

6.18

Amended
12/10/02
2/3/04

Telecommunications Towers and Equipment

The following words, terms and phrases, when used in this Section, shall have the meanings ascribed to them in this Section, except where the context clearly indicates a different meaning:

Accessory Use – A use incidental to, subordinate to, and subservient to the principal use of the property. As defined in this section an accessory use is a secondary use.

Antenna – A transmitting and/or receiving device used for wireless services that radiates or captures electromagnetic waves, including directional antennas, such as panel and microwave dish antennas, and omni-directional antennas, such as whips, excluding radar antennas, amateur radio antennas and satellite earth stations.

Building Code – The most recently adopted or amended edition of the North Carolina State Building Code.

Co-location – Locating telecommunication equipment for more than one provider on one qualified shared facility at one site.

Commercial Impracticability or Commercially Impracticable – The inability to perform an act on terms that are reasonable in commerce; the cause or occurrence of which could not have been reasonably anticipated or foreseen and that jeopardizes the financial efficacy of the project.
The inability to achieve a particular financial return on investment or profit, standing alone, shall not deem a situation to be commercially impracticable.

EIA-222 – Electronics Industries Association Standard 222 (Structural Standards for Steel Antenna Towers and Antenna Support Structures).

Existing Structure/Building – For purposes of this Section, any building or structure that are currently existing on a parcel of land. Such structures may include, but shall not be limited to, telecommunications towers, overhead transmission line support structures, water tanks, silos, churches, schools, and utility poles.

Extraordinary Conditions – Conditions subsequent to a hurricane, flood, tornado, or other natural or other disaster.

FAA – The Federal Aviation Administration.

FCC – The Federal Communications Commission.

Fall Zone – The circular area measured from the base of the tower outward in a circular pattern (radius) for a distance of 110% of the proposed or existing tower's height including lightning rod. Telecommunications towers shall not be located on property where the proposed tower's fall zone will encroach on a residential, buildable, lot.

Guyed Tower – A telecommunication tower that is supported, in whole or in part, by guy wires and ground anchors.

Inspections Division – A division of the Orange County Planning and Inspections Department.

Master Telecommunications Plan (“Plan”) – A plan developed for Orange County by the County’s Planning Department that shows properties where owners have expressed interest in allowing the placement of telecommunications towers provided that all applicable federal, state, and local regulations are met. Information that may be shown on the plan will include existing towers, County defined Natural Areas, historic properties, scenic corridors, all major electrical lines, Voluntary Agricultural Districts, existing telecommunication towers, known bird migratory patterns through the County and all public and quasi-public properties that may allow telecommunication facilities. The Plan will be for purposes of disclosing information to telecommunication providers when they are seeking to establish their telecommunication networks in the County.

Microwave dish antenna – A dish-like antenna used to link wireless service sites together by wireless transmission of voice or data.

Monopole Tower – A telecommunication tower consisting of a single pole or spire self supported by a permanent foundation, constructed without guy wires and ground anchors.

Panel Antenna – An inconspicuous, relatively flat, square or rectangular antenna designed to be affixed to the wall of a building or structure in order to receive and transmit signals from a telecommunication device.

Qualified Shared Facility – A telecommunication tower or existing structure/building that is appropriately designed for sharing antenna space, and grants space on the tower in a fair, reasonable, and non-discriminatory manner.

Roofline – The overall ridgeline of the structure, not including cupolas, elevator towers, clock towers or other similar features.

Search Area – An area or areas defined on a map or maps showing the maximum extent of locations suitable for the installation of an individual telecommunications provider’s facilities (tower or antenna co-locations).

Self-Support/Lattice Tower – A tapered structure broad at the base and more narrow at the top consisting of cross-members and diagonal bracing and without guyed support.

Stealth or Stealth Technology – Technology or practice intended to minimize adverse aesthetic and visual impacts on the land, property, buildings, and other equipment adjacent to, surrounding, and in generally the same area as the requested location of such wireless telecommunications towers and equipment, which shall mean using the least visually and physically intrusive tower and/or equipment that is not technologically or commercially impracticable under the facts and circumstances.

Stealth Facility – Any stealth telecommunication tower or equipment, which is designed using stealth technology to blend into the surrounding environment. Examples of stealth facilities include architecturally screened roof-mounted

antennas, antennas integrated into architectural elements, and telecommunication and/or personal wireless services towers designed to look like light poles, power poles or trees.

Telecommunication Equipment – Equipment, which is located either upon a telecommunication tower or a structure and includes some form of antenna for the purpose of transmitting and receiving wireless services.

Telecommunications Tower – A guyed, monopole or self-support/lattice tower, constructed as a free-standing structure containing one (1) or more antennas, used in the provision of wireless services excluding radar towers, amateur radio support structures licensed by the FCC, private home use of satellite dishes and television receiving antennas and satellite earth stations installed in accordance with applicable codes.

Telecommunications Tower, Stealth – A telecommunication tower designed using stealth technology such that its primary purpose is, or visually appears to be, something other than the support of telecommunications equipment, the apparent purpose of the tower is customarily considered as accessory to a use that is allowed in the zoning district, and the structure and its primary use comply with the Orange County Zoning Ordinance.

Unforeseen Events – Condemnations of existing telecommunications towers for road projects, casualty of existing telecommunications towers, blocking of signals from new construction necessitating a relocation of a telecommunication tower, or the need to replace an existing telecommunication tower for capacity issues, or for other reasons deemed necessary by the County Planning Director or his/her designee.

Whip Antenna – A cylindrical antenna that transmits and/or receives signals in three hundred sixty (360) degrees.

6.18.1 Administrative Approval of Stealth Telecommunications towers and Telecommunication Equipment

New stealth telecommunications towers up to 75 feet in height that are sufficiently disguised so as to minimize visual impact, may be approved administratively by the Planning Staff provided that all of the provisions contained in Article 8.8.17a are met.

The placement of telecommunication equipment on existing structures may be approved administratively as provided for in this ordinance.

6.18.2 Telecommunications towers and equipment as principal or accessory uses

a) Telecommunications towers shall be permitted as a principal or accessory use in all districts in accordance with the provisions of this Ordinance as follows:

- 1) On property owned by the County or any public entity except those designated as historic properties or sites. The County may, in its sole discretion as the owner of the property, authorize the application and use of County property after the applicant executes a lease agreement acceptable to the County.

2) Telecommunications towers as part of existing utility poles shall be permitted as an accessory use. Towers shall be constructed as part of the existing utility poles or as replacements for the existing utility poles. No freestanding towers constructed exclusively for personal wireless services shall be permitted within utility easements.

3) The placement of a new telecommunications tower in any zoning district must be approved as a Special Use, except as permitted in the Master Telecommunications Plan ("Plan").

b) Existing Telecommunications Towers

1) Telecommunications equipment as accessory uses may be placed on existing towers in accordance with the provisions of this Ordinance.

2) Notwithstanding the above provisions of Section 6.18, telecommunications towers in existence as of December 10, 2002, may be replaced with a tower of equal or less visual impact after approval by the County Planning Director or his/her designee. However, if the proposed new tower would not be consistent with the minimum standards under Section 6.18, replacement must be approved as provided for in this Ordinance.

6.18.3

Antennas not located on telecommunications towers

a) Antenna types. To minimize adverse visual impacts, stealth antenna types shall be preferred. If a non-stealth antenna is proposed, the application shall be required to demonstrate, in a technical manner acceptable to the Planning Director or his/her designee, why the stealth antenna (i.e. an antenna incorporated into the architecture of the building or fully screened from view from sight proximate to the antenna) cannot be used for the particular application. This does not preclude a combination of the various types of antennas.

Antenna dimensions. Antenna dimensions shall be subject to approval by the Planning Director or his/her designee. A statement shall be submitted, prepared by a professional engineer competent to evaluate antenna choices, to certify the technical need for the required dimensions.

b) Aircraft hazard. Prior to the issuance of a Building Permit by the Inspections Division, the application shall provide evidence that the telecommunication tower or antennas are in compliance with FAA regulations. Where an antenna will not exceed the highest point of the existing structure upon which it is to be mounted, such evidence shall not be required.

c) Stealth rooftop or building mounted antennas not exceeding twenty (20) feet above roofline of the building or support structure shall be permitted in all zoning districts subject to the provisions of Section 6.18.3 d) 1-5 stated below.

d) Building or rooftop stealth antennas shall be subject to the following minimum standards:

1) No commercial advertising shall be allowed on an antenna;

- 2) No signals, lights, or illumination shall be permitted on an antenna, unless required by the FCC or the FAA;
 - 3) Any related unmanned equipment building shall not contain more than six hundred (600) square feet of gross floor area per user or be more than twelve (12) feet in height;
 - 4) If the equipment building is located on the roof of the building, the area of the equipment building shall not occupy more than twenty-five (25) percent of the roof area, and shall comply with all State of North Carolina Building Code requirements for the proposed and existing building; and
 - 5) Approval of the Planning Director or his/her designee to ensure consistency with the definition of stealth facility is required. Each application shall contain a rendering or photograph of the antenna including, but not limited to, colors and screening devices.
- e) Non-stealth rooftop or building mounted antennas shall only be permitted not exceeding twenty (20) feet above the roofline of the subject building or support structure and subject to the procedure and requirements provided elsewhere in this Section. Building rooftop non-stealth antennas shall be subject to the following minimum standards:
- 1) Antennas shall only be permitted on buildings or structures that are at least fifty- (50) feet tall. Antennas may be placed on buildings less than fifty- (50) feet tall if public safety needs warrant the antenna;
 - 2) Antennas, and related equipment buildings, shall be located or screened to minimize the visual impact of the antenna upon adjacent properties and shall be of a material or color which matches the exterior of the building or structure upon which it is situated;
 - 3) No commercial advertising shall be allowed on an antenna;
 - 4) No signals, lights, or illumination shall be permitted on an antenna, unless required by the FCC or the FAA;
 - 5) Any related unmanned equipment building shall not contain more than six hundred (600) square feet of gross floor area per user or be more than twelve (12) feet in height;
 - 6) If the equipment building is located on the roof of the building, the area of the equipment building shall not occupy more than twenty-five (25) percent of the roof area, and shall comply with all State of North Carolina Building Code requirements for the proposed and existing building;
 - 7) Antennas may be located on poles owned or controlled by the County or by a utility provider pursuant to the following regulations:
 - a) The maximum height of the pole with antenna shall not exceed seventy- (70) feet in height; and
 - b) The utility poles shall be located on public property, within public easements, or public rights-of-way.

- c) The antenna shall be of a size and placement that is structurally compatible with the engineering design of the pole pursuant to the North Carolina State Building Code and attested to by a professional engineer licensed in the State of North Carolina, and competent to evaluate antenna choices.
 - d) The antenna shall not extend more than ten- (10) feet above the existing pole height. If the pole is replaced to withstand the addition of telecommunications equipment, then the same restriction shall apply except that the utility pole may be twenty- (20) feet higher than the adjacent pole heights.
 - e) Placement of an antenna on a utility pole shall only be on poles owned or operated by a public utility authorized to operate in the County, a County franchisee, or Orange County.
 - f) All relocation costs associated with any relocation of the antenna necessitated by roadway or sidewalk improvements shall be borne by the telecommunications provider.
- f) Fees.
- 1) A filing fee as set by the Orange County Board of Commissioners shall be paid upon application for a Building Permit, Site Plan approval, or Special Use Permit. In addition, an inspection fee is due the County at the time of future inspections.
 - 2) An engineering permit fee shall be paid if a pole is replaced to accommodate telecommunications equipment.
 - 3) Public land or right-of-way lease agreements will be established by separate instrument.

6.18.4 Minimum Standards for Telecommunications Towers

All telecommunications towers must meet the following minimum standards:

- a) Prior to the issuance of a Building/Electrical Permit by the Inspections Division, a site development plan shall be presented for approval to the Planning Division. Each application for a proposed telecommunications tower shall include all requirements for site development plan approval as required. Approval of the Planning Director or his/her designee to verify consistency with the definition of stealth facility is required. Each application shall contain a rendering or photograph of the tower including, but not limited to, colors and screening devices.
- b) All telecommunications towers shall be placed in heavily wooded areas on the site to the maximum extent possible so as to lessen the visual intrusiveness of the structure and accessory structures. A statement shall be submitted by the applicant stating how the proposed tower will minimize visual intrusiveness to surrounding properties in the area. Criteria that may be used for such evidence may be height and type of existing trees surrounding the proposed tower, and local topography.

- c) A statement shall be submitted, prepared by a professional engineer licensed in the State of North Carolina, which through rational engineering analysis, certifies the tower's compliance with applicable standards as set forth in the State of North Carolina Building Code, and any associated regulations; and describes the tower's capacity, including an example of the number and type of antennas it can accommodate.
- d) Applicants shall provide at time of application submittal:
- 1) The existing cell sites (latitude, longitude, power levels) to which this proposed site will be a handoff candidate;
 - 2) Propagation studies of the proposed site and all adjoining planned, proposed, in-service or existing sites;
 - 3) The search area utilized in finding the proposed site;
 - 4) The make, model and manufacturer of the tower and antenna(s), antenna heights and power levels of proposed site;
 - 5) The frequency, modulation and class of service of radio or other transmitting equipment;
 - 6) The actual intended transmission and the maximum effective radiated power of the antenna(s);
 - 7) The direction(s) of maximum lobes and associated radiation of the antenna(s);
 - 8) Certification that the NIER levels at the proposed site are within the threshold levels adopted by the FCC;
 - 9) Certification that the proposed antenna(s) will not cause interference with other telecommunications devices;
 - 10) A written affidavit stating why "the proposed site is necessary for their communications service" (e.g., for coverage, capacity, hole-filling, etc.) and a statement that there are no existing alternative sites within the provided search area and there are no alternative technologies available which could provide the proposed telecommunications service need without the tower.

County staff will utilize the services of a registered professional engineer to confirm the accuracy and reliability of the substantive portions of data provided in tower applications. No tower shall be permitted to exceed its designed loading capacity. For all towers attached to existing structures, the statement shall include certification that the structure can support the load superimposed from the tower. All towers shall have the capacity to permit multiple users; at a minimum monopole towers shall accommodate two (2) users and self-support/lattice or guyed towers shall, at a minimum accommodate three (3) users.

- e) Standards of evaluation.

- 1) A proposed tower shall not be permitted if it is not substantially necessary for the telecommunications service need identified pursuant to Subsection d. (10) of this Section.
 - 2) Tower height shall be measured from the base of the tower to the highest point of the proposed antenna(s), with lightening rod, to be located atop the tower structure.
 - 3) Telecommunications towers shall conform with all of the requirements of Sections 8.8.17a.1a (a-g) and 8.8.17a.2 of the Zoning Ordinance.
 - 4) All towers shall be engineered to allow for co-locations. No co-locator shall be refused access for co-location by charging exorbitant lease fees. Public safety co-locations shall take priority over other co-locators.
 - 5) A tower consultant shall provide Staff assistance on exorbitant rate leases.
- f) Tower Inspection.
- 1) Telecommunication tower owners shall submit a report to the County Inspections Division certifying structural and electrical integrity upon completion of the initial construction and at intervals as specified in this Section
 - 2) Inspection records shall be kept by the tower owner and made available upon request to the Inspections Division during regular business hours.
 - a) The following inspection schedule shall be followed except in cases where a tower has no structures other than those associated with telecommunication tower use located within the tower's fall zone. At least once every thirty-six (36) months, or thirty-six (36) months from the date of a co-location approval, a structural engineer who is regularly involved in the maintenance, inspection and/or erection of telecommunications towers shall inspect the tower and submit a report to the Inspections Division within a reasonable time thereafter. At a minimum, this inspection shall be conducted in accordance with the provisions of this Ordinance and in accordance with the tower inspections check list provided in the EIA-222 (as amended from time to time). This is considered a major inspection review.
 - b) At least once every twelve (12) months, a visual inspection from the ground shall be conducted by a properly trained staff member of a tower provider or tower consultant and a report shall be filed with the Inspections Division within a reasonable time thereafter. This inspection shall include, but shall not be limited to, visual inspection of tower foundations, structures, guys, and connections for evidence of settlement or later movement; soil erosion; condition of paint or galvanizing; rust or corrosion, loose or missing bolts, loose or corroded lightning protection connectors; tower plumbness, significant variation in guy sags (i.e. tensions), and other material areas or matters relating to the structural

integrity of the tower. This is considered a minor inspection review.

- c) In addition to the regularly scheduled major and minor inspections set forth in paragraphs 1) and 2) above, a minor inspection, at a minimum, will be conducted if the tower or its appurtenances are noted at any time to be visibly damaged. Additionally, a major inspection shall be conducted if the visible damage to the tower is significant or when, after conducting a minor inspection, significant questions remain about the structural integrity of the tower.
- 3) The Inspections Division may conduct periodic inspections of telecommunications towers to ensure electrical integrity. The owner of the telecommunication tower may be required by the County to have more frequent inspections should there be reason to believe that the electrical integrity of the tower is jeopardized. The County reserves the right to require additional inspections if there is evidence that the tower has a safety problem or is exposed to extraordinary conditions.
 - 4) Structurally Unsafe or Unused Towers. Any tower found, through inspection by the owner or by inspection of the Inspections Division, to be structurally unsafe and cannot be brought into compliance within 180 days shall be removed at the owner's expense.
 - 5) Compliance with Standards. Current or former EIA standards shall apply to the addition of antennas or other appurtenances to communications towers under the following conditions:
 - a) Additions to towers constructed prior to the effective date of this Ordinance, regardless of whether the additions are accounted for in the original design, shall comply with the current EIA standards, and the wind loading specified therein. Additions to towers constructed subsequent to the effective date of this Ordinance shall comply with standards set forth elsewhere in this Section.
 - b) Existing towers that will not have any additional attached appurtenances shall at a minimum comply with the EIA standards in existence at the time the tower was erected.
 - c) Replacement of antennas or other appurtenances shall at a minimum comply with the EIA standard in existence at the time the tower was erected if the replacement does not add to the original design loading.
 - d) If a structural analysis shows a tower is not in compliance with the appropriate EIA standards, the owner shall submit an application to the Inspections Division with a plan to bring the tower into compliance within six (6) months.
 - e) Analysis of Existing Towers. Within twelve (12) months of the effective date of this Ordinance an analysis by a North Carolina Licensed Professional Engineer (P.E. Analysis) shall be performed on all towers in excess of 100 feet in height and shall be submitted to the Inspections Division. The analysis shall

determine the tower's compliance or lack thereof with the EIA standard in effect at the time the tower was constructed and when the most recent structural loading change was made. For all towers less than six (6) years old, a current existing P.E. analysis of the tower may be submitted in lieu of the new P. E. analysis required above. If the tower does not meet the aforementioned EIA standards, the letter or existing P.E. analysis shall include the types of modifications that would be required to bring the tower up to standard. All existing towers shall be subject to the annual electrical inspection conducted by the Inspections Division including any associated inspection fees.

The Inspections Division shall be notified in writing when a required analysis is complete. A copy of the analysis report shall be made available to the County Inspections Division upon request. That report shall also give details of the net result of any changes made to the tower or its appurtenances since the last inspection.

- 6) Fees and charges.
 - a) A filing fee as set by the Orange County Board of Commissioners shall be paid upon application for a Building Permit, Site Plan approval or Special Use Permit. In addition, an inspection fee is due the County at the time of future inspections.
 - b) Public land or right-of-way lease agreements shall be established by separate instrument and recorded prior to the issuance of Building Permits.
 - c) Escrow Account. An escrow account of an amount determined by the Board of County Commissioners shall be paid by check to Orange County to pay associated consultant review fees during the review process. A partial escrow payment of \$1,000 shall be submitted at the pre-application meeting to cover associated consulting fees incurred prior to the formal submittal of a Special Use Permit application. The escrow amount required at the formal application submittal shall be reduced by the \$1,000 partial payment amount. Any unused funds in the account after either the approval of the Certificate of Occupancy (CO), or the expiration of the Special Use Permit approval, whichever is sooner, shall be returned to the designated party.

6.18.5 Master Telecommunications Plan ("Plan")

The Plan will assist providers in their search for suitable locations to build their service network. The County may develop the Plan (map), which would display locations within the County's zoning jurisdiction where property owners have expressed interest in allowing construction of telecommunications equipment. Information that may be shown on the base Plan will include: existing towers, major transmission lines, County-defined Natural Areas, historic properties, scenic corridors, known bird migratory patterns through the County, Voluntary

Agricultural Districts, and publicly-owned or quasi-public lands. In all cases, an interest in allowing the placement of telecommunication equipment on the property/properties shall have been expressed. In order to participate in the MTP all owner(s), or their legally binding representatives, shall submit an application on a form prepared by the Planning Department and meet the following guidelines:

- a) Information to be provided. All telecommunication providers who elect to construct facilities on properties in the Plan shall provide all necessary and requested information to the County's telecommunications consultant.
- b) Plan modification. After adoption of the initial Plan any subsequent modification of the Plan may be considered annually at the February Quarterly Public Hearing. Any applicant requesting modification of the Plan shall make application to the Zoning Officer on or before December 1st of each year. The fee for modifying the Plan shall be that as set forth in the Orange County Schedule of Fees.
- c) Withdrawal from the Plan. Withdrawal from the Plan is permitted if any owner submits, to the Planning Director, a notarized statement requesting withdrawal from the Plan.