainage patterns and avoid drainage structures that concentrate storm water.
 5. Incidental drainage improvements/repairs for maintenance.
 6. Individual pedestrian paths connecting homeowners to the stream in the form of narrow, pervious footpaths with minimal tree disturbance.
 7. New domesticated animal trails (farming) where existing trails are lost as a result of action beyond the farmer's control. Stream crossings should be constructed to minimize impacts to the Stream Side Zone and be maintained with fencing perpendicular to and through the buffer to direct animal movement.
 8. Mitigation approved by a state or federal agency acting pursuant to §§ 401 or 404 of the federal Clean Water Act.
- F. APPEALS AND SWIM BUFFER VARIANCES, WITH MITIGATION.

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1. **APPEALS.** An appeal to reverse or modify the order, decision, determination, or interpretation of any authorized Town or County official shall comply with the requirements of Chapter 4 of this Title.
2. **VARIANCE PROVISIONS.**
 - a. When a difficulty or hardship would result from adherence to the buffer width requirements and/or buffer treatment standards, a request for subdivision variance may be filed with the Planning Board in compliance with the procedures of § 155.712.B. Such request shall not be deemed complete for consideration until a written report with recommended actions, including preferred mitigation techniques, from Mecklenburg LUESA is provided. It shall be the responsibility of the applicant requesting the SWIM buffer variance to obtain this report.
 - b. The standards for granting a variance, as set out in § 155.712 of these regulations shall be met. Site specific mitigation plans using the techniques below, and approved by the designated agency, shall constitute conditions relating to the intent and standards of this Chapter, and may be attached to variance approval by the Town Board. Specifications for these mitigation techniques are provided in the Mecklenburg County Land Development Standards Manual, and provisions outlined for PCO compliance may also be applied, when determined to be appropriate by the Storm Water Administrator. These techniques are not construed to offset the requirement of § 155.704.C.3 for diffuse flow.
3. **MITIGATION TECHNIQUES.** The following techniques are available to landowners for mitigation of buffer impacts, in association with the granting of a SWIM buffer variance to specific buffer requirements of § 155.704.A through E, inclusive.
 - a. **INSTALLATION OF STRUCTURAL BMPs.** The installation of an on-site structural BMP designed to achieve specified pollutant removal targets will allow for all proposed stream buffer impact on the specific site. The BMP must remain outside of the Stream Side Zone and Managed Use Zone. A detailed BMP design plan must be submitted to the Mecklenburg County Department of Environmental Protection for approval based on specifications contained in the Mecklenburg County Land Development Standards Manual. This plan must also include a long term maintenance strategy for the BMP, complete with the establishment of adequate financing to support the proposed maintenance practices.
 - b. **STREAM RESTORATION.** The owner may restore and preserve the buffer area on any stream of equivalent or greater drainage area the condition of which is determined to be qualified for restoration by the Mecklenburg County Department of Environmental Protection on a 1:1 basis in linear feet of stream. This restoration shall include stream bank improvements and Stream Side and Managed Use Zone re-vegetation, in accordance with the Mecklenburg County Land Development Standards Manual and receive approval by Mecklenburg County Department of Environmental Protection.
 - c. **STREAM PRESERVATION.** The owner may purchase, fee simple, other stream segments at equivalent or greater drainage area on a 1:1 linear foot basis and convey fee simple and absolute title to the land to the Town of Matthews, Mecklenburg County, or conservation trust, with a plan approved by the Mecklenburg County Department of Environmental Protection.
 - d. **WETLANDS RESTORATION.** On a 2:1 acreage basis for disturbed stream and buffer area (2 acres of wetland for each acre of disturbed area), the owner may provide a combination of the preservation and/or restoration of wetlands with protective easements and the implementation of structural or non-structural BMPs to achieve specific pollutant removal targets within the impacted area. Restoration plan must be approved by the Mecklenburg County Department of Environmental Protection.
 - e. **BOTTOM LAND HARDWOOD PRESERVATION.** On a 2:1 acreage basis for impacted stream and buffer area (2 acres of bottomland hardwood for each acre of disturbed area), the owner may provide a combination of the preservation of existing bottom land hardwood forest or other specifically approved natural heritage area by conservation easement or other legal instrument, and the implementation of structural or non-structural BMPs to achieve

specific pollutant removal targets within the impacted area. Plan to be approved by Mecklenburg County Department of Environmental Protection.

- f. CONTROLLED IMPERVIOUS COVER FOR DISTURBANCE LANDWARD OF STREAM SIDE ZONE. The owner may commit to, and provide, a specific site development plan for the parcel with requested buffer disturbance. The plan shall limit overall site impervious cover to less than or equal to twenty four percent (24%). Preservation of the Stream Side Zone is still required. Plan to be approved by Mecklenburg County Department of Environmental Protection.
 - g. OPEN SPACE DEVELOPMENT. The submission of a site specific development plan that preserves fifty percent (50%) of the total land area as undisturbed open space. Plan to be approved by Mecklenburg County Department of Environmental Protection.
 - h. MITIGATION CREDITS. The purchase of mitigation credits through the Stream Restoration Program on a 1:1 basis, utilizing linear feet of stream impacted and the prevailing rate of purchase as established by the Mecklenburg County Land Development Standards Manual. Mitigation credits purchased under any other program, i.e., U.S. Army Corps of Engineers, shall not cover this requirement unless the issuing agency agrees to relinquish the funds to the appropriate local government agency.
 - i. ALTERNATIVE MITIGATION. The list of mitigation techniques shall not prevent the creative development of alternative mitigation plans that achieve the purposes of this section. The owner shall submit such plan with proposed buffer impacts and detailed mitigation information to the Mecklenburg County Department of Environmental Protection for approval. The criteria used to judge acceptability of any alternative plan shall be the degree to which the plan addresses the preservation of the four primary natural functions of stream buffers given in § 155.704.A. When considering proposed mitigation alternatives, the Mecklenburg County Department of Environmental Protection shall give equal weight to proposals which utilize the preservation of unique or endangered habitat or natural areas against proposed buffer impacts. Plans may be submitted in conjunction with a mitigation plan submission to the US Army Corps of Engineers and NC Department of Environment and Natural Resources for proposed stream or wetlands impacts.
- G. FINANCIAL SECURITY REQUIRED. When structural BMPs (wet detention ponds and other BMPs) are approved for mitigation of a buffer disturbance, the approval will be subject to the owner filing a surety bond or letter of credit or making other financial arrangements which are acceptable to the Mecklenburg County Department of Environmental Protection, in a form which is satisfactory to the County Attorney, guaranteeing the installation and maintenance of the required structural BMPs until the issuance of certificates of occupancy for seventy-five (75) percent of all construction which might reasonably be anticipated to be built within the area which drains into the BMPs, allowing credit for improvements completed prior to the submission of the final plat. At such time that this level of occupancy is achieved, written notice thereof must be submitted by the owner to the Mecklenburg County Department of Environmental Protection. The owner must also verify the adequacy of the maintenance plan for the BMPs, including the necessary financing to support the proposed maintenance practices. The Mecklenburg County Department of Environmental Protection will inspect the structural BMPs and verify the effectiveness of the maintenance plan; if both are found to be satisfactory, the department will notify the owner within thirty (30) days of the date of notice.
- H. MAINTENANCE RESPONSIBILITIES FOR STRUCTURAL BMPS—CIVIL PENALTIES. Maintenance of all structural BMPs will be the responsibility of the property owner or his designee. Any person who fails to maintain the required BMPs in accordance with the approved maintenance plan will be subject to a civil penalty of not more than five hundred dollars (\$500.00). Each day that the violation continues shall constitute a separate violation. No penalties shall be assessed until the person alleged to be in violation has been notified in writing of the violation by registered or certified mail, return receipt requested, or by other means which are reasonably calculated to give actual notice. The notice shall describe the nature of the violation with reasonable particularity, specify a reasonable time period within which the violation must be corrected, and warn that failure to correct the violation within the time period will result in assessment of a civil penalty or other enforcement action. (Ord. 1124, passed 2-14-00)

155.705. Dedication of Open Space and Recreational Land [formerly § 152.40]

- A. GENERAL PROVISION. The subdivider or developer of any site which includes a residential component with single dwelling per lot (detached or attached) shall dedicate a portion of such land in accordance with this Section or pay a fee in lieu thereof, in accordance with § 155.706, for public park, greenway, pathway, recreation, and open space sites to serve the recreational needs of both the residents of the subdivision and the general public. When closes, mini-park sites, or similar small pockets of land are designed and improved primarily for use of the nearby residents, they may be considered as meeting a portion of this open space dedication.
- B. AMOUNT OF LAND TO BE DEDICATED. At least one thirty fifth (1/35) of an acre shall be dedicated for each dwelling unit lot planned or proposed in the subdivision plat, except that any land to be dedicated which lies within the one hundred (100) year floodplain, any required SWIM buffers, or has slopes greater than fifteen percent (15%) or is included within overhead utility easements shall be dedicated at a rate of at least one twentieth (1/20) of an acre per dwelling unit.
- C. NATURE OF LAND TO BE DEDICATED. Except as otherwise required by the Town Board of Commissioners at the time of preliminary plan approval, all dedications of land shall meet the following criteria:
 - 1. UNITY. The dedicated land shall form a single parcel of land except where the Town Board of Commissioners determines that two or more parcels would be in the best interest of the public, given the type and distribution of open spaces needed to adequately serve the proposed development. In such cases, the Town Board of Commissioners may require that such parcels either be connected by a dedicated strip of land at least thirty feet (30') in width, or be an improved small pocket of land specifically intended to be used by the adjacent residential parcels.
 - 2. USABILITY. At least one-half of the total land dedicated shall be located outside of areas of special flood hazard, SWIM buffers, alluvial soils, lakes, or other water bodies, and areas with slopes greater than fifteen percent (15%). Land dedicated only for greenways need not follow the requirements of this subsection.
 - 3. MINIMUM SIZE. In general, land dedicated for recreational purposes shall have an area of at least four (4) acres. When the requirements of § 155.705.B would create less than four (4) acres, the Town Board of Commissioners may require that the recreation area be located at a suitable place on the edge of the subdivision so that additional land may be added at such time as the adjacent land is subdivided. In no case shall an area of less than two (2) acres be dedicated for recreational purposes if it will be impractical or impossible to secure additional lands in order to increase its area. Where minimal requirements of this subsection cannot be met, the provisions of § 155.706 shall be applicable. Land dedication only for greenways or allowed small pocket spaces need not follow the requirements of this subsection.
 - 4. SHAPE. The shape of the portion of the dedicated land which is deemed suitable for active recreation shall be sufficiently square or round to be usable for any or all recreational facilities and activities, such as athletic fields and tennis courts, when a sufficient amount of land is dedicated to accommodate such facilities. Land dedicated only for greenways or allowed improved small pocket spaces need not follow the requirements of this subsection.
 - 5. LOCATION. The dedicated land shall be located so as to reasonably serve the recreation and open space needs of the subdivision for which the dedication was made and shall bear a reasonable relationship to the use of the area by the future inhabitants of the subdivision or residential development.
 - 6. ACCESS. Public access to the dedicated land shall be provided either by adjoining public street frontage or by a dedicated public easement, at least thirty feet (30') wide, which connects the dedicated land to a public street or right-of-way. Gradients adjacent to existing and proposed streets shall allow for usable access to dedicated land. Where the dedicated land is located adjacent to a street, the developer or subdivider shall remain responsible for the installation of utilities, sidewalks, and other improvements required along that street segment. Public access to greenway dedications are required and shall be at least twenty feet (20') wide.
 - 7. TOPOGRAPHY. The average slope of the portion of dedicated land deemed usable for active recreation shall not exceed the average slope of the entire subdivision to be developed. In no case shall a slope on the usable portion of dedicated land exceed fifteen percent (15%).

8. USABILITY. Any land dedicated as open space to meet the requirements of this section shall generally be improved based on its intended use, such that a playground shall have age-appropriate play structures and open fields shall be level and free of overhead utilities or trees and of sufficient shape and size for various team sports. When the proposed land dedication is intended to preserve land in its natural environment, minimal improvements may be required.
- D. PROCEDURE FOR DEDICATION OF LAND. The dedication of land shall be reviewed for recommendations by the Planning Board and the Parks and Recreation Director as part of the Sketch Plan review process prior to the filing of an application for approval of the Preliminary Plan. The subdivider shall designate on the Sketch Plan the area of land to be dedicated pursuant to this Section. Where wetlands falling under the jurisdiction of State or Federal agencies have been certified to exist on the property, the boundaries of such wetlands shall also be identified. Any subdivider wishing to request payment of funds in lieu of land dedication in accordance with § 155.706 shall submit a letter of request along with the Sketch Plan.

155.706. Payment of Fees in Lieu of Dedication [formerly § 152.41]

- A. GENERAL. The payment of fees, in lieu of the dedication of land under § 155.705 above, may occur at the request of the subdivider or developer. The payment of fees in lieu of land dedication also may be required by the Town Board of Commissioners at the time of preliminary plan approval upon finding that all or part of the land required to be dedicated under § 155.705 is not suitable for public recreation and open space purposes, or upon finding that the recreational needs of the proposed development can be met by other park, greenway, or recreational facilities planned or constructed by the Town within reasonable proximity to the development.
- B. PROCEDURE FOR APPROVAL. Any subdivider wishing to pay fees in lieu of land dedication shall submit a letter of request with the Sketch Plan submittal. As part of the Sketch Plan review the Planning Board and the Parks and Recreation Department shall make recommendations concerning land dedication or payment of fees in lieu of land dedication. Following Sketch Plan recommendations, the subdivider shall prepare the Preliminary Plan and include land dedication or payment of fees in lieu of land dedication as part of the Preliminary Plan submission for approval.
- C. TIME OF PAYMENT. The fees in lieu of land dedication shall be paid prior to recording any lot(s) in the subdivision to which the fees relate.
- D. AMOUNT OF PAYMENT. The amount of the payment shall be the product of:
 1. The number of acres to be dedicated, as required by § 155.705 above;
 2. The assessed value for property tax purposes of the land being subdivided, adjusted to reflect its current fair market value at the time such payment is due to be paid.
- E. DISAGREEMENT AS TO AMOUNT. When the applicant disagrees with the fair market value methodology as explained here, the applicant may choose to obtain a special appraisal by a professional appraiser. (A professional appraiser is an individual who can show by credentials and experience that he or she has knowledge of land appraisals of a similar type). The Plan Review Committee (PRC) shall review the conclusions of the established method and the appraiser, and may receive comments from both the County tax assessor's office and the applicant. The PRC shall make a recommendation on an appropriate value to the Town Board of Commissioners, who shall determine a final amount within thirty (30) days of receiving the PRC's recommendation. If the applicant continues to disagree with the Board of Commissioner's decision, another professional appraiser shall be chosen jointly by the applicant and the Town to provide an additional appraisal. The cost of this supplementary professional land appraiser shall be borne evenly by the applicant and the Town. The decision of this supplementary appraisal shall be final, and shall be certified by the Board of Commissioners within thirty (30) days of receipt of final appraisal report.
- F. USE OF FUNDS. All funds received in lieu of land dedication shall be deposited in a Park and Recreation Improvement Fund to be established by the Town. The deposits shall be used by the Town for improvement of a neighborhood park, playground, or recreation area including the acquisition of property. The deposit must be used for facilities that actually will be available to and benefit the persons in the subdivision for which payment was made and be located in the general vicinity of the subdivision.

155.707. Improvements [formerly § 152.50]

- A. IMPROVEMENT RESPONSIBILITY. In order to facilitate the provision of street right-of-way and necessary improvements, the following sections establish responsibilities for the installation of streets and related improvements for each class of street. Any right-of-way which must be reserved for future acquisition may be dedicated at the option of the developer or property owner for development rights transfer purposes as provided in § 155.701.B of this ordinance.
1. CLASS I (FREEWAY-EXPRESSWAY): The entire right-of-way width shall be reserved for future acquisition.
 2. CLASS II (LIMITED ACCESS ARTERIAL): The entire right-of-way width shall be reserved for future acquisition.
 3. CLASS III-C (COMMERCIAL ARTERIAL):
 - a. RIGHT-OF-WAY. One hundred feet (100') dedicated and the remainder reserved for future acquisition (fifty feet (50') on each side of centerline). Any development along a Class III-C Street which requires specific improvements of the street to meet traffic demands of the particular development must dedicate the right-of-way necessary to accommodate those improvements.
 - b. IMPROVEMENTS. Installed by the public in accordance with a schedule of public street improvements, except where specific improvements are required to meet the traffic demands of the particular development in which case the developer must install the necessary improvements at the time of development. If, however, a public improvement project for the street is programmed and funded, the developer may be relieved of the actual construction, but remains liable for the costs of the improvements for which he or she would otherwise be liable. The developer has the option, after consultation with the Town and Mecklenburg LUESA to construct all or a portion of the street if the developer wants to make use of the street for access to the development.
 4. CLASS III (MAJOR ARTERIAL):
 - a. RIGHT-OF-WAY. The developer is responsible for the dedication of up to one hundred feet (100') (fifty feet (50') each side of the centerline) as provided for in § 155.701.B. Any development along a Class III street which requires specific improvements of the street to meet traffic demands of the particular development must dedicate the right-of-way necessary to accommodate those improvements.
 - b. IMPROVEMENTS. Installed by the public in accordance with a schedule of public street improvements, except on existing streets where specific improvements are required to meet the traffic demands of the particular development in which case the developer must install the necessary improvements at the time of development. If, however, a public improvement project for the street is programmed and funded, the developer may be relieved of the actual construction, but the developer remains liable for the costs of the improvements for which he or she would otherwise be liable. Development sites which are dependent on an unbuilt portion of a Class III street may be required to be phased or deferred until the missing section of roadway is continued through or along the entire site. The developer has the option, after consultation with the Town and Mecklenburg LUESA to construct all or a portion of the street if the developer wants to make use of the street for access to the development. Development along new Class III streets or extensions of Class III streets must utilize reverse frontage with the only access points being public streets or specifically approved street type entrances.
 5. CLASS IV (MINOR ARTERIAL).
 - a. RIGHT-OF-WAY. The developer is responsible for the dedication of up to seventy feet (70') (thirty five feet (35') each side of the centerline) as provided for in § 155.701.A. Additional right-of-way which may be required for improvements to meet specific traffic demands of the development must be dedicated by the developer.
 - b. IMPROVEMENTS. Installed by the public in accordance with a schedule of public street improvements, except on existing streets where specific improvements are required to meet the traffic demands of the particular development in which case the developer must install the necessary improvements at the time of development. If, however, a public improvement

project for the street is programmed and funded, the developer may be relieved of the actual construction, but the developer remains liable for the costs of the improvements for which he or she would otherwise be liable. Development sites which are dependent on an unbuilt portion of a Class IV street may be required to be phased or deferred until the missing section of roadway is continued through or along the entire site. The developer has the option, after consultation with the Town and Mecklenburg LUESAs to construct all or a portion of the street if the developer wants to make use of the street for access to the development. Development along new Class IV streets or extensions of Class IV streets must utilize reverse frontage with the only access points being public streets or specifically approved street type entrances.

6. CLASS V (COLLECTOR).
 - a. RIGHT-OF-WAY. Dedicated by the developer.
 - b. IMPROVEMENTS. Constructed by the developer.
7. CLASS VI AND CLASS VI-L (LOCAL):
 - a. RIGHT-OF-WAY. Dedicated by the developer.
 - b. IMPROVEMENTS. Constructed by the developer. All streets must be constructed to comply with the minimum standards of the Mecklenburg County Land Development Standards Manual and all appropriate applicable Town requirements. Public improvements shall be made in accordance with adopted plans, programs and budgets. It should not be expected that the occurrence of development will result in the immediate installation of public street improvements by the public sector unless those improvements are scheduled and funded in accordance with public policies and programs.
8. ALLEY (PUBLIC AND PRIVATE).
 - a. RIGHT-OF-WAY. Dedicated by the developer if public. Private alleys may be located within an established single parcel paralleling the alley pavement, or may be located within an easement over adjacent parcels.
 - b. IMPROVEMENTS. Constructed by the developer. All alleys must be constructed to comply with the minimum standards of the Mecklenburg County Land Development Standards Manual and all appropriate applicable Town requirements. Public improvements shall be made in accordance with adopted plans, programs and budgets. When an alley is dedicated to the public, it should not be expected that the occurrence of development will result in immediate installation of further public street improvements by the public sector. Private alleys shall meet the construction standards for public alleys for subgrade, base, and surface although standards for curbing, sidewalks, and minimum widths may be altered. (Am. Ord. 2059, passed 12-8-14)

B. REQUIRED WORK ON GROUND.

1. Street and sidewalk infrastructure improvements are not required for any minor residential subdivision containing not more than three (3) lots where required improvements do not exist within five hundred feet (500') of the proposed subdivision. Further subdivision of lots within the minor subdivision shall not occur within twenty-four months.
2. Except as provided in these regulations, improvements shall have been completed and approved in accordance with the standards of these regulations as specified below before any final plat of a subdivision shall be eligible for approval.

C. STREETS.

1. GRADING.
 - a. Proposed street rights-of-way shall be graded to a minimum of eight feet (8') behind the curb.
 - b. Longitudinal grades shall conform with the requirements of § 155.701.C.
 - c. The transverse grade or crown shall be at a slope of three eighths inches (3/8") to one foot (1'). The maximum slope for cut or fill embankment shall be one foot of vertical distance to every one and one half feet (1½') of lateral distance. Fill embankments shall be formed

of suitable material placed in successive layers of not more than six inches (6") in depth for the full width of the cross sections including the width of the slope area. No stumps, trees, brush, rubbish, or other unsuitable materials or substances shall be placed in the embankment. Each successive six-inch layer shall be thoroughly compacted by a sheepsfoot tamping roller, ten (10) ton power roller, pneumatic tired roller, or other methods approved by the Mecklenburg LUESA. Embankments over and around all pipe and culverts shall be of select materials, placed and thoroughly tamped and compacted as directed by the Mecklenburg LUESA. All grading and excavation shall conform to the *Standard Specifications for Roads and Structures* of the North Carolina State Highway Commission.

2. SUBGRADE. For standards and requirements see the Mecklenburg Land Development Standards Manual.
3. ROADWAY BASE.
 - a. All roadways shall be improved with a base course to the required width of the roadway.
 - b. The material and construction methods for base course shall meet the requirements of the latest edition of the NCDOT Standard Specifications.
 - c. The stone base shall be compacted to one hundred percent (100%) of the maximum density obtainable with the Standard Proctor Test by rolling with ring or tamping roller or with a pneumatic tired roller with a minimum weight of ten tons. When completed, the base course shall be smooth, hard, dense, unyielding and well bonded. Certified test reports shall be submitted to Mecklenburg LUESA and the Town Engineer.
 - d. In lieu of a stone base course, a bituminous concrete base course, Type I19.0X may be substituted. Construction shall conform to the requirements of Section 640 of the NCDOT Standard Specifications. (Ord. No. 1292, passed 5-12-03)
 - e. Bituminous concrete base course, type I19.0X, shall be used in widening strips less than five feet (5') in width. (Ord. No. 1292, passed 5-12-03)
4. ROADWAY SURFACE.
 - a. All roadways shall be improved with a surface course to the required width of the roadway.
 - b. Plant mixed asphalt shall conform in all respects to the Section 645 of the NCDOT Standard Specifications (S9.5X and SF9.5X). On Class I, II, III, III-C, IV and V streets the asphalt mix will be determined by truck volumes (ESALS). A prime coat shall be applied when the base has been in place for seven (7) days or more. The compacted surface course shall not be less than one and one half inches (1½ ") thick.
 - c. The Inspector for Mecklenburg LUESA and the Town Public Works Department shall be notified prior to, and approve the use of, recycled asphalt.
 - d. Standard curb and gutter shall be constructed on all arterial (Class I, II, III, III-C and IV), industrial access, office access, or multi-family access streets. Rolled curb and gutter or standard curb and gutter shall be constructed on all minor and secondary residential access streets (Class V, VI, and VI-L). Curb and gutter design shall conform to Town standards.
5. CUL-DE-SAC DESIGN. Any road segment terminating in a permanent deadend shall include turnaround area. One of the options illustrated below may be used, or another alternative as designed by the developer and approved by the County and Town Engineer may be allowed. see also § 155.701.C.4.e.

D. SIDEWALKS, NON-STREETSIDE PUBLIC USE PATHS, BICYCLE FACILITIES AND GREENWAYS-VARIOUS NON-MOTORIZED VEHICULAR USE AREAS.

1. REQUIREMENTS. Sidewalks shall be constructed on both sides of all classes of streets.
2. LOCATION OF SIDEWALKS. The outer edge of the sidewalk shall generally be located at the street right-of-way edge or one foot (1') inside of the right-of-way. However, a variance may be granted for location other than the edge of the right-of-way to avoid excessive grading and the destruction of trees, to allow placement of utility lines or surface water drainage facilities, or other unusual circumstances.

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3. **MATERIAL AND CONSTRUCTION.** Sidewalks shall be constructed of not less than three thousand six hundred (3600) PSI concrete and shall be a minimum of five feet (5') wide and four inches (4") thick and constructed on an adequately graded base, except that where the sidewalk crosses a driveway it shall be six inches (6") thick. Subgrade shall be compacted to ninety five percent (95%) of the maximum density obtainable with the Standard Proctor Test. The surface of the sidewalk shall be steel trowel and light broom finished and cured with an acceptable curing compound. Troweled joints shall be provided at intervals of not less than five feet (5') and expansion joints at intervals of not less than thirty feet (30'). The sidewalk shall have a lateral slope of one quarter inch (1/4") per foot. Test reports shall be submitted to Mecklenburg LUESA and the Town Engineer.
4. **ACCESSIBLE RAMPS.** Accessible ramps are required where sidewalks intersect curbing, at any street intersection, and at Type III driveway connections. Ramps must comply with current ADA standards and Mecklenburg County Land Development Standards Manual.
5. **ELEVATION.** The elevation of the sidewalk shall be flexible to allow for flexibility in tree preservation and reduction of excessive grading. When approaching intersections or driveways the sidewalk shall generally not be less than six inches (6") above the roadway crown, and within fifty feet (50') of any intersection the elevation of the sidewalk shall not be more than eighteen inches (18") above the roadway crown unless approved by the Town Public Works Department.
6. **NON-STREETSIDE PUBLIC USE PATHS.** There may be situations where pedestrian movement can be met or enhanced with the use of paths not adjacent and parallel to a street. This may include mid-block connections, multimodal pathways, shared use alleys, or other design formats. When such pathway is proposed in a development, it shall be designed and built to meet the minimum construction standards for sidewalks as given in § 155.707.D.3. above and shall be a minimum width as needed for the specific type of modal use anticipated. Any non-streetside pathway facility that may allow bicycles and pedestrians shall be a minimum of ten feet (10') wide. The use of any path that intends to mix motorized vehicles with nonmotorized transport shall be favorably recommended by the PRC, and the minimum width, materials, and construction shall be approved by Mecklenburg LUESA and the Town Engineer.
7. **BICYCLE FACILITIES THAT ARE SEPARATE FROM MOTORIZED VEHICULAR USE TRAVEL LANES.** There are a variety of design options for bicycle use that are separated from on-street shared travel lanes. When any such bicycle facility is included in any adopted plan, such as a neighborhood or small area plan, the Carolina Thread Trail, or the Town's Comprehensive Bicycle Plan, then the portion of the facility within the development site shall be required to be built at the time the surrounding or adjacent development is installed. Where no adopted construction standards exist, the PRC shall recommend the minimum width, materials, and construction, which shall be approved by Mecklenburg LUESA and the Town Engineer. A request to delay construction may be considered through the subdivision variance process at § 155.172, if there are no bicycle facilities connection to the development site and a bond or other acceptable financial guarantee is posted to assure full funding for the improvements when it is appropriate to do so.
8. **GREENWAYS.** Town and County adopted greenway plans identify trail pathways through the community separate from roadside sidewalks. These greenways run generally parallel to creeks and may be located within SWIM buffers, PCO buffers, and/or floodplains. When any portion of a greenway is shown on any adopted plan within a development site, it shall be installed at the time the site is developed and shall meet all adopted construction design standards. When no adopted construction standards exist, the PRC shall recommend the minimum width, materials, and construction, which shall be approved by Mecklenburg LUESA and the Town Engineer. A request to delay construction may be considered through the subdivision variance process at § 155.712, if there are no pathways connecting to the development site and a bond or other acceptable financial guarantee is posted to assure full funding for the improvements when it is appropriate to do so.

E. STORM DRAINAGE.

1. All storm drainage design shall conform to the standards and specifications as provided at § 155.704.1, in Chapter 8 Matthews Post Construction Ordinance, the Charlotte Mecklenburg Storm Water Design Manual, Mecklenburg County Land Development Standards Manual, or the more restrictive of any standards that conflict.

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2. All work and materials shall conform to the latest edition of the NCDOT Standard Specifications unless otherwise specified in the Mecklenburg County Land Development Standards Manual or by the Design Manual for the Post Construction Ordinance. (Ord. 1585, passed 8-13-07)

F. WATER SUPPLY SYSTEM.

1. When any part of the subdivision or development lies within one thousand feet (1,000') of the Charlotte-Mecklenburg public water system, it shall be properly connected to the public water system or an alternate community system approved by the Division of Environmental Health of the State Department of Environment and Natural Resources and shall meet all Charlotte Mecklenburg Utility Department standards and be constructed in such a manner as to serve adequately for both domestic use and fire protection on all lots and buildable areas shown on the subdivision plat or development plan. The size of the water mains shall be at least six inches (6").
2. Fire hydrants shall be installed in accordance with Charlotte-Mecklenburg Utility Department standards.

G. SANITARY SEWERS.

1. When any part of the subdivision or development site lies within one thousand feet (1,000') of the Charlotte-Mecklenburg sanitary sewerage system, sanitary sewer shall be installed in a manner as to serve adequately all lots and building sites with connection to the public system.
2. Sewer connections shall comply with the regulations of the State Department of Environment and Natural Resources (DENR) and shall be constructed under the supervision and approval of the Department of Environment and Natural Resources. All sewer collection lines shall be at least eight inches (8") in diameter.
3. Where lots are not to be connected with a sewerage system, they must be at least twenty thousand (20,000) square feet in area, contain an area for the installation of approved septic tank and disposal fields, and must be approved in writing by the Mecklenburg County Department of Environmental Health.

- H. STREETScape TREES.** Streetscape trees are a protection against excessive heat and glare and enhance the attractiveness and value of property. Streetscape trees can also serve as a traffic calming measure, encouraging drivers to reduce speeding. The provisions of § 155.606.3 shall be followed. Where the Town has adopted specific tree species and spacing/location requirements for existing roads, those plans shall be followed as new subdivisions and development projects are designed. Where new streets are designed that are not part of an approved plan, then the species, locations, and spacing of trees shall follow the standards listed in § 155.606.3. (Ord. No. 1618, passed 4-14-08)

- I. TREES ON BUILDING LOTS.** Existing tree cover shall be taken into account as the layout of new streets and lots is designed and build placement is determined. Tree canopy preservation and protection standards listed at § 155.606.7 shall be followed, utilizing preservation of existing trees to the greatest extent feasible. Post Construction Ordinance provisions for Undisturbed Open Space may also be met by preserving existing trees and planting new trees. Existing trees on the tract identified for designation as Undisturbed Open Space shall be clearly identified on the site and on all plans. (Ord. No. 1618, passed 4-14-08)

- J. STREET LIGHTS.** Street lighting shall be installed in each new subdivision and development site unless exempted by the Town Public Works Director. Street lights shall meet the standards given at § 155.609. This shall be the responsibility of the developer with placement coordinated with and approved by the Town Public Works Director as part of preliminary plan review.

155.708. Streetscape Tree Standards [formerly § 152.51]

Streetscape trees shall generally be planted or preserved along the edges of streets, except where an adopted streetscape plan or alternative streetscape provisions are in place. Specific standards are provided at § 155.606.3.

155.709. Landscaping Standards [formerly § 152.52]

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- A. **PRESERVATION STANDARDS.** Existing trees specified on an approved landscape plan to remain on site during any land disturbing activity are protected trees. Special criteria apply to protected trees either as individuals or in a stand. The standards provided in § 155.606.11 of this Title shall be followed.
- B. **PLANTING STANDARDS.** Planting standards apply uniform and commonly acceptable guidelines to the installation of new trees into the landscape. Standards help ensure tree survivability and long-term health. The standards provided at § 155.606.12 of this Title shall be followed.
- C. **MAINTENANCE STANDARDS.** The property owner and/or lessee shall maintain all tree and landscape areas in accordance with the approved landscape plan. Maintenance shall include watering, weeding, mowing, fertilizing, treating, mulching, pruning, removal and replacement of dead or diseased trees. Maintenance shall be performed on a regular basis in order to maintain plant vigor and stability, and to present a neat and well-kept appearance at all times. The standards provided at § 155.606.13 of this Title shall be followed.
- D. **MITIGATION FOR LOSS OF STREETSCAPE TREES.** The loss of a protected or approved new streetscape tree normally requires replacement by the subdivider or developer during the three (3) year Landscape Establishment Guarantee period. Replacement streetscape trees shall not be planted until approved by the Town. The standards provided at § 155.606.13.C. of this Title shall be followed.
 - 1. Failure by the subdivider to replace trees as indicated here shall be cause for the Town to complete the replacement action using the subdivider’s Landscape Establishment Guarantee.
 - 2. Beyond the three-year period, all streetscape trees within the public right-of-way shall be the responsibility of the Town for ongoing maintenance, removal, and replacement. All streetscape trees on private property, after the three (3) year period, shall be the responsibility of the property owner for maintenance, as provided at § 155.606.13.D. The Town vision is to encourage mature trees along streets, so will generally not allow removal or unnecessary pruning of streetscape trees. No streetscape tree on private property may be substantially pruned or limbed up, removed or replaced by the property owner without Town approval. (Ord. No. 1618, passed 4-14-08)

155.710. Inspections [formerly § 152.60]

- A. Mecklenburg County LUESA and the Town Engineer must be notified two (2) working days in advance of the work so that all necessary inspections of the work may be made.
- B. County and Town inspectors must be allowed access to all parts of the work, and must be furnished with every reasonable facility to ascertain whether or not the work as performed is in accordance with the specifications.
- C. No material may be placed nor any work performed except in the presence of the inspector without special permission of the appropriate agency. Such inspection, however, does not relieve the contractor from any obligation to perform all of the work strictly in accordance with the specifications.
- D. In case of any disputes arising as to the material furnished or the manner of performing the work, the inspector shall have the authority to reject the materials or reject completed work. The contractor shall remove any work or material condemned as unsatisfactory by the authorized inspector and shall rebuild and replace same to the standard required by the specifications, all at his own expense.
- E. In the event that work is suspended for more than forty eight (48) hours, Mecklenburg County LUESA and the Town Engineer or other designated authority must be notified and any work re-inspected.
- F. When subdivisions or developments are being developed in phases or for development of adjoining tracts, and upon which lots structures are being and/or are to be constructed, a surety bond, letter of credit, or other form of guarantee that provides equivalent security to a surety bond or letter of credit filed with the Mecklenburg County LUESA in the amount determined by Mecklenburg County LUESA and the Town Engineer shall be required, or the bond by §§ 155.405.8.C. and 155.405.10. shall be retained, in order to insure that the streets shall be in acceptable completed condition at the time active development activity is concluded. (Am. Ord. 2141, passed 4-11-16)
 - 1. Mecklenburg County LUESA will release the posted securities only after LUESA and the Town Public Works Director have determined that all work guaranteed by the securities filed has been completed within the subject phase in compliance with the standards set forth in these regulations, and that barricades approved by the Mecklenburg County LUESA in accordance with § 155.703.B

have been installed at the termination point of any street leading into future phases of the development. (Am. Ord. 2141, passed 4-11-16)

2. All subsequent development of future phases or development of adjoining tracts, whether or not those phases are shown on a preliminary plan, shall not be allowed, nor shall the removal of barricades required by § 155.703.B be allowed, and no access to adjoining property for development purposes shall be allowed via previously completed sections of a subdivision or development site until the developer shall first have filed a surety bond, letter of credit or other form of security as described in § 155.710.F with Mecklenburg LUESA in an amount determined by Mecklenburg LUESA. (Am. Ord. 2141, passed 4-11-16)

- G. The performance bond required by this section shall not be released until the phase under development has met the criteria for acceptance of streets as outlined in § 155.405.10, and it has been determined by Mecklenburg LUESA and the Town Public Works Director that streets are in an acceptable completed condition. (Ord. No. 1010; passed 11-9-98; Am. Ord. 2141, passed 4-11-16)

155.711. Acceptance of Dedicated Land and Public Improvements [formerly § 152.08, 09]

- A. ACCEPTANCE OF STREETS WITHIN A SUBDIVISION. The approval of a preliminary or final plat by the Board of Commissioners shall not constitute the acceptance by the Town of any street, public utility line, or other public facility or ground shown upon that plat. The Town shall not maintain, lay out, open, improve, grade, pave, or light any street or authorize the laying of water mains, sewers, connections, or other utilities in any street unless that street has been accepted as a public street by a resolution adopted by the Board of Commissioners in a regular or duly called special session.
- B. ACCEPTANCE PROCEDURE. The Board of Commissioners shall not adopt any resolution accepting a new street or any public improvements unless:
 1. The Board has received a written request from the subdivider, developer, or from a majority of the property owners along a street that the street be accepted as a public street for maintenance by the Town.
 2. The Board of Commissioners receives a report from the Public Works Director that:
 - a. Either final approval of the street or streets was granted by Mecklenburg LUESA and the Town Public Works Director at least one (1) year prior to the time of the request for maintenance or that the street or streets existed as a public street prior to the effective date of these regulations and as such have functioned as a street or streets for a least one year; provided that this one (1) year testing period may be waived by the Board of Commissioners in cases where the development density set forth in division B.2.b of this Section has been met and the Board of Commissioners finds that the street or streets requested for maintenance would suffer damage from further delay of application of the final surface course required under § 155.405.10 of this Title;
 - b. At least eighty percent (80%) of the lots fronting on the street or streets requested for maintenance contain an occupied dwelling unit, occupied multi-family, commercial or mixed use building, or occupied permanent principal use which does not involve a building; and (Am. Ord. 2141, passed 4-11-16)
 - c. Any defects which have appeared in new streets during the one (1) year waiting period, or in the case of existing streets, any defects identified by the Public Works Director at the time the request for maintenance is made have been repaired.
 3. The Board of Commissioners determines that the street corresponds in its location and aligns with a street shown on an approved preliminary subdivision plat or development plan or that the street was established as a public street prior to the adoption of these regulations and therefore not subject to these regulations.
 4. The security bond as required by Mecklenburg LUESA according to § 155.405.10 of this Title shall not be released prior to acceptance of the street by the Board of Commissioners or by the North Carolina Department of Transportation (NCDOT). [formerly § 152.09]

155.712. Public Improvement Variances [formerly § 152.06]

The Planning Board may review and make recommendations on requests for public improvement variances from the regulations of §§ 155.701, 155.702, 155.704, 155.707, 155.708, and 155.709. These recommendations shall be forwarded to the Town Board of Commissioners for final decision. Request for public improvement variances shall be governed by the following requirements and procedures. (Am. Ord. 2038, passed 5-11-15)

- A. GENERAL. Where the Planning Board finds that unnecessary hardships or practical difficulties may result from strict compliance with these regulations and/or that the purposes of these regulations may be served to a greater extent by an alternative proposal, it may recommend, and the Board of Commissioners may authorize, variances to these regulations, provided that the public improvement variances shall not have the effect of nullifying the intent and purpose of these regulations. Approval of a public improvement variance shall be based on evidence in each specific case that:
 - 1. The relationship of the property to natural topography or to the nature of adjoining properties warrants relief from the standard in question; or
 - 2. The difficulty or hardship from the application of these regulations would prevent the owner from making reasonable use of the property; or
 - 3. The granting of a variance would permit the preservation of an historic structure or site; or
 - 4. The granting of a variance would permit the preservation of a mature grove of hardwood trees or a significant specimen tree.
- B. PROCEDURES. Wherever practicable, a request for a public improvement variance should be submitted in writing by the subdivider or developer at the time the sketch plan or development site plan is submitted for review to the Planning Board or Plan Review Committee. The request shall state fully the grounds for the application and all of the facts relied upon by the applicant.