

Asked  
Beland  
Go to...  
planning...  
CONCORD ZONING

Note row  
...

**7.8 Personal Wireless Communications Facility**

*7.8.1 Purpose and Intent:* The purpose of this Section is to establish a district within the Town in which personal wireless communication facilities may be provided, to regulate their impacts and to accommodate their location and use in a manner which:

- (a) protects the visual, aesthetic, scenic, historic, environmental and natural or man-made resources of the Town;
- (b) encourages the use of existing structures and towers;
- (c) protects property values;
- (d) minimizes the total number and height of towers located within ~~the~~ community by requiring tower sharing and clustering of personal wireless communication facilities where possible;
- (e) minimizes any adverse impacts on the residents of the Town (such as, but not limited to, visual blight on viewsheds, attractive nuisance, noise and falling objects) with regard to the general safety, welfare and quality of life in the community;
- (f) provides standards and requirements for regulation, placement, construction, monitoring, design, modification and removal of personal wireless communication facilities; and
- (g) provides a procedural basis for action within a reasonable period of time for requests for authorization to place, construct, operate or modify personal wireless communication facilities;

The intent of this Section is to be in compliance with the federal Telecommunications Act of 1996.

*7.8.2 Definitions:* As used in this Section, the following terms shall have the meanings indicated:

*7.8.2.1 Act:* The federal Telecommunications Act of 1996.

*7.8.2.2 Adequate coverage:* Coverage is considered to be "adequate" within that area surrounding a base station where the predicted or measured median field strength of the transmitted signal is greater than minus 95 (-95)dbm. It is acceptable for there to be holes within the area of adequate coverage where the signal is less than -95dbm, as long as the signal regains its strength to greater than -95dbm further away from the base station. For the limited purpose of determining whether the use of a repeater is necessary or desirable, there shall be deemed not to be adequate coverage within said holes. The outer boundary of the area of adequate coverage, however, is that location past which the signal does not regain its strength to greater than -95dbm. In applications to the Board, predictions of field strength in proposed coverage areas shall be supported by submission of actual measurements or drive test data, using at least two methodologies, along the most heavily traveled roads in the proposed coverage area for review and analysis by the independent consultant referred to in subsection 7.8.4.3.

*7.8.2.3 Adequate capacity:* In an area where coverage exists, capacity is considered "adequate" if, during the busiest hour of the day on at least fifty percent (50%) of the

## SPECIAL PROVISIONS

days in any month preceding the date of application, 95% or more of the attempted calls are able to connect on their first attempt, as measured using direct measurement of the coverage area in question.

7.8.2.4 *Antenna*: A device that is attached to a tower, or other structure for transmitting and receiving electromagnetic waves.

7.8.2.5 *Array*: A set of antennas for one carrier or personal wireless communication service provider that are placed on a mount at a given height above ground level and spaced so as to avoid internal interference.

7.8.2.6 *Available space*: The space on a tower or other structure to which antennas of a personal wireless communication service provider are both structurally able and electromagnetically able to be attached.

7.8.2.7 *Base station*: A fixed-location sending and receiving site serving a coverage area within a wireless communication network. More than one base station and/or facilities as used or operated by more than one variety of personal wireless communication service provider can be located on a single tower or structure.

7.8.2.8 *Channel*: A segment of the radiation spectrum radiating from an antenna. An antenna may radiate on many channels simultaneously.

7.8.2.9 *Communication equipment shelter*: A structure located at the base of a tower or other structure designed principally to enclose equipment used in connection with personal wireless communication transmissions.

7.8.2.10 *Coverage or propagation studies*: Computer generated estimates of the radiation emanating from antennas or repeaters sited on a specific tower or structure. The height above ground, power input and output, frequency output, type of antenna, antenna gain, topography of the site and its surroundings are all taken into account to create these simulations. They are a preliminary tool for determining whether a site will provide adequate coverage for a personal wireless communication service facility proposed for that site.

7.8.2.11 *Facility site*: A property, or any part thereof, which is owned or leased by one or more personal wireless communication service providers and upon which one or more personal wireless communication facility(s) and required landscaping are located.

7.8.2.12 *Filler site*: a small, lower-powered site that uses a repeater or other similar technology to fill a gap in coverage that is otherwise not filled by a base station array.

7.8.2.13 *Modification of an existing facility*: Any material change or proposed change to a personal wireless communication facility including but not limited to power input or output, number of antennas, change in antenna type or model, repositioning of antenna(s), or change in number of channels per antenna above the maximum number approved under an existing special permit.

7.8.2.14 *Monitoring*: The measurement, by the use of instruments in the field, of the radiation from a facility site as a whole, or from individual personal wireless communication facilities, towers, antennas or repeaters.

## CONCORD ZONING

7.8.2.15 *Monitoring protocol*: the testing protocol adopted by the Board, which is to be used to monitor the emissions from existing and new personal wireless communication facilities. A copy of the monitoring protocol shall be on file with the Building Inspector.

7.8.2.16 *Monopole*: A single self-supporting vertical pole with no guy wire anchors, usually consisting of a galvanized or other painted metal, or a wooden pole with below grade foundations.

7.8.2.17 *Personal wireless communication services*: Commercial mobile services, unlicensed wireless services, and common carrier wireless exchange services. These services include (but are not limited to): cellular services, personal communication services (PCS), specialized mobile radio services and paging services.

7.8.2.18 *Personal wireless communication facility*: All equipment (including any repeaters, micro-cells or other similar technology) with which a personal wireless communication service provider broadcasts and receives the radio-frequency waves that carry their services and all locations of said equipment or any part thereof.

7.8.2.19 *Personal wireless communication service provider*: An entity licensed by the Federal Communication Commission (FCC) to provide personal wireless communication services to individuals or institutions.

7.8.2.20 *Repeater*: A small receiver/relay transmitter designed to provide service to areas which are not able to receive adequate coverage from a base station in a wireless communications network and has no significant visual impact on the surrounding area.

7.8.2.21 *Structurally able*: The determination that a tower or structure is capable of carrying the load imposed by the new antennas under all reasonably predictable conditions as determined by professional structural engineering analysis.

7.8.2.22 *Tower*: A freestanding lattice structure or framework, or monopole, that is self-supporting, fixed to the ground and is designed to support personal wireless communication transmissions, receiving and/or relaying antennas and/or equipment. An existing lattice tower may be replaced in an existing location but no new lattice structures shall be permitted.

7.8.3 *Exemptions*: The following wireless communication facilities are exempt: police, fire, ambulance and other emergency dispatch; amateur (ham) radio; citizens band radio; any existing commercial radio tower; and radio dispatch for local businesses. No personal wireless communication facility shall be considered exempt from this Section for any reason whether or not said facility is proposed to share a tower or other structure with such exempt uses.

7.8.4 *Procedure for review by the Board*: Any person who desires to construct or install a personal wireless communication facility, including co-location on an existing facility, shall submit a written application for a special permit and site plan approval to the Board, with copies to the Planning Board. Applications shall be submitted in accordance with the requirements outlined in the Rules and Regulations for Personal Wireless Communication Facility(s) adopted by the Board. A special permit is required for: a) new tower construction (or modification of an existing tower); and b) personal wireless

## SPECIAL PROVISIONS

communication service facilities (or modification of an existing facility) to be mounted in or on an existing or newly permitted tower or structure. The following additional information shall also be submitted:

### 7.8.4.1 Adequate coverage, adequate capacity and justification of need:

- (a) The applicant shall provide written documentation of any facility sites in the Town and in abutting towns in which it has a legal or equitable interest, whether by ownership, leasehold or otherwise. Said documentation shall demonstrate the following: that these facility site(s) are not already providing, or do not have the potential, by adjusting the personal wireless communication facility on the site(s), to provide adequate coverage and/or adequate capacity; that there is a significant gap in coverage; and, that the proposal reduces or eliminates the significant gap in coverage in a manner that is least intrusive upon the interests of the Town as expressed in the purpose and intent of this Section. A "gap" in coverage exists when a remote user of personal wireless communication services is unable to either connect, directly or indirectly, with a base station or to maintain a connection capable of supporting a reasonably uninterrupted communication. A "significant gap" depends upon the physical size of the gap and upon the number of customers affected by that gap. Documentation shall include, for each facility site listed, the exact location, ground elevation, height of tower or structure, type of antennas, antenna gain, height of antennas on tower or structure, output frequency, number of channels, power input and maximum output per channel. Potential adjustments to these existing facility sites, including changes in antenna type, orientation, gain, height or power output shall be specified. Radial plots from each of these facility sites, as they exist and with adjustments as above, shall be provided as part of the application. Average  
→
- (b) The applicant shall provide written documentation that they have examined all personal wireless communication facility sites located in the town and in abutting towns in which the applicant has no legal or equitable interest to determine whether those existing facility sites can be used to provide adequate coverage and/or adequate capacity. Documentation shall include all information outlined above. Radial plots from each of these facility sites as proposed shall also be provided.
- (c) The applicant shall provide written documentation (including radial plots) that they have analyzed the provision of adequate coverage and adequate capacity through the use of filler sites in conjunction with all personal wireless communication facility sites listed above.
- (d) The applicant shall provide a map of all proposed facilities to be applied for over the next twenty (20) months (or a complete build-out analysis) by the personal wireless communication service provider. Such map shall also include any and all existing personal wireless communication facility(s) of the provider and known proposed facilities of other personal wireless communication service providers.
- (e) The applicant shall provide written documentation that the applicant has examined potentially viable personal wireless facility sites in the overlay districts in the town and relevant sites in abutting towns that could provide adequate coverage and capacity in the town, including the existing structures and open areas that comply

## CONCORD ZONING

with the relevant zoning bylaws of those towns and are consistent with Section 7.8.1 *Purpose and Intent (a) through (e)*. The applicant shall list all such sites examined and state fully and completely the rationale for rejecting any such sites that are less intrusive upon the interests of the Town than the site(s) for which application is being made.

### 7.8.4.2 *General requirements:*

- (a) New towers shall be set back a distance at least equal to the height of the tower from all lot lines of the site on which the tower is located, unless the tower has been designed to break away at a certain point above the ground, in which case the new tower may be set at least the breakaway distance from all lot lines.
- (b) If the facility site is in a wooded area, a vegetated buffer strip of undisturbed trees shall be retained around the entire perimeter of the personal wireless communication facility site for at least the lesser of (i) the distance to the lot line or (ii) fifty (50) feet. The landowner shall enter into a recordable easement, restriction, or similar instrument enforceable by the Town to ensure that the buffer strip is retained while the facility site is in place.
- (c) Fencing and signs: the area around the tower and communication equipment shelters shall be completely fenced for security to a height of six feet and gated (unless the communication equipment shelter is otherwise secured). Use of razor wire is not permitted. A sign shall be posted adjacent to the entry gate indicating the facility owner(s) and a 24-hour emergency telephone number and any legally required radio-frequency warning sign shall be posted in an appropriate location. Commercial advertising on any antenna, tower, fencing, accessory building or communication equipment shelter is prohibited.
- (d) Communication equipment shelters and accessory buildings shall be designed to be architecturally similar and compatible with each other and the surrounding area. The building shall be used only for the housing of equipment related to the site. Whenever practical, the buildings shall be located underground. Additional supplemental landscape screening may be required by the Board to lessen adverse visual impacts.
- (e) New towers shall not exceed the minimum height necessary to provide adequate coverage for the personal wireless service facilities proposed for use on the tower, unless the Board determines that co-location with another service provider is desirable, suitable and consistent with this Section. In areas where there is no significant tree canopy, the maximum height of a tower shall not exceed one-hundred-twenty (120) feet above finished grade of the ground elevation. Such finished grade shall not be distorted above the pre-existent natural grade as a way to achieve additional height.

In areas where there is significant tree canopy, the maximum height of a tower shall not exceed twenty (20) feet above the average height of the natural pre-existent tree canopy within a one-hundred fifty (150) foot radius of the tower.

## SPECIAL PROVISIONS

The Board may permit an increase in the height of a tower, or attachment thereto, to facilitate co-location, provided the Board determines that no material increase in visual impacts will result from the increased height, but in no case shall the height exceed one-hundred fifty (150) feet.

The design of the tower and supporting base structure shall accommodate an ultimate height of whatever is approved by the Board.

(f) If primary coverage from the proposed personal wireless communication facility (greater than 50%) is outside the Town of Concord, the permit may be denied unless the Applicant can show that they are unable to locate within the Town which is primarily receiving service from the proposed facility.

(g) A personal wireless communication facility proposed to be located on an existing, suitable, non-residential structure or tower for which an occupancy permit was issued as of January 1, 2001 and located within this district, shall not exceed the height of such structure by more than twenty (20) feet.

(h) Unless required by the Federal Aviation Administration or Emerson Hospital mediflight program, no exterior night lighting of towers or the personal wireless communication facility is permitted except for manually operated emergency lights for use when operating personnel are on site.

(i) A personal wireless communication facility subject to jurisdiction by the Federal Aviation Administration (FAA) shall be designed to minimize, to the extent feasible, adverse visual effects upon existing single-family detached dwellings and historic or scenic viewsheds. No new tower that requires striping or lighting per FAA requirements shall be located within one-thousand (1000) feet of an existing school, day care center, single-family detached dwelling or historic resource.

 (j) No new tower for a personal wireless communication facility, shall be located within:

i. One-thousand (1000) feet, on a horizontal plane, to any existing structure which is, or is able to be, occupied or habitable on the property of any existing child care facility or school;

ii. One thousand (1000) feet, on a horizontal plane, to the structure of an existing single-family detached dwelling;

iii. One thousand (1000) feet, on a horizontal plane, to any structure in an Historic District, or listed, or eligible to be listed, on the state or federal Register of Historic Places;

iv. a Massachusetts or federally regulated bordering, vegetated wetland;

v. a Massachusetts certified vernal pool;

vi. the habitat of any Massachusetts listed rare or endangered wildlife or rare plant species;

(k) New personal wireless communication facilities in or on an existing, suitable, non-residential structure or tower for which an occupancy permit was issued as of January 1, 2000 shall be located at least:

NO  
? see  
for  
rationale

## CONCORD ZONING

- i. five hundred (500) feet, on a horizontal plane, from any existing structure which is, or is able to be, occupied or habitable on the property of a child care facility or school;
  - ii. three hundred (300) feet, on a horizontal plane, from the structure of an existing single-family detached dwelling; or
  - iii. three hundred (300) feet, on a horizontal plane, from any structure in a Historic District or listed (or eligible to be listed) on the State or Federal Register of Historic Places.
- (l) The following locations are ranked in order of preference and are encouraged:
- i. personal wireless communication facility sites that are most distant from single-family detached dwellings and schools.
  - ii. municipal lands which comply with other requirements of this section.
  - iii. where the visual impact of towers can be minimized by the use of camouflage, stealth design or other innovative measures to reduce, eliminate or disguise the negative visual impact.
  - iv. filler sites to provide adequate coverage without requiring new towers.
  - v. existing personal wireless communication facility(s).
- (m) Personal wireless communication facilities shall be located so as to provide adequate coverage and adequate capacity with the fewest number of base stations, towers and antenna arrays that are technically feasible. The Board may limit the number of base stations, towers and antenna arrays upon any single parcel. The Board may limit the number of base stations, towers and antenna arrays in any given overlay district.
- (n) Subsequent applicants are required to co-locate and shall submit an application to add to existing towers, installed under the provisions of this Bylaw.
- (o) The Board shall request input from the Fire, Police and other town emergency services regarding the adequacy for emergency access to the site.
- (p) Balloon test: Within 35 days of submitting an application, the applicant shall arrange to fly, or raise upon a temporary mast, a three foot diameter brightly colored balloon at the maximum height and at the location of the proposed tower. The date(s) (including a second date, in case of poor visibility on the initial date), times and location of the balloon test shall be advertised, by the applicant at seven (7) and fourteen (14) days in advance of the first test date in a newspaper with a general circulation in the Town. The applicant shall inform the Board and the Planning Board in writing of the dates and times of the test at least fourteen days in advance. The balloon shall be flown for at least five consecutive hours between 7:00 a.m. and 5:00 p.m. on the date(s) chosen. The applicant shall bear any and all expenses associated with such balloon test.

7.8.4.3 *Evaluation by independent consultants:* Upon submission of a complete application for a special permit under this Section, the Board shall engage the services of a qualified independent consultant and shall provide the independent consultant with the

## SPECIAL PROVISIONS

completed application and existing documentation for analysis and review. The independent consultant shall gather additional documentation and conduct additional research as necessary to support the analysis and review. Access to the site to conduct any necessary site visits shall be provided to the qualified independent consultant. The qualified independent consultant shall submit to the Board a written recommendation and an opinion as to the conformance of the application with the requirements of this Section.

*7.8.4.4 Fees and insurance:* Personal wireless service facilities shall be continuously insured by the owner(s) against damage to persons or property. The owner(s) shall provide a Certificate of Insurance to the Building Inspector on an annual basis in which the Town shall be specifically listed as an additional insured. A schedule of fees for personal wireless service facilities permitting and renewal, any monitoring of emissions and inspection of structures, and any other fees shall be established by the Board as part of the Rules and Regulations for Personal Wireless Communication Facility(s).

*7.8.4.5 Relief from general requirements:* The Board may, upon advice of the Planning Board and a qualified independent consultant, grant relief from the general requirements contained in subsection 7.8.4.2 (rather than require an applicant to seek a variance from this Bylaw) where the Board finds that the relief is supported by the submittal of a study prepared by a qualified technical consultant showing a significant gap in coverage, where the Board finds that the extent of the granted relief is mitigated by a showing that the project provides a minimally intrusive viable means of reducing or eliminating such significant gap in coverage, and where the Board finds that the desired relief may be granted without substantial detriment to the neighborhood and without derogating from the intent and purpose of this Bylaw. However, the Board shall not grant relief from the maximum height limitation in subsection 7.8.4.2(e). The Board shall be empowered to grant relief from any setback requirement in subsection 7.8.4.2(i), (j) or (k) provided that the site proposed is demonstrated to be necessary to achieve adequate coverage or capacity and to be minimally intrusive upon the interests of the Town, consistent with Section 7.8.1 *Purpose and Intent (a) through (e)*. The applicant shall provide the Board with a written statement describing why the requested relief is in the best interest of the Town with references to Section 7.8.1 *Purpose and Intent (a) through (e)*."

*7.8.4.6 Approval criteria:* A special permit shall be issued under this section only if the Board shall find that the project is in harmony with the general purpose and intent of this Section. In addition, the Board, in consultation with the independent consultant referred to in subsection 7.8.4.3 shall make all the applicable findings before granting the special permit, as follows:

- (a) that the applicant is not already providing adequate coverage and/or adequate capacity and that a significant gap in coverage exists;
- (b) that the applicant is not able to use existing personal wireless communication facility site(s) either with or without the use of filler sites to provide adequate coverage and adequate capacity;
- (c) that the proposed personal wireless communication facility site selected by the applicant minimizes adverse impacts on historic resources, scenic views (viewsheds)

## CONCORD ZONING

and residential property values by being located most distant from historic resources, scenic views (viewsheds) and single-family detached dwellings.

(d) that the proposed personal wireless communication facility site minimizes adverse impacts on historic resources, scenic views, residential property values and natural or man-made resources through the use of camouflage, stealth or other innovative technology;

(e) that the applicant has agreed to implement all reasonable measures to mitigate the potential adverse impacts of the facilities;

(f) that the proposal shall comply with the appropriate FCC Regulations regarding emissions of electromagnetic radiation and that the required monitoring program is in place and shall be paid for by the applicant; and

(g) that the applicant has agreed to rent or lease available space on the tower, under the terms of a fair-market lease, without discrimination to other Personal wireless service providers;

If a special permit is granted the Board shall impose any such additional conditions and safeguards as public safety, welfare and convenience may require, either as recommended by the independent consultant, the Planning Board or upon its own initiative.

Any decision by the Board to deny a special permit under this Section shall be in conformance with the Act, in that it shall be in writing and supported by substantial evidence contained in a written record.

7.8.5 *Monitoring and evaluation of compliance:* Pre-testing and post-testing (including monitoring) shall be required and in accordance with the Office of Engineering Technology Bulletin 65 "Evaluating Compliance the FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" and as defined in "A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance".

(a) *Structural Inspection:* The tower owner(s) shall pay for an independent licensed professional structural engineer to conduct inspection of the tower's structural integrity and safety. Pre-existing guyed towers shall be inspected every three years. Monopoles and non-guyed lattice towers shall be inspected every five years. A report of the inspection results shall be prepared by the structural engineer and submitted to the Building Inspector, the Town Clerk and the Planning Board. Any modification of an existing facility that increases tower dimensions or antenna numbers or type shall require a new structural inspection.

(b) *Unsafe Structure:* Should the inspection of any tower reveal any structural defect(s) that, in the opinion of the independent structural engineer, render(s) the tower unsafe, the following actions shall be taken. Within ten business days of written notification of unsafe structure, the owner(s) of the tower shall submit a plan to remediate the structural defect(s). This plan shall be initiated within ten business days of the submission of the remediation plan and completed as soon as reasonably possible.

## SPECIAL PROVISIONS

7.8.6. *Removal requirements:* Any personal wireless communication facility that ceases to operate for a period of one year shall be removed. Cease to operate is defined as not performing the normal functions associated with the personal wireless communication facility and its equipment on a continuous and ongoing basis for a period of one year. At the time of removal, the facility site shall be remediated such that all personal wireless communication facility improvements that have ceased to operate are removed. If all facilities on a tower have ceased to operate, the tower (including the foundation to depth of three feet below grade) shall also be removed and the site shall be revegetated by the owner of the tower. Existing trees shall only be removed if necessary to complete the required removal. The applicant shall, as a condition of the special permit, provide a financial surety or other form of financial guarantee acceptable to the Board, to cover the cost of removal of the facility and the remediation of the landscape, should the facility cease to operate.