

8 Subdivision Design Standards

8.1 General

The Subdivision Design Standards contained herein are intended to provide property owners, developers, builders, and city Staff with technical guidance to provide for efficient and well planned development, to support development that is sensitive to the context in which it is built and provides the necessary infrastructure to support the project. The Land Development Permit process contained herein are intended to provide a framework under which land development can occur in a manner that is efficient, that encourages the creation of a high quality built environment, that is flexible and is predictable. The regulations contained herein shall provide policy guidance in the development and maintenance of a technical manual that shall illustrate the application of the standards contained herein.

8.1.1 Applicability

Unless otherwise expressly stated, the regulations of this chapter shall apply to all divisions of a tract or parcel of land into two or more lots, building sites or other division when any one or more of those divisions is created for the purpose of sale or building development, whether immediate or future, including all divisions of land involving the dedication of a new street or a change in existing streets.

No subdivision shall be made, platted, or recorded for any purpose, nor shall parcels resulting from such subdivision be sold or offered for sale, unless such subdivision complies with the regulations of this chapter and all other applicable regulations.

No plat of any subdivision within such jurisdiction shall be filed or recorded by the Register of Deeds until it shall have been submitted to and approved by the City of Hickory and such approval has been entered in writing on the plat.

Where indicated these requirements shall also apply to development projects not requiring subdivision.

8.1.2 Exemptions (TA 18-01) (TA 21-01)

The following shall not be subject to the regulations of this chapter:

- (1) The combination or recombination of portions of previously subdivided and recorded lots where the total number of lots is not increased and the resultant lots are equal to or exceed the standards of this Land Development Code;
- (2) The division of land into parcels greater than 10 acres where no street right-of-way dedication is involved;
- (3) The public acquisition, by purchase, of strips of land for the widening or opening of streets or for public transportation corridors; or
- (4) The division of a tract in single ownership whose entire area is no greater than 2 acres into not more than 3 lots, where no street right-of-way dedication is involved and where the resultant lots are equal to or exceed the standards of this Land Development Code;
- (5) The division of a tract into parcels in accordance with the terms of a probated will or in accordance with intestate succession under Chapter 29 of the North Carolina General Statutes.

In interpreting paragraph (1) above, the term “previously subdivided” shall mean platted and approved if such lots were created in accordance with subdivision regulations in effect at the time of their creation, or created as a result of a recorded land division prior to existence of applicable subdivision regulations.

In interpreting paragraphs (2) and (4) above, the phrase “where no street right-of-way dedication is involved” shall be construed as meaning that any such parcel shall be served by a private driveway

or by an existing street that has been accepted for dedication and maintenance by the City of Hickory or the North Carolina Department of Transportation.

8.1.3 Procedures

Subdivisions and other land divisions and combinations shall be subject to the review and approval procedures of Chapter 2 of this Land Development Code.

8.1.4 Purposes

In addition to furthering the purposes of Sec. 1.7, regulations of this chapter and the procedures of Chapter 2 are intended to:

- Encourage economically sound and stable development in the City and the Hickory Regional Planning Area;
- assure the timely provision of required streets, utilities and other facilities and services to new land developments;
- Ensure adequate provision of safe and convenient pedestrian access to the site and all lots and that conflicts with traffic flow are minimized to the greatest extent possible;
- Ensure adequate provision of safe and convenient traffic access to the site and all lots and traffic flow as determined by the application of generally accepted engineering practices and as approved by the City Engineer;
- Ensure provision of needed public open spaces and building sites in new land developments through the dedication or reservation of land for recreational, educational and other public purposes or the provision of funds in lieu of dedication;
- Ensure, in general, the wise and timely development of new areas in harmony with the Land Development Plan and other official plans of the City of Hickory;
- Ensure accurate public records of land ownership, to facilitate land ownership transfer, the effective conduct of public and private business and the protection of private property rights;
- Ensure coordination of streets within subdivisions with other existing or planned streets or official map streets;
- Ensure appropriate shapes and sizes of blocks and lots;
- Provide land and easements for utilities and other public facilities and services; and
- Distribute population and traffic to create conditions favorable to health, safety, convenience, prosperity and general welfare.

8.1.5 Building Permits/Certificates of Occupancy Prior to Completion of Improvements

Building permits may be issued for construction of buildings in subdivisions prior to completion of required subdivision improvements.

- (1) Up to 3 sales models may be constructed per subdivision prior to final plat approval. Prior to issuance of a certificate of occupancy all applicable property development regulations shall be complied with. One of these sales models may be used for a temporary real estate sales office if sanitary facilities are provided.

Certificates of Occupancy may be issued and buildings occupied only when all of the following improvements are available and as further provided below:

- (1) Streets shall be passable as determined by the City Engineer for private, service and emergency vehicles under normal weather conditions, provided that distance along such streets shall not exceed 1,200 feet by normal routes;
- (2) Driveways shall be passable under normal weather conditions;
- (3) Drainage shall be installed and operative, thus assuring that under normal weather conditions, there will be no flooding of the building site or access ways to the site;
- (4) Erosion protection as provided herein shall be installed;

- (5) Domestic water supply, fire protection and sanitary sewerage shall be installed and operative. Where the City provides water and sewer service, the system must be accepted for operation by the City.

No additional building permits or certificates of occupancy shall be issued unless all remaining required improvements are covered by a performance guarantee in accordance with this chapter, and the applicant accepts tort liability pending completion of all required improvements.

8.2 Adequate Public Facilities

8.2.1 A proposed subdivision shall not exceed the city's current ability to provide adequate public facilities, including, streets, water, sewer, stormwater management, and fire services. Where it is determined by the Planning Director that such adequate public facilities are not in place, subdivisions may be required to be constructed and platted in phases, provided; however, the Planning Director may not approve a phasing plan when in his or her opinion such phasing will not provide for adequate public facilities to support any such phase or phases independent of the overall development plan. In approving phasing plans, the Planning Director may require that additional streets, water and sewer facilities or other required public facilities be constructed as part of the phase or phases in order to ensure that sufficient public facilities will be in place to support such a phase or phases independent of any future development.

8.2.2 For purposes of this section, a proposed subdivision meeting the following criteria shall be deemed to have inadequate public facilities and shall be subject to remedial measures set forth in subsection 8.2.1:

Streets. Where it is estimated traffic generated by the subdivision will cause a roadway serving the subdivision to operate at a level of service D (LOS D) at any time of the day or night or where the estimated project traffic represents at least 10% of the traffic volume on the affected street. These requirements shall not apply, where the projected traffic volume from the project represents less than 1% of the capacity of the adjoining roadway or up to 200 trips per day whichever is greater.

Water. Where the project water needs would cause water pressure to fall below acceptable levels or where the configuration of the water distribution system would create unacceptable dead end conditions.

Sewer. Where the sewer generation from the proposed development would exceed the capacity of the existing collection system servicing the proposed development.

Stormwater. Where runoff from the project creates downstream flooding.

8.3 Manual of Practice

The City Engineer shall maintain a Manual of Practice. This manual shall be a technical guide providing plans and specifications for typical subdivision infrastructure improvements including but not limited to: streets, driveways, street lighting, sidewalks, stormwater management and utility service. All development shall comply with the standards contained therein or with City Engineer approved alternatives prior to issuance of certificate of completion, certificate of occupancy or release of performance. The City Engineer may amend the Manual of Practice as required to maintain it in conformance with industry best practices.

8.4 Lots

8.4.1 General (TA 18-01)

Lot size, width, depth, shape and orientation shall be in accordance with Chapter 7 of this Land Development Code.

8.4.2 Lot Dimensions

Residential. Residential lot dimensions shall comply with the underlying zoning district regulations, subject to increases as required by the appropriate county health department for residential lots not served by public water supply and public sanitary sewerage.

Nonresidential. Nonresidential lot dimensions shall comply with the underlying zoning district regulations. Depth and width of lots subdivided for nonresidential purposes shall be adequate for off-street parking and service facilities required by the type of use and development anticipated. Where such lots are to be used for purposes requiring water for domestic use and sanitary sewage disposal, and where public water and/or sanitary sewage disposal is not provided, they shall also conform to the minimum area requirements set by the appropriate county health department.

8.4.3 Access to Streets

Each lot created in a subdivision shall have street frontage of at least 25 feet in width on a street that is either an existing public or private street or one that, upon completion of installation, can be accepted by the State of North Carolina or the City for continual maintenance. Limited access highways that provide no direct access to abutting properties shall not be considered streets for the purpose of this provision.

No building permit shall be issued for and no structure shall be erected on any lot in a subdivision unless the street giving access to the lot upon which the structure is proposed to be placed:

- (1) has been accepted, or opened as, or otherwise has received the legal status of, a public street prior to that time; or
- (2) corresponds in its locations and lines with a street shown on a subdivision plat approved by the City of Hickory or on an official map adopted by the Planning Commission and the City Council, or with a street located and accepted by the City Council.

Any structure erected in violation of this section shall be deemed an unlawful structure, and the building official or other official designated by the City Council may bring appropriate action to enjoin such erection or cause the structure to be vacated or removed.

8.4.4 Double-Frontage and Reverse-Frontage Lots

Double-frontage and reverse-frontage lots shall be prohibited except when necessary to provide separation from major roadways, railroad rights-of-way or other similar features or to overcome other disadvantages of orientation or topography or to provide protection for adjacent uses. A non-access easement of at least 10 feet in width shall be provided along the line of lots abutting such features, across which there shall be no right of access. The easement shall be maintained by the subdivider and all successors in title.

8.4.5 Side Lot Lines

Side lot lines shall be substantially perpendicular or radial to street lines unless a satisfactory lot pattern, easement pattern and area for access has otherwise been approved by the Planning Director.

8.4.6 Lot Lines and Utility Easements

Lot lines shall be so arranged with respect to utility easements as to permit efficient installation of utilities without unnecessary irregularities in alignment.

8.4.7 Suitable Building Sites (TA 18-01)

No subdivision shall be approved by the Planning Director unless he or she determines that each lot or parcel intended for building contains a building site:

- (1) within the inner lines of required setbacks;
- (2) determined by the City Engineer to be free from inundation and safely accessible from an approved street during rainfall of ten-year return frequency;

- (3) with a minimum area equal to 1,200 square feet;
- (4) suitable for potential building use as permitted by the underlying zoning district and other applicable regulations of this Land Development Code and controlled under the provisions of ordinances and regulations adopted in conformance with the National Flood Insurance Program, and without danger from subsidence, heaving, erosion or slippage of soils, from hazards or nuisances incidental to airports as related to potential uses of such lots, or from other risks to health, safety or the general welfare. For any proposed lot, the applicant may submit and the Planning Director may require a sealed statement from a North Carolina licensed engineer or other appropriate licensed expert that gives an opinion as to the risk from inundation or other flooding; subsidence; heaving; erosion or soil slippage; or any other risks to health, safety or the general welfare. In the absence of a sealed expert statement to the contrary, this opinion shall be conclusive.

As guides for such determinations, the Planning Director shall give due consideration to limitations, standards and requirements established in ordinances and regulations adopted in conformance with the National Flood Insurance Program, provision of water and sewerage, proposed drainage and potential types of occupancy and similar considerations.

Where a lot or parcel is not intended for building, the building site requirements of this subsection shall not apply, but such lot or parcel shall be identified on the plat with the following notation: "Not a building site. No building permit shall be issued nor shall any building be erected on this lot." Permanent maintenance shall be provided for by the property owner, property owners association or other appropriate entity.

8.5 Blocks

8.5.1 General Design Criteria

Lengths, widths and shapes of blocks shall be determined with due regard to:

- provisions of adequate building sites suitable to the special needs of the type of use contemplated (residential, commercial, industrial or other);
- other requirements of this Land Development Code;
- need for convenient access, flow, traffic control and safety; and
- limitations and opportunities of topography and drainage features.

8.5.2 Block Lengths

Block lengths shall not exceed 1,500 feet or be less than 300 feet.

8.5.3 Pedestrian Crosswalks

Where orientation or length of blocks or other considerations justify such action, crosswalks may be provided to improve pedestrian circulation and provide access to schools, playgrounds, shopping centers, transportation and other facilities. Where crosswalks are provided, they shall be located, dimensioned, fenced, screened, lighted or otherwise improved in such a manner as to provide security, tranquility and privacy for occupants of adjoining property, and safety for users of the walks.

8.6 Streets (TA 22-01)

8.6.1 Continuation or Projection of Arterial and Collector Streets

Within or adjacent to subdivisions, arterial and collector streets shall provide for continuation of arterial or collector traffic flow from surrounding areas, except where topographic or other conditions make such continuance or projection unnecessary, impractical or undesirable.

8.6.2 Right-of-Way and Pavement Widths

All streets shall be constructed in accordance with the City's Engineering Manual of Practice.

8.6.3 Right-of-Way Reservation (TA 18-01)

When developments are to take place in areas where future roadways or roadway improvements are proposed by the Thoroughfare Plan, the design of the development should give consideration of the future improvements, and make efforts to design the development in a manner that accommodates for the future roadways.

8.6.4 Private Streets

Private streets shall be allowed providing sole or primary access to one or more lots only if all of the following requirements are met:

Private streets shall meet all minimum design, dimensional and construction standards as provided in the Manual of Practice for streets.

Design, location and improvement shall provide for safe intersection with public streets, safe passage of public service and emergency vehicles and protection of adjoining property.

Agreements satisfactory to the City Manager, as agent for the City Council, are made for continuing common use of the private street by occupants of the property served, drainage, access easements for public service and emergency vehicles, and continuing private maintenance in condition for safe passage of public service and emergency vehicles. There shall be a recorded agreement, contained in the deed restrictions for the development creating an entity with legal authority to collect funds and cause work to be completed to maintain the private roadway. This agreement shall also specify that unless the street is privately maintained in condition for safe passage of such vehicles, the City may provide such maintenance, with charges therefore becoming a lien on the properties served, dividing among them proportionate to their assessed tax valuation.

8.6.5 Cul-de-Sacs (TA 18-01)

Maximum Length. Except where otherwise approved by the Planning Director due to unusual land configuration (e.g., a narrow peninsula), cul-de-sac streets shall be subject to the following maximum length limits:

- (1) the maximum length is 1,500 feet to the beginning of the turning point; and
- (2) the Planning Director is authorized to approve access roads without turnarounds for dead end streets less than 150 feet in length or in such cases where a portion of a Transportation Plan Roadway is constructed to service the property.

Design. All such cul-de-sac streets shall be provided at the closed end with a turnaround of minimum dimensions as indicated with the City's Engineering Manual of Practice.

8.6.6 Roundabouts

All roundabouts and traffic circles shall be considered on an individual basis taking into consideration the design vehicle, speed, specific site conditions and limitations imposed by the individual location.

8.6.7 Access to Adjacent Properties

Where compliance with the City's approved transportation plan or to provide connection to existing or future neighborhoods, proposed streets may be extended to the boundary of such property with a temporary turnaround provided.

8.6.8 Grading and Surfacing

Streets and alleys shall be graded and surfaced as provided within the City's Engineering Manual of Practice.

8.6.9 Curbs and Gutters

Curbs and gutters, where installed, shall be constructed in accordance with the City’s Engineering Manual of Practice.

8.6.10 Street Signs

Street name signs shall be installed according to specifications set forth in the City’s Engineering Manual of Practice. The City Engineer may permit installation of nonstandard poles at the expense of the subdivider, who shall make arrangements, satisfactory to the City Engineer, for payment of any operating expenses above those for standard installations.

8.6.11 Street Names

The City or County shall assign the name of any street or road laid out within the territory over which it has jurisdiction. It shall be unlawful for any person in laying out any new street or road to name such street or road on any plat, by any marking or in any deed or instrument without first getting the approval of the Planning Director.

8.6.12 Streetlights

Streetlights may be provided and installed at such locations and in such manner and design as set forth in the City’s Engineering Manual of Practice. Non-standard streets lights may be considered and approved by the City Engineer so long as:

- the proposed fixtures meet illumination standards for the intended purpose,
- any additional expense associated with their installation is paid for by the developer and;
- their continuing maintenance is provided for.

8.6.13 Ground Cover

All land within the right-of-way that is not used for structures, vehicular or pedestrian traffic or for other approved landscaping shall be provided with grass or other ground cover of a nature approved by the City Engineer. Such ground cover shall be installed as set forth in the City’s Engineering Manual of Practice. Ground cover may include appropriate plant materials preserved in place.

8.7 Sidewalk and Pedestrian Access *(TA 18-01) (TA 23-02)*

8.7.1 Construction Specifications

All development projects, regardless of if they are located within a subdivision or not, shall be required to install sidewalks along all adjacent streets. If development or redevelopment occurs in an area where the current sidewalk network is more than 500 feet away none shall be required.

Developments located along a street where imminent roadway or infrastructure improvements would cause required sidewalks to be removed and such future plans include the installation of sidewalks, the development shall not be required to install sidewalks.

Within subdivisions, sidewalks shall be installed along at least one side of all proposed streets (public and private)

Sidewalks shall be constructed according to the specifications of the City’s Engineering Manual of Practice. Sidewalks shall be installed before a certificate of occupancy is issued for the adjoining lot.

8.8 Conservation Subdivisions

8.8.1 Purpose and Description

Conservation Subdivisions (CS) are a green development strategy that can support sustainable development in Hickory through the preservation of open space and natural areas. By providing design flexibility, CS strategically concentrates development on a subject site in order to protect

sensitive and valuable open space, habitat, and other environmental resources. Successful implementation of CS strategies should result in the support and creation of contiguous open space throughout the city.

8.8.2 Minimum Design Standards (TA 14-01) (TA 21-01) (TA 22-01)

Conservation Subdivisions shall comply with the following requirements:

- (1) The minimum land area shall be equal to or greater than 10 acres in R-1 and R-2 districts and 5 acres in all other districts where single-family and two-family residential are permissible.
- (2) No lot or parcel, existing or created, as part of the conservation subdivision shall have access or be granted any form of access, with the exception of pedestrian walkways, to or from any street or roadway, existing or future, that was not constructed as part of the subdivision. All lots shall be accessed, vehicular or otherwise, only by new streets or roadways, public or private, constructed to the minimum standards of the City. Private alleys may also be utilized, as long as such are constructed in a manner satisfactory to the city.
- (3) All conservation, common open space, areas shall be contiguous to the maximum extent practical, or consist of several large areas. In no instance shall open space be part of an individual lot, owned by a single person, family, etc., who is solely responsible for its maintenance.
- (4) Protects the minimum required land area, including developable and undevelopable land, as permanent open space for natural habitat, active or passive recreation, and/or conservation or preservation where no more than 50% of the designated open space shall be protected by other regulations or otherwise be unsuitable for development (i.e. floodplains, wetlands, steep slopes, shorelines, etc).
- (5) Protects all floodplains, wetlands and steep slopes (steep slopes are those equal to or greater than 25%).
- (6) Maintains upland buffers of at least 50' along all wetlands, lakes and perennial streams.
- (7) Protects rural roadside character and public safety by limiting the number of driveways.
- (8) Identifies a conservation theme. Conservation themes may include, but are not limited to: Maintenance of mature woodlands, existing fields, pastures, meadows, forest preservation, water quality preservation, or viewshed preservation. The conservation theme should guide the location and use of the designated open space.

Dimensional Standards (TA 18-01) (TA 22-01)

Zoning District	Min. Lot Size[1] (sq. ft.)	Min. Lot Width (ft)	Min. Conservation Area	Setbacks[2] (ft)		
				Front	Side	Rear
R-1	6,000	50	50%	25	5	20
R-2	4,800	40	30%	20	5	10
R-3	4,000	30	30%	20	5	10
R-4	3,200	20	30%	20	5	10
Non-Residential Districts	2,400	20	30%	20	5	10

- (1) No land intended for dwellings units or other buildings, or their accompanying lots may be preserved as conservation area.
- (2) All setbacks for lots on the perimeter of the development shall be the same as those of the underlying zoning district. Side corner setbacks shall be 15 feet. Setbacks as noted herein shall apply to single family (attached and detached) and two-family dwellings. The setbacks included herein shall be treated as building separations between multiple family buildings and setbacks from property lines for 1, 2 and 3 story multiple family dwellings.

Buildings greater than three stories in height shall provide an additional 5-foot of setback or separation per story per structure. Where these regulations are inconsistent with the North Carolina Building Code, the more stringent shall apply.

Conservation Subdivisions shall consider the following design principles and shall provide a written report to the Planning Director demonstrating how each of these requirements is going to be met to the greatest extent possible on the subject property:

- (1) Developed lots are located in or adjacent to woodlands and visually buffered from surrounding roadways
- (2) Designs around existing hedgerows and tree lines between fields and minimizes impacts on large mature woodlands
- (3) Leaves scenic views and vistas unblocked
- (4) Interior lots surrounded by other structures should be avoided; each structure should have a view of the conservation area.

Provides open space that is reasonably contiguous, avoids linear configuration where possible (except along streams and other linear features) and is located to take advantage of the potential for the creation of additional open space parcels on adjoining parcels.

- (1) Provides for the permanent maintenance and protection of dedicated open space.
- (2) Preserves and maintains mature woodlands, existing fields, pastures, meadows and creates buffers to protect residential development from agricultural land uses.

All streets, whether public or private, utility lines, and other necessary infrastructure improvements shall be constructed in accordance with the City's Manual of Practice.

8.8.3 Planning Director Approval Required

The Planning Director shall find that the above referenced requirements have been met and the design principles have been complied with to the maximum extent possible before approving a preliminary plat for a Conservation Subdivision.

8.9 Domestic Water Supply and Sanitary Sewerage

8.9.1 Public Water Supply Required

Each lot intended for a use requiring domestic water supply shall be served by a public system approved by the State of North Carolina or, where such a system is not available to the lot, by a community water system or individual well. This requirement shall not be deemed to prohibit installation of private water supply systems where the water is not used for human consumption. All required domestic water supply installations shall be in accordance with the Manual of Practice and the approved plans and specifications for the subdivision or development project.

8.9.2 Public Sanitary Sewerage Required; Exceptions

Each lot intended for a use requiring sanitary sewerage shall be served by a public system approved by the State of North Carolina, except where it is documented and such documentation is accepted by the Planning Director that the provision of sewer service is not feasible.

Where the Planning Director has accepted that sewer service is not feasible by a public system, it shall require approval of the lot by the County Department of Health. Such approval shall be in accordance with State law, including but not limited to G.S. Chapter 130A, Article. 11, "Wastewater Systems

All required sanitary sewerage shall be installed in accordance with the Manual of Practice and the approved plans and specifications for the subdivision or development project.

8.10 Erosion Control

8.10.1 Sedimentation Control

In general, during the preparation of the subdivision or any other development project and installation of improvements, appropriate measures shall be taken to prevent erosion and damaging siltation on the property and on adjoining land or water areas in accordance with the North Carolina Sedimentation Pollution Control Act of 1973 (G.S. Chapter 113A, Article 4) and all applicable administrative regulations design manuals. Erosion control plans shall be approved by the NC Department of Environment and Natural Resources or the appropriate county agency.

8.10.2 Topsoil Conservation

In any grading or filling operations, desirable topsoil shall be conserved and redistributed as such, particularly to cover exposed subsoils.

8.10.3 Erosion Control Permit

The City Engineer shall not issue a Land Development Permit until he or she has received a copy of the Certificate of Compliance with the provisions of Chapter 113A, Article 4 of the North Carolina General Statutes, Sedimentation Pollution Control Act of 1973, as amended, issued by the appropriate office of the NC Department of Environmental and Natural Resources or appropriate agency.

8.11 Fire Protection

The following standards shall apply to all property within the City of Hickory's Corporate Limits and Extra Territorial Jurisdiction. All property shall be afforded fire protection by fire apparatus access roads. All property served by a public water supply system shall be afforded fire protection by means of fire hydrants and their appurtenances constructed and installed in accordance to the requirements and specifications of the Manual of Practice, Chapter 11 of the Hickory City Code, and the current version of the Public Utilities Distribution Construction Specifications.

8.11.1 Financial Responsibility

Unless otherwise approved by the Public Utilities Department, the developer or property owner shall bear the expense of providing Fire Department access roads, water mains and fire hydrants. This shall include, but not be limited to the following:

- Extension of publicly owned water mains in order to provide service for the new development.
- Additional fire hydrants and assemblies to existing water lines.
- Upgrading existing public and private water mains to provide the necessary fire flows.

8.11.2 Timing of Required Improvements

When Fire Department access roads or a water supply for fire protection is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when approved alternative methods of protection are provided.

8.11.3 Fire Department Access Roads:

All lots shall be afforded fire protection by Fire Department access roads and if served by public water systems shall be in accordance with the requirements and specifications of the Manual of Practice, Chapter 11 of the Hickory City Code and the approved plans and specifications for the subdivision or development project. Fire Department access roads shall comply with the following:

- **Dimensions.** Fire Department access roads shall have an unobstructed width of not less than twenty (20) feet except where passing through an approved security gate or by a guardhouse. The unobstructed vertical clearance shall not be less than 13 feet 6 inches.

- **Surface.** Fire Department access roads shall be designed and maintained to support the imposed loads of fire apparatus weighing at least 75,000 pounds and shall be surfaced so as to provide all-weather driving capabilities.
- **Turning Radius.** The required turning radius of a Fire Department access road shall be approved by the Engineering Department based on the maximum turning radius of responding apparatus.
- **Security Gates.** Gates securing the Fire Department access road shall comply with the following provisions:
 - (1) The portion of the roadway that allows passage through the security gate shall provide a minimum of fifteen (15) feet of clear width.
 - (2) Gates shall be of the swinging or sliding type.
 - (3) Gates shall be of materials that allow manual operation by one person.
 - (4) Electric gates shall be equipped with a means of opening the gate by emergency response personnel for emergency access.
 - (5) Manual opening gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by means of forcible entry tools.
- **Guardhouse.** Guardhouses by which a Fire Department access road shall pass must comply with the following provisions:
 - (1) Clear width (roadway) of twenty (20) feet for two-way traffic.
 - (2) Clear width (roadway) of twelve (12) feet for one-way traffic.
 - (3) Clear width of fifteen (15) feet for other obstruction such as columns and pillars.
- **Dead Ends.** When required, Fire Department access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus.

8.11.4 Residential Planned Developments and Multiple Family Developments shall comply with the following:

All portions of buildings housing a dwelling unit shall be located within one hundred fifty (150) feet from the closest fire apparatus access road, as measured around both sides of the building and not through the building.

Exception: The Hickory Fire Department is authorized to increase the maximum distance of one hundred fifty (150) feet where:

- (1) The building is equipped throughout with an approved automatic sprinkler system installed in accordance with the applicable NFPA Standard for that occupancy classification.
- (2) Fire Department access roads cannot be installed due to location on property, topography, waterways, non-negotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.

8.11.5 Water Supply

An approved water supply capable of supplying the required flows for fire protection and domestic use shall be provided to premises upon which facilities, buildings, or portions of buildings are constructed or moved into.

8.11.6 Fire Hydrant Accessibility

All required fire hydrants shall be located in an easement or right of way affording the Fire Department access except as otherwise approved by the Fire Marshal and Public Utilities Manager.

8.11.7 Fire Flow

Fire flows shall be determined in accordance to Chapter 11 of the Hickory City Code.

The minimum acceptable fire flow for each fire hydrant is 1000 gallons per minute in residential areas and 1,500 gallons per minute in other districts.

The applicant shall provide construction alternatives shall be provided if the required fire flows exceed the available water supply.

8.11.8 Water Main Size

Transmission lines shall be sized in accordance with the long-term extension plan of the City of Hickory or as required by the Public Services Department.

The following are minimum sizes of the water mains upon which fire hydrants can be installed:

Main Type	Diameter (inches)
Dead End	8
Looped	6

When necessary to provide required flows, water main sizes may need to be increased or water mains looped. Any proposed alternate design shall be submitted to the Fire Marshal and Public Utilities Manager for review and approval prior to the technical plans and specifications review for issuance of a Land Development Permit.

8.11.9 Fire Hydrant Distribution

Fire hydrants shall be provided and distributed in accordance to Chapter 11 of the Hickory City Code. The following shall be the minimum requirements:

In residential districts, the maximum distance between fire hydrants, measured along street centerlines, shall be 600 feet. Where intersections are less than 800 feet apart, a fire hydrant is not required between the intersections provided that a fire hydrant is located at the intersections.

- (1) Fire hydrant spacing may be exceeded if the following conditions are met:
 - (a) Fire Department access road and fire hydrants have previously been installed and are not being modified;
 - (b) No extension or work is being done to the fire department access road, water supply system, or fire hydrants;
 - (c) The maximum distances between the existing fire hydrants does not exceed 1,000 feet;
 - (d) Fire hydrants are located on both sides of the lots being subdivided.

In commercial, industrial, office, and institutional districts, fire hydrants shall be located at each intersection with intermediate spacing not to exceed 500 feet as measured along street centerlines.

In mixed-use and multifamily districts, the distance between fire hydrants will comply with the requirements of (A) or (B) as above, based upon review and recommendation of staff.

In limited access and no access streets, fire hydrants shall be located at each street intersection and at 1000-foot intervals along the street. Fire hydrants shall be placed in a staggered arrangement on both sides of any roadway classified as a major or minor thoroughfare with the hydrant spacing as referenced above.

8.11.10 On-Site Fire Hydrant Distribution

For other than one and two family detached dwellings, on-site fire hydrants shall be provided in accordance with Chapter 11 of the Hickory City Code.

8.11.11 Plans, Residual Pressure and Flows

Plans of all proposed fire protection water mains, fire hydrant locations, and all other aspects of fire protection, shall be submitted to the City for approval. Static pressure, residual pressure, and flows shall be included in order to verify that the minimum fire flow requirements are being met.

At a minimum preliminary plats shall include the location of the water mains, fire hydrants, and their appurtenances and such other information as may be required by in the Manual of Practice or review officials to reasonably determine compliance with applicable regulations.

Technical plans and specifications submitted for Land Development Permit review shall at a minimum include the following:

- (1) Size of the water mains.
- (2) Fire hydrant locations.
- (3) Valves, blow-offs, and their appurtenances.
- (4) Static pressure, residual pressure, and flows for each fire hydrant.
- (5) Bear the seal of a professional engineer licensed in the State of North Carolina.

8.11.12 Private Water Mains and Fire Hydrants

If approved, private water mains and their appurtenances shall comply with the following requirements:

- Shall be installed to meet the specifications of the Public Utilities Department and the National Fire Protection Association's Standard #24.
- Shall be inspected, tested, and maintained as required by the Public Utilities Department and the National Fire Protection Association's Standard # 25.
- Shall be maintained in an operative condition at all times and shall be repaired where defective.
- Shall be identifiable as required by the City of Hickory.

8.12 Underground Utilities

8.12.1 Underground Utilities Required (TA 18-01) (TA 21-01)

All development projects, regardless of if they are located in a subdivision or not, shall be required to comply with this section. Electrical distribution systems (defined for the purposes of these regulations as facilities for delivering electrical energy from a substation to a customer's meter and generally associated with voltage in the 14.4-24.9 kv range and below), telephone lines and any other wire installation shall be underground unless such installation is determined to be unfeasible by the Planning Director.

8.12.2 Infeasibility Determination

In making its decision on the adequacy of the documentation, the Planning Director shall consider the following factors:

- Terrain;
- Load characteristics;
- Reliability;
- Accessibility;
- System flexibility;
- Equipment availability;
- Geologic difficulties;
- Safety; and
- Timing.

8.12.3 Power Line Exemption (TA 21-01)

A developer or builder shall not be required to bury power lines meeting all of the following criteria:

- The power lines existed above ground at the time of first approval of a plat or development plan by the City, whether or not the power lines are subsequently relocated during construction of the subdivision or development plan.
- The power lines are located outside the boundaries of the parcel of land that contains the subdivision or the property covered by the development plan.

8.13 Easements

8.13.1 Utility Easements

Easements for utilities shall be provided where necessary along front, rear or side lot lines, but shall not be required to center on such lines. Such easements shall be sufficiently wide to provide for installation of such utilities and access for maintenance and operation.

8.13.2 Minor Drainage Easements

For purposes of this Land Development Code, minor drainage easements are defined as providing for drainage of surface waters from 4 or fewer lots and not involving water bodies of substantial significance in the ecology of the area, as hereinafter described. Minor drainage easements, where required, shall be permitted in cross lots at other points only where such arrangement is found by the City Engineer to be practically necessary as a result of topography or soils conditions or improved flow, and where such arrangement will leave a suitable buildable area, safe from inundation, erosion or subsidence and safely accessible from approved streets. Where necessary for operation, construction or maintenance, the City Engineer may require, in accord with the terms of the easement, minor drainage easements to be cleared or kept free of undergrowth, trees and other obstructions.

8.13.3 Utilities in Drainage Easements

Utilities in drainage easements shall be permitted only upon a showing the utilities will not interfere with the operation or effectiveness of the drainage easement, and with specific authorization by the City Engineer, and only in locations authorized.

8.14 Public Sites

Where a proposed park or other recreation area, school site or other public site shown on the adopted master and/or comprehensive plans of the City of Hickory is located in whole or in part within the proposed subdivision, the proposed park or recreation area, school site or other public site shall be reserved for possible acquisition by the City Council or school board for a period of 18 months from the approval of the preliminary plat. Upon receipt of the preliminary plat, the Planning Director shall immediately notify the appropriate public body. The public body shall then decide within 60 days if it wishes the site to be reserved. If the City Council or school board does not wish to reserve the site, it shall notify the Planning Director that no reservation should be required. If the City Council or school board does wish to reserve the site, the subdivision shall not be approved without the reservation. The City Council or school board shall then have 18 months from the approval of the preliminary plat to acquire the site by purchase or initiation of condemnation proceedings. If the appropriate public body has not purchased or begun proceedings to condemn the site within 18 months, the reservation requirement shall lapse and the land may be used by the subdivider for other purposes as allowed by this Land Development Code.

8.15 Performance Guarantees

8.15.1 Applicability (TA 21-01) (TA 22-01)

In lieu of completion of any required infrastructure improvements that are required, the applicant may, prior to the recordation of a plat, post a performance guarantee in an amount sufficient to secure to the City of Hickory the satisfactory construction, installation and dedication of the uncompleted portion of the required infrastructure improvements.

This section shall also be applicable to development activities not associated with property subdivisions. In lieu of completion of required improvements, including, but not limited to, parking lots, landscaping and other required site improvements, the applicant shall prior to the issuance of a

certificate of occupancy, post a performance guarantee in an amount sufficient to secure to the City of Hickory the satisfactory construction of the uncompleted parts of the development.

Performance guarantees associated with erosion control and stormwater control measures are not subject to the provisions of this section.

8.15.2 Type of Guarantee; Multiple Guarantees (TA 21-01)

The performance guarantee shall be in the form of an irrevocable surety bond issued by any company authorized to do business in this State, an irrevocable letter of credit issued by any financial institution licensed to do business in this State, or other form of guarantee that provides equivalent security to a surety bond or letter of credit. The type of performance guarantee used shall be at the election of the developer. The developer shall have the option to post one type of a performance guarantee in lieu of multiple bonds, letters of credit, or other equivalent security, for all development matters related to the same project requiring performance guarantees.

Except in the case of cash or a certified check, sureties shall not be accepted unless the Staff Attorney and City Engineer has made a review thereof and rendered an opinion that the interests of the City of Hickory are fully protected.

The certified check shall be deposited with the City Manager, as escrow agent, who shall deposit it in an escrow account of the City of Hickory.

The letter of credit shall be from a banking corporation licensed to do business in North Carolina. The terms of the letter shall include the absolute right of the City of Hickory to withdraw funds from the bank forthwith upon the City Manager, or his or her designee, certifying to the bank that the terms and conditions of the performance guarantee have been breached.

8.15.3 Plans and Construction Programs

Plans, specifications, quantities, unit costs and estimated total costs shall be provided by the applicant to the Planning Director, together with a schedule indicating time of initiation and completion of the work, as a whole or in stages. Number of copies shall be as required for records and processing in the particular case.

The Planning Director shall refer such plans and programs to governmental bodies exercising control for their recommendations as to whether the proposals meet all requirements of such agencies, as to sufficiency of cost estimates, and as to reasonableness of construction programs.

8.15.4 Amount and Terms of Guarantee; Time Limits (TA 21-01)

The duration of the performance guarantee shall initially be one year, unless the developer determines the scope of work for the improvements necessitates a longer duration. In the case of a bonded obligation, the completion date shall be set one year from the date the bond is issued. A developer shall demonstrate reasonable, good-faith progress toward completion of the required improvements that are secured by the performance guarantee or any extension. If the improvements are not completed to the specifications of the City, and the current performance guarantee is likely to expire prior to completion of the required improvements, the performance guarantee shall be extended, or a new performance guarantee issued, for an additional period; provided, however, the extension shall only be for the duration necessary to complete the required improvements. If a new performance guarantee is issued, the amount shall not exceed 125% of the needed outstanding improvements.

The amount of the guarantee shall be 125% of the total reasonably estimated cost to complete all outstanding infrastructure improvements. The Planning Director shall set the amount and terms of the performance guarantee based on the following:

- (1) The reasonably estimated cost of completion shall include one 100% of the costs for labor and materials necessary for completion of the required improvements.

- (2) Where applicable, the costs shall be based on unit pricing. The additional 25% includes inflation and all costs of administration regardless of how such fees or charges are denominated.
- (3) The amount of any extension of any performance guarantee shall be determined according to the procedures for determining the initial guarantee and shall not exceed 125% of the reasonably estimated cost of completion of the remaining incomplete improvements still outstanding at the time the extension is obtained.

Reductions in the total amount of the performance guarantee may be permitted. In order to request a reduction in the provided performance guarantee, the developer shall provide revised documentation outlining outstanding infrastructure improvements, and revised plans, schedules, and the revised performance guarantee.

8.15.5 Inspections; Reports; Cost Responsibility (TA 21-01)

The applicant's engineer of record shall certify that all work has been completed in accordance with the Manual of Practice and the approved plans and specifications for the subdivision or development project. Governmental bodies exercising control shall make inspections to determine whether work has started as scheduled; shall make inspections as are necessary during the course of work, and shall make final inspections to determine whether stages of construction required under the performance guarantee have been completed in accordance with the terms of the guarantee.

Within 5 working days of such inspections, copies of reports of the results thereof shall be provided to the Planning Director.

The full cost of making such inspections and preparing such reports shall be paid by the applicant.

8.15.6 Action on Inspection Reports

Reports Indicating Satisfaction of Requirements. Where such reports indicate satisfactory completion of work within time limits set and in accordance with other terms of the performance guarantee, for agreed upon stages or for the entire work, the Planning Director shall so notify the City Manager, and in writing by first class mail the applicant and any surety company involved. The City Manager, upon such notification and any further assurance he may require from the Staff Attorney or governmental bodies exercising operating control, shall then release all or portions of the performance guarantee in accordance with the terms thereof.

Reports Indicating Failure to Satisfy Requirements. Where such reports indicate failure to initiate work on schedule or to complete work on schedule in full compliance with the terms of the performance guarantee, the Planning Director shall so indicate to the City Manager and in writing by first class mail to the applicant, governmental bodies exercising control, any surety company involved and the City Manager. Such notice shall indicate that unless action required under the terms of the performance guarantee is completed within 30 days of the date of such notification, the performance guarantee or portions thereof, set forth in its terms, shall be called. Unless such action is completed, as evidenced by inspections and reports from governmental bodies exercising control transmitted through the Planning Director, the City Manager shall call the performance guarantee or affected portions thereof.

Reports Indicating Unsatisfactory Progress. Where such reports indicate that work initiated appears likely not to be completed on schedule, and where the performance guarantee provides for extension of time for cause, the Planning Director shall notify the City Manager and the applicant in writing by first class mail and any surety company involved concerning potential need for an application for such extension. Where such notice has been given, no application for extension shall be considered after expiration of the original schedule date.

8.15.7 Actions Following Failure to Complete Work Under Performance Guarantee

Where work required under the terms of any performance guarantee is not completed by the applicant as specified therein, the City Manager, following the call of the guarantee, shall take such action as is appropriate in the circumstances of the case to procure the completion of the required improvements at the earliest reasonable time, according to the plans and specifications and staging of construction approved in connection therewith.

8.15.8 Acceptance of Guarantee of Other Governmental Agency or Public Utility

Where all or part of required improvements are to be completed by another government agency or public utility, the City Manager may accept the written guarantee of such agency to complete such improvements within a time to be mutually agreed upon, with time for completion limited as provided in Sec. 8.15.4.

8.15.9 Release (TA 21-01)

The City shall return letters of credit of escrowed funds upon completion of the required improvements to the specifications of the City, or upon acceptance of the required improvements, if the required improvements are subject to acceptance. When required improvements that are secured by a bond are completed to the specifications of the city, or accepted by the City, if subject to City acceptance, upon request of the developer; the City shall timely provide written acknowledgement the required improvements have been completed.

8.16 Maintenance and Warranty Funds

8.16.1 Maintenance Required

The developer shall maintain all land and required improvements in a condition equal to or better than at the time of final inspections. Under no circumstance shall any portion of the development, whether land or infrastructure, be allowed to remain in a state where the development poses any form of safety hazard. Such maintenance shall be the responsibility of the developer until acceptance of the offer of dedication has been properly approved.

8.16.2 Warranty Required (TA 21-01)

Upon acceptance of the offer of dedication, the developer shall be responsible for the repair of defects in workmanship and/or materials for all dedicated improvements located within the development. The warranty period shall be 12 months from the acceptance of the offer of dedication.