

# CHAPTER 9: INFRASTRUCTURE

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## CHAPTER 9: INFRASTRUCTURE

### Section 9.1 Street Standards

#### 9.1.1 Conformance with Comprehensive Transportation Plan (CTP)

The location and design of streets shall be in conformance with the adopted Comprehensive Transportation Plan (CTP). Where conditions warrant, right-of-way width and pavement width in excess of the minimum street standards may be required. In any case where any part of a development lies within the corridor of a thoroughfare shown on an official Thoroughfare Map adopted pursuant to NCGS Chapter 136, Article 2E, no development approval shall be granted with respect to the property in the corridor. Provided, however, no development plat approval shall be delayed by the provision of the official Thoroughfare Map procedure for more than three (3) years from the date of its original submittal.

#### 9.1.2 Blocks

- A. The lengths, widths, and shapes of blocks shall be determined with due regard to: provision of adequate building sites suitable to the special needs of the type of use contemplated; zoning requirements; needs for vehicular and pedestrian circulation; control and safety of street traffic; limitations and opportunities of topography; and convenient access to water areas.
- B. Blocks shall not be less than 400 feet nor more than 1,200 feet in length. Where a longer block will reduce the number of railroad grade crossings, major stream crossings, or where longer blocks will result in less traffic through residential developments from adjoining business or industrial areas, the Technical Review Committee may authorize block lengths in excess of 1,200 feet.
- C. Blocks shall have sufficient width to allow two (2) tiers of lots of minimum depth except where single tier lots are required to separate residential development from through vehicular traffic or another type of use, in nonresidential developments, or where abutting a water area.
- D. Where deemed necessary by the Planning Board or Administrator, a pedestrian crosswalk at least 15 feet in width may be required to provide convenient public access to a public area such as a park or school, to a water area, or to areas such as shopping centers, religious or transportation facilities.

#### 9.1.3 Street Design

- A. In any new development, the street layout shall conform to the arrangement, width and location indicated by an official plan or map for the town. In areas for which such plans have not been completed, the streets shall be designed and located in proper relation to existing and proposed streets, to the topography, to such natural features as streams and tree growth, to public convenience and safety, and to the proposed use of land to be served by such streets.
- B. Residential collector and local streets shall be laid out in such a way that their use by through traffic will be discouraged. Streets shall be designed or walkways dedicated to assure convenient access to parks, playgrounds, schools, or other places of public assembly.
- C. Proposed streets should be adjusted to the contour of the land so as to produce usable lots, and streets shall be kept to a minimum.

**9.1.4 Street Construction Standards**

All new streets and street improvements shall be constructed in accordance with the latest edition of the *Town of Angier Standard Specifications and Construction Details*.

**9.1.4.1 On-Street Parking**

On-street parking shall be at least eight (8) feet wide and 22 feet long and be marked on the pavement.

**9.1.4.2 Sidewalks**

- A. Sidewalks shall be required along both sides of all streets to provide pedestrian linkages in multifamily developments, on collector streets, on major and minor thoroughfares, and in residential developments with lots of 10,000 square feet or less. All other streets shall have sidewalks along one side. Developments located within the RA-30 Zoning District shall be exempt from this requirement.
- B. Sidewalks shall also be required along all streets that extend the sidewalks of an existing sidewalk network.
- C. Sidewalks shall be constructed to a minimum width that meets American Disabilities Act (ADA) requirements.
- D. All sidewalks shall be placed in the right-of-way, unless the development is platted as a planned development, and shall be separated from the street pavement by a minimum distance of four (4) feet. Sidewalks shall consist of a minimum of six (6) inches of concrete at driveway crossings.
- E. The Town Board may waive the sidewalk requirement, along one (1) side of a street, when an alternative system is available and accessible or when a development is located within the Watershed. In order for a waiver to be considered on the latter the applicant or developer must propose an alternative include pedestrian trails that meet all local and State requirements.
- F. Installation of all sidewalks in residential subdivisions shall be completed at such time that a building permit has been issued on 50 percent (50%) of all recorded lots.

**9.1.4.3 Curb & Gutter**

Concrete curbs and gutters, that meet Department of Transportation standards, shall be constructed along both sides all streets within the subdivision. Developments located within the RA-30 Zoning District shall be exempt from this requirement.

**9.1.4.4 Cul-de-sacs**

- A. As a feature of development design, cul-de-sacs should be discouraged and kept to a minimum.
- B. Cul-de-sacs should not be used to avoid connection with an existing street or to avoid the extension of an important street, unless an exception is granted by the Town Board.

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### **9.1.4.5 Alleys**

- A. Alleys shall be required to serve lots used for commercial and industrial purposes except that this requirement may be waived where other definite and assured provision is made for service access.
- B. The width of an alley shall be at least 20 feet.
- C. Dead-end alleys shall be avoided where possible, but if unavoidable, shall be provided with adequate turnaround facilities at the dead end as may be approved by the Town Board.
- D. Sharp changes in alignment and grade shall be avoided.
- E. All alleys shall be designed in accordance with NCDOT Standards.

### **9.1.4.6 Sight Distance**

No planting, structure, sign, fence, wall, or obstruction greater than three (3) feet in height shall be placed or maintained within the sight triangle. The following are the distances used to establish a sight triangle as measured from an intersecting right-of-way:

## **9.1.5 Access Management, Driveways, and Connectivity**

### **9.1.5.1 Development Access**

At least two (2) entry points will be provided in developments that contain 100 or more dwelling units and to all lots within the development. The Board of Commissioners may allow other alternatives if the curb cuts for the two (2) accesses cannot meet the minimum distance allowed according to NCDOT regulations at any location.

### **9.1.5.2 Restriction of Access**

Where a tract of land to be subdivided adjoins a principal arterial street, the developer may be required to provide a marginal access street parallel to the arterial street or reverse frontage on a minor street for the lots to be developed adjacent to the arterial. Where reverse frontage is established, private driveways shall be prevented from having direct access to the principal arterial.

### **9.1.5.3 Through Traffic**

Residential collector and local streets shall be laid out in such a way that their use by through traffic will be discouraged. The intent of the street design is to provide multiple connections to existing and future developments, disperse traffic, and maintain reduced speeds. Streets shall be designed or walkways dedicated to assure convenient access to parks, playgrounds, schools, or other places of public assembly.

### **9.1.5.4 Intersections**

- A. Where public and private streets intersect, the design standards of the NCDOT Division of Highways, *Development Roads Minimum Construction Standards* shall apply. An approved permit is required for connection to any existing state system street. This permit is required prior to any construction on the street. The application is available at the office of the nearest district engineer of NCDOT.

- B. Streets shall be laid out so as to intersect as nearly as possible at right angles, and no street shall intersect any other street at an angle less than 60 degrees.
- C. Offset intersections are to be avoided unless exception is granted by NCDOT. Intersections which cannot be aligned should be separated by a minimum length of 200 feet between survey center lines.

**9.1.5.5 Connectivity**

- A. The proposed street layout shall be made according to good land planning practice for the type development proposed and shall be coordinated with the street system of the surrounding areas. The arrangements of streets in new developments shall make provision for the continuation of the principal existing streets in adjoining developments or, when adjoining property is not developed, their proper projection insofar as they may be necessary for vehicular circulation in the future. The street and alley arrangement must be so designated as to cause no hardship to owners of adjoining property when they plat their own land and seek to provide for convenient access to it. When a new development adjoins developed land, the new streets shall be carried and stub to the boundaries of the tract proposed to be developed and a temporary turnaround provided, except where it is determined by the Planning Board that certain streets may not be required to be so extended for the following reasons:
  - 1. Physical barriers or environmentally sensitive area be crossed (for example, railroad, watercourses, steep topography, or flood area).
  - 2. There is a large discrepancy in the size of the adjacent parcel (A smaller parcel being subdivided may not have to provide a stub to a much larger parcel, if other, more desirable, interconnections are available to the large parcel).
  - 3. The stub street would connect to property for which development rights have been sold for a public purpose and access to the property is not desirable for orderly development of the street network.
  - 4. The stub street would cause the existing roads to go over the design capacity on that portion of the street.
- B. Where a temporary turnaround is provided as required in Subsection A, a sign shall be erected at the temporary turnaround that informs the public of the intended future connection of the street to future development.

**9.1.6 Street Names & Signs**

- A. Proposed streets which are obviously in alignment with existing streets shall be given the same name. In assigning new names, duplication of existing names shall be avoided and in no case shall the proposed name be phonetically similar to existing names in the town or its planning area irrespective of the use of a suffix such as street, road, drive, place, court, etc.
- B. The Town shall provide and erect street name signs at all intersections within the development. The Town shall be reimbursed by the developer for the cost of the signs.

**9.1.7 Right-of-Way Dedication**

- A. Developments that adjoin existing streets maintained by either the Town or NCDOT shall dedicate the additional street right-of-way necessary to meet the minimum width requirements for the type of classification of the adjoining street.

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- B. When any part of the development is on both sides of an existing street, the entire minimum right-of-way shall be provided.
- C. When the development is located on only one (1) side of an existing street, one-half (1/2) of the minimum right-of-way, measured from the centerline of the existing street, shall be provided.
- D. The dedication requirements of this Section shall not apply to infill single-family residential and two-family residential lots fronting on existing streets that have already been accepted for maintenance by the Town or NCDOT.

### **Section 9.2 Water, Sewer, & Fire Hydrants**

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- A. All water lines, sewer lines, and fire hydrants shall be constructed or installed in accordance with Section in accordance with the latest edition of the *Town of Angier Standard Specifications and Construction Details*.
- B. Connection to public water and/or sewer systems when the proposed subdivision is located within that number of feet of an existing Town owned and operated system which equals the product of the number of lots within the subdivision (including lots to be developed in the future) multiplied by 100; provided however that the maximum distance required for connection shall be 5,000 feet. In such cases where the public water and/or sewer supply system is of insufficient capacity to permit the delivery of either water or sewer supply, the subject proposed subdivision shall be relieved of the requirement to connect to such public system.
- C. Where public water and/or sewer systems are to be installed as part of the development improvements, such systems shall be constructed to provide tap-on stub-outs for each lot plotted in the development.
- D. Uses requiring an excess of 20,000 gallons per day of water or sewer usage shall be required to improve infrastructure capacity as determined by the Town Board of Commissioners upon the recommendation of the Town Engineer.
- E. Where community water and/or sewer systems are to be installed as part of the development improvements, such systems shall be designed and installed in accordance with the standards and specifications of the County Health Department and/or the North Carolina Department of Environment and Natural Resources agency responsible for the approval of such systems.
- F. Prerequisite to final plat approval, all lots on the plat to be recorded must be certified in writing by the County Health Department to meet minimum standards for on-site water and/or sewer systems when either or both of such systems are proposed to be used.

**Section 9.3 Lighting**

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**9.3.1 Applicability**

The provisions of this Section shall apply to the installation of all outdoor lighting within the jurisdiction of this Ordinance except that the following shall be exempt from this Section:

- A. Outdoor lighting installed for governmental purposes by local, state or federal governmental units and their agents.
- B. Outdoor lighting required to be installed by laws or regulations of a local, State or Federal governmental units.
- C. Outdoor lighting installed for one (1) and two-family dwellings.
- D. Outdoor lighting associated with a bona fide farm operation.

**9.3.2 Prohibited Outdoor Lighting**

The following types of outdoor lighting are prohibited unless exempted by the Subsection above:

- A. Light fixtures that imitate an official highway or traffic control light or sign.
- B. Light fixtures in the direct line of vision with any traffic control light or sign.
- C. Light fixtures that have a flashing or intermittent pattern of illumination.
- D. Privately owned light fixtures located in the public right-of-way.
- E. Light fixtures that are a source of glare by their design, orientation or intensity.
- F. Searchlights.
- G. Structure highlighting that is illuminated between 12 midnight and 7:00am.
- H. Unshielded open vertical light fixtures.
- I. Light fixtures that violate any law of the State of North Carolina relative to outdoor lighting.

**9.3.3 Plan Approval Required**

Outdoor lighting is subject to approval by the Administrator and Technical Review Committee (TRC). The lighting plan shall show sufficient information to determine compliance with the standards of this Section and may require a photometric plan upon determination of the Administrator. In approving lighting plans the Administrator and TRC may modify the standards of this Section where the applicant agrees and where equal or better performance would result. In granting modifications, the Administrator and TRC may require such conditions as will secure, insofar as practicable, the objectives of the requirements modified.

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### 9.3.4 Outdoor Lighting Requirements

- A. Outdoor lighting fixtures shall be installed in a manner to protect the street and neighboring properties from direct glare or hazardous interference of any kind. Glare or hazardous interference are situations where the sensation produced by luminance within the visual field is sufficiently greater than the luminance to which the eyes are adapted, such as to cause annoyance, discomfort, or loss in visual performance and visibility.
- B. Outdoor lighting shall be constructed and operated to minimize the spillover of obtrusive light onto property outside the boundaries of the property on which the lighting is sited which could result in annoyance, discomfort or distraction to persons on the other property.
- C. All outdoor lighting fixtures, subject to this Section, except for temporary and emergency lighting, that would otherwise cause glare or obtrusive spillover shall be shielded, recessed or otherwise oriented or treated in such a way to prevent glare or obtrusive spill over.
- D. As a general principle, all outdoor lighting shall be directed downward and away from adjoining property and streets.
- E. The maximum light level shall not exceed one-half (1/2 or 0.5) maintained footcandle at any property line in a residential district, or on a lot occupied by a dwelling, and shall not exceed two (2) maintained footcandles at any public street right-of-way.
- F. All floodlights shall be installed such that the fixture shall be aimed down at least 45 degrees from vertical, or the front of the fixture is shielded such that no portion of the light bulb extends below the bottom edge of an external shield. Floodlights and display lights shall be positioned such that any such fixture located within 50 feet of a public street right-of-way is mounted and aimed perpendicular to and away from the right-of-way, with a side-to-side horizontal aiming tolerance not to exceed 15 degrees from perpendicular to the right-of-way.
- G. The mounting height of all outdoor lighting shall not exceed 40 feet above finished grade, except that the mounting height of outdoor sports field and outdoor performance area lighting fixtures shall not exceed 80 feet from finished grade.
- H. All light fixtures shall meet the IESNA definition of cutoff fixtures. Forward throw fixtures (type IV light distribution, as defined by the IESNA) are required within 25 feet of any public street right-of-way. Alternatively, directional fixtures (such as floodlights) may be used provided they shall be aimed and shielded in accordance with this Section.
- I. Sign lighting shall be regulated in accordance with Chapter 10.
- J. Lighting fixtures shall be selected, located, aimed, and shielded so that direct illumination is focused exclusively on the building façade, plantings, and other intended site features and away from adjoining properties and the public street right-of-way.

### 9.3.5 Street Lighting Provisions

Street lighting shall be provided and installed at the developer's expense throughout the development in accordance with the latest edition of the *Town of Angier Standard Specifications*

*and Construction Details.* The developer shall be required to pay to the electric company the cost of street lighting installation that exceeds four (4) times the continuing annual revenue. The developer may be required to install all fixed items such as conduit, pads, hand holes and pole foundations. The Town of Angier will own and maintain the said fixed items.

## **Section 9.4 Stormwater Management**

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### **9.4.1 General Provisions**

The developer shall provide a surface water drainage system constructed to the standards of the North Carolina Department of Transportation, as reflected in the *Handbook for the Design of Highway Surface Drainage Structures*, subject or to review by the Town of Angier consulting engineer.

- A. No surface water shall be channeled or directed into a sanitary sewer.
- B. Where feasible, the developer shall connect to an existing surface water drainage system.
- C. Where an existing surface water drainage system cannot feasibly be extended to the development, a surface drainage system shall be designed to protect the proposed development from water damage.
- D. Surface drainage courses shall have side slopes of at least three (3) feet of horizontal distance for each one (1) foot of vertical distance, and courses shall be of sufficient size to accommodate the drainage area without flooding, and designed to comply with the standards and specifications for erosion control of the North Carolina Sedimentation Pollution Control Act, G.S. 143-34.12, Chapter 113A, Article 4 and the North Carolina Administrative Code Title 15, Chapter 4, and any locally adopted erosion and sedimentation control ordinances.
- E. The minimum grade along the bottom of a surface drainage course shall be a vertical fall of at least one (1) foot in each 200 feet of horizontal distance.
- F. Stream banks and channels downstream from any land disturbing activity shall be protected from increased degradation by accelerated erosion caused by increased velocity of runoff from the land disturbing activity in accordance with the North Carolina Sedimentation Pollution Control Act, G.S. 143-34.12, Chapter 113A, Article 4 and the North Carolina Administrative Code Title 15, Chapter 4.
- G. Anyone constructing a dam or impoundment within the development must comply with the North Carolina Dam Safety Law of 1967 and the North Carolina Administrative Code Title 15, Subchapter 2 K.
- H. In all areas of special flood hazards, all development proposals shall have adequate drainage provided to reduce exposure to flood damage.
- I. In areas contained within Water Supply Watershed boundaries, all development proposals shall comply with the requirements of the Town of Angier Water Supply Watershed regulations.

### **9.4.2 Stormwater Construction Standards**

Stormwater improvements shall be constructed and installed to the in accordance with the latest edition of the *Town of Angier Standard Specifications and Construction Details*.

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The Town of Angier is in Harnett County, which is designated as a “Phase II Tipped” County. Future development in Harnett County would be subject to Phase II Post-Construction stormwater requirements. Decide whether to include the model ordinance in the UDO or in the Standard Specifications and Construction Details.

### 9.4.3 Easements

- A. Where a development is traversed by a stream or drainage way, an easement shall be provided conforming with the lines of such stream and of sufficient width as will be adequate for the purpose of drainage.
- B. The Administrator may require any water course or stormwater management facility to be located within dedicated a drainage easement officially recorded at the Harnett County Register of Deeds as a “public storm drainage easement” that provides sufficient width for maintenance.
- C. Maintenance easements may be required depending upon the size of the drainage way and the maintenance responsibility as determined by the Town.
- D. Where easements are required, they shall be noted on the Final Plat.

### 9.4.4 Obstruction of Drainage Channels Prohibited

No fences or structures shall be constructed across an open drainage channel that will reduce or restrict the flow of water.

### 9.4.5 Grading Standards

The following standards shall be followed in establishing the grading plan for a development:

- A. Developments shall be designed and constructed with a positive drainage flow away from buildings towards approved stormwater management facilities. Plans for drainage facilities shall be approved by the Town Engineer.
- B. In the design of site grading plans, all impervious surfaces in the proposed development (including off street parking) shall be considered.
- C. Site grading and drainage facilities shall protect sinkholes, wetlands, ponds and lakes from increased sediment loading.
- D. Site grading shall not increase runoff flow rate onto downstream properties.
- E. A site shall not be graded to create a slope greater than 2:1 at adjacent properties unless the slope already existed on the undeveloped land. In no case shall the slope be made steeper than it was on the undeveloped land. Terraced or stepped slopes that achieve the overall slope requirement may be considered by the TRC on a case by case basis.
- F. All disturbed areas within the dedicated right-of-way and easements of any development street shall be restored with vegetation and the landscaping standards of Chapter 7 shall be met.

**Section 9.5 Garbage & Refuse Collection**

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- A. Dumpster pads shall be constructed and installed in accordance with the latest edition of the *Town of Angier Standard Specifications and Construction Details* and shall be screened in accordance with Chapter 7.
- B. The method of garbage disposal shall be indicated on each site plan or Preliminary Plat that is submitted.

**Section 9.6 Other Infrastructure Requirements**

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**9.6.1 Placement of Monuments**

Unless otherwise specified by this Ordinance, the Manual of Practice for Land Surveying as adopted by the N. C. State Board of Registration for Professional Engineers and Land Surveyors, under the provisions of Title 21 of the North Carolina Administrative Code, Chapter 56 (21 NCAC 56), shall apply when conducting surveys for subdivisions; to determine the accuracy for surveys and placement of monuments, control corners, markers, and property corner ties; to determine the location, design, and material of monuments, markers, control corners, and property corner ties; and to determine other standards and procedures governing the practice of land surveying for subdivisions.

**9.6.2 Construction Procedures**

No construction or installation of improvements shall commence in a proposed subdivision until the preliminary plat has been approved, and all plans and specifications have been approved by the appropriate authorities. No building, zoning or other permits shall be issued for erection of a structure on any lot not of record at the time of adoption of this Ordinance until the requirements of this Ordinance have been met. The developer, prior to commencing any work within the subdivision, shall make arrangements with the Administrative Officer to provide for adequate inspection. The Administrative Officer or his representatives shall inspect and approve all completed work prior to release of the sureties.

**9.6.3 Oversized Improvements**

The Town of Angier may require installation of certain oversized infrastructure or the extension of utilities to adjacent property when it is in the interest of future development. If the Town requires the installation of improvements in excess of the standards required in this Ordinance, including all standards adopted by reference, the Town shall pay the cost differential between the improvement required and the standards in this Ordinance.

**Section 9.7 Improvement Guarantees**

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For any required improvement that cannot be installed prior to final zoning inspection or Final Plat approval the following shall apply:

- A. In order to ensure compliance with this Ordinance, in lieu of requiring the completion and installation of required improvements prior to occupancy or final plat recordation, the Town of Angier may enter into an agreement with the developer whereby the developer shall agree

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to complete all required improvements. To secure this agreement, the developer shall provide to the Town of Angier one of the following guarantees. The amount of such guarantee shall be equal to one and one-quarter (1.25) times the cost of purchasing, installing, and completing all required improvements of this Ordinance. All such guarantees shall be subject to the approval of the Town Board of Commissioners and shall be made payable to the Town of Angier. The developer shall provide either one or a combination of the following guarantees:

1. **Surety Performance Bond(s):** The developer shall obtain a performance bond(s) from a surety company authorized to do business in North Carolina. The duration of the bond(s) shall be until such time as the improvements are accepted by the Town Board of Commissioners.
  2. **Cash or Equivalent Security:** The developer shall deposit cash, an irrevocable letter of credit or other instrument readily convertible into cash at face value, either with the Town or in escrow with a financial institution designated as an official depository of the Town of Angier. If cash or other instrument is deposited in escrow with a financial institution as herein provided, the developer shall then file with the Town of Angier an agreement between the financial institution and himself guaranteeing the following:
    - a. That said escrow account shall be held in trust until released by the Town Board of Commissioners and may not be used or pledged by the developer in any matter during the term of the escrow; and
    - b. That in the case of a failure on the part of the developer to complete said improvement, the financial institution shall, upon notification by the Town of Angier and submission by the Town of Angier to the financial institution of a landscape architect's estimate of the amount needed to complete the improvements, immediately either pay to the Town the funds estimated to complete the improvements, up to the full balance of the escrow account, or deliver to the Town any other instruments fully endorsed or otherwise made payable in full to the Town.
- B. Upon default, meaning failure on the part of the developer to complete the required improvements in a timely manner as spelled out in the performance bond or escrow agreement, then the surety, or the financial institution holding the escrow account, shall, if requested by the Town Board of Commissioners, pay all or any portion of the bond or escrow fund to the Town of Angier up to the amount needed to complete the improvements based on a landscape architect's estimate. Upon payment, the Town Board of Commissioners, in its discretion, may expend such portion of said funds as it deems necessary to complete all or any portion of the required improvements. The Town shall return to the bonding firm any funds not spent in completing the improvements. Should the amount of funds needed to complete the installation of all required improvements exceed the amount in the bond or escrow account, the developer shall nonetheless be responsible for providing the funds to cover such costs. The developer shall at all times bear the financial burden for the installation of all required improvements. A lien shall be attached to the property if the developer fails to provide the full financial responsibility.
- C. The Administrator may authorize the release of a portion of any security posted as the improvements are completed and approved. Such funds shall then be released within 10 days after the corresponding improvements have been so approved.