Design Standards for Small Cell Wireless Facilities and Telecommunications Towers

Purpose: The Town of Dewey Beach has a small beach town aesthetic that is important to retain. The installation of small cell technology will enhance wireless capabilities while harmoniously blending into the existing character and context of the Town. Installation of the technology shall take into consideration the area in which it will be placed to ensure Dewey Beach's small town character is maintained when development occurs in any form. Public safety shall also be considered when locating small cell wireless facilities.

General Requirements for Small Cell Wireless Facilities

Type of Applications

There are four categories of wireless siting applications for attachments in the right of way (ROW):

- New – A proposal to install a new structure where none exists and to attach wireless facilities on the new structure.
- Replacement – A proposal to replace an existing structure without wireless facilities with a new structure and to attach wireless facilities on the replacement structure.
- Minor modification – A proposal to modify~~ication of~~ an existing wireless facility; the modification does not substantially change the size of the structure or wireless facilities.
- Collocation – means and refers to the mounting or installation of transmission equipment on a wireless support structure for the purpose of transmitting and/or receiving radio frequency signals for communications purposes. Collocation also refers to a proposal to collocate transmission equipment on a wireless support structure. ~~–~~This definition includes the first placement of transmission equipment on a Tower or base station.

Antenna

- ~~a.~~ The antenna shall appear as a seamless extension of the existing structure.
- ~~b.~~ Antenna shall be equal to or less diameter of the tower/structure.
- ~~c.~~ Antenna shall appear as a seamless extension of the new tower/structure.
- ~~d.~~ The antenna shall match the color, texture of the tower/structure it will be a part of.
- Antennas should be placed in line with the pole and should have a smooth, cylindrical shape, such as a single canister.
- Each antenna is located inside an antenna enclosure of no more than three cubic feet in volume or, in the case of an antenna that has exposed elements, the antenna and all of ~~its~~its exposed elements are cumulatively no more than three cubic feet in volume.
- Total height of the antenna shroud/ canister shall not exceed 3 feet.

- Antennas on small wireless facilities should be of the type and operate at frequency such that it will not cause unacceptable interference with a public safety agency's communications equipment.

Backup Power and Power Connections

Battery backup-power devices shall be installed with a transfer switch to prevent back feeding into the electrical system.

All utility lines required to power wireless communication must be buried underground. Overhead wires are prohibited.

Commented [RE1]: I haven't seen any documentation of generator plugs being installed on these poles, so it's highly unlikely that one will be utilized during a power outage. Any batteries are installed within the cabinet enclosure itself.

Cabinets and Equipment

- ~~a.~~ All equipment/cabinets associated with small cell wireless facilities shall comply with the Town's floodplain regulations.
- ~~b.~~ If equipment needs to be located on the tower/structure other than the antenna the equipment shall not protrude more than 12" from any tower/structure.
- ~~c.~~ All equipment/cabinets shall comply with any wind restrictions.
- ~~d.~~ All equipment/cabinets shall match the color and texture of the tower/structure it is to be placed with the exception of wood utility poles.
- ~~e.~~ All wires shall be shrouded and shall match the color and texture of the structure it is to be attached.
- ~~f.~~ All wires, cables, and other equipment shall be firmly attached to the structure.
- Any and all wiring (including cabling) must be covered with an appropriate cover or placed inside the pole/ wireless support structure.
- Ground mounted ~~g.~~ c~~C~~abinets shall be integrated into the structure. ~~If integration is not feasible the cabinet shall be adjacent to the structure to which the antenna is placed.~~
- ~~h.~~ Any~~The~~ pole mounted cabinet shall not exceed 12~~28~~ cubic feet in volume, ~~and~~ shall not exceed 3 ft. in height and 2ft. in width~~.~~
- Any~~The~~ ground mounted cabinet shall not exceed 28 cubic feet in volume, shall not exceed 3 ft. in height, 3ft. in width and 3ft. in depth
- ~~i.~~ Any pole mounted equipment, excluding the power meter and disconnect, ~~placed~~to be mounted on the tower/structure shall have a clear height of 10 ft. ~~Should we add in a minimum height for the power meter and disconnect to be a minimum of~~eet ~~and a maximum height of XXXt.~~
- ~~j.~~ No equipment or structure shall interfere with the pedestrian or bicycle traffic.
- ~~k.~~ Street trees shall not be removed to allow for cabinets or equipment.

~~-~~Noise and Lighting

a. Illumination is not permitted for the small cell wireless facilities, unless it is part of a ~~street light~~streetlight or where required by the FCC.

b. All equipment shall comply with the Town's noise regulation.

Power Disconnect

Each approved small wireless facility shall have a clearly marked power-disconnect switch adjacent to the electronics cabinet and located outside areas that exceed radio-frequency exposure limits.

The power meter and disconnect should be mounted at a minimum height of 7 feet and a maximum height of 10 feet.

Signage

Signage shall be for notification purposes of the wireless carrier, identification of equipment, contact information etc. and shall not exceed 2 SF unless otherwise required by applicable law.

~~Preferred~~ Small Cell Wireless Facilities Locations

As such, small cell facilities shall not be installed:

- On medians or traffic islands
- On the same support structure as a traffic control device
- In any location where they will interfere with or detract from traffic control devices
- On the wireless support structure which is less than 50 ft. from the midpoint of any beach access location at the end of any ocean side street

Preferred placement of small wireless facilities shall depend on application types. The order of priority from most preferable to least preferable, is:

- Beach front Hotel/Motel Rooftop co-location
- Minor modification or co-location on wireless support structure
- Replacement
- New

If the Wireless Service Provider (WSP) is unable to co-locate on the existing wireless support structure; WSP need to provide the preferred pole locations considered within 300' of proposed New/ replacement pole location and provide a justification as to why the poles weren't suitable for co-locations.

Placement and Siting of Small Wireless Facilities

This section refers to the placement of small cell antenna and wireless equipment. Co-location on an existing structure is the preferred method for placement of small cell antenna and wireless equipment. If co-location is not feasible the construction of a new pole is permitted.

Co-location on existing pole or building. Documentation shall be required if co-location can not be complied with.

a. There shall be a 10 ft. clear height.

~~b. Maximum height shall not exceed 50 feet or by more than 10% of the existing pole/structure height as of a result of co-locating new small wireless facilities, whichever is lesser.~~ Maximum height of the existing pole/structure, plus collocated enclosure, shall not exceed 50ft or increase existing pole/structure height by more than 10%, as a result of the collocated SWF, whichever is lesser.

c. Co-location on a building.

1. Antenna and wireless equipment/cabinets shall be stealth and concealed by the building.
2. Antenna and wireless equipment/cabinets shall not exceed more than 1 foot above the roof line.

3. Co-location is encouraged to use the existing structures. If a new structure is proposed, it shall match the character of the area that if will be placed. The intent for new structures is to match the character of the area and have the structures fit in.

Commented [RE2]: This would appear to prevent all roof mounted antennas and equipment, especially with the limit of 1 ft. Is that the intention? I believe you have mentioned that you wanted to encourage using hotel/beach-front rooftops?

New/ Replacement Small Cell Wireless Structure Requirements

a. New structures shall comply with the following:

- ~~1.~~ The new structure shall be at least 10 ft. from light poles, traffic signals.
- ~~2.~~ New structure shall be 100 ft. from existing structures/poles/streetlights.
- ~~3.~~ The new/ replacement structure shall be 10 ft. from any building face. Can this be addressed to go beyond 10 ft to 25 ft or further?
- ~~4.~~ The new/ replacement structure shall be 12 ft. from driveway aprons to ensure access.
- ~~5.~~ The new/ replacement structure shall be 10 ft. from permanent objects in the ROW and out of the sight triangle at intersections. What does permanent objects mean?
- ~~7.~~ Avoid placement in front of residential and business entrances, windows, signs, etc. New/ replacement ~~-~~structures shall be sited in the vicinity of lot corners.
-
- The new/ replacement wireless support structure on which antenna facilities are mounted on~~,~~ should be no taller than 35 feet above the grade including the antenna. ~~-~~If it is technically infeasible for the wireless service provider to operate within the 35 ft. limit, the wireless service provider must ~~can~~ provide documentation ~~adequate~~ justifying the technical infeasibility.
- Maximum height of a new/replacement structure shall be 50 ft from grade including antenna and any enclosure, or not exceed by more than 10% the height of the closest streetlight/pole within 100 ft on the same side of the street that it is being designed to match, whichever is smaller.

- Under no circumstances will a wireless support structure taller than 50' including antenna and enclosure be approved.
- ~~11.~~ The new/ replacement structure shall match the aesthetic, color, texture of the structures within the immediate area and street.
- ~~12.~~ The new/ replacement ~~tower/~~structure shall comply with the floodplain regulations.
- Small wireless facilities on replacement structures must be located within 2 feet of the existing structure to be replaced, where co-location is not proven to be viable.
- New/Replacement poles must meet one of the preferred pole designs, outlined in Appendix A.

Setback Requirements

- Small wireless facilities must be at a minimum set back distance of 30 feet from the nearest residential dwelling.
- Small wireless facilities must be at a minimum set back distance of 20 feet from the nearest commercial dwelling.
- Small wireless facilities must be at a minimum set back distance of 250 feet from the nearest elementary and secondary educational institutions.
- Small wireless facilities must be at a minimum set back distance of 300 feet from ~~the~~ another small wireless facility from the same WSP, and 100 feet from another small wireless facility from different WSP, unless they are collocating on the same wireless support structure.
- Small wireless facilities must be at a minimum set back distance of 3.5 feet from the curb, or 6 feet from the edge of the paved roadway section if no curb exists.
- Small wireless facilities must be at a minimum set back distance of 15 feet from the nearest tree.
- Small wireless facilities must be at a minimum set back distance of 250 feet from the nearest park.~~5.~~
- Small wireless facilities must be at a minimum set back distance of 50 feet from the midpoint of any beach access location at the end of any ocean side or bay side street.

~~Siting Prohibitions~~

~~a. All new wireless equipment other than that which is co-located on an existing pole or building shall be a minimum of 100 ft. from another small cell antenna/wireless equipment.~~

~~b. All new wireless equipment shall be installed no closer than 50 ft. from the midpoint of any beach access location at the end of any ocean side street.~~

Removal

The removal of all structures and/or equipment and repair of the structures shall be done by and at the expense of the wireless company.

a. Structure shall be returned in equal or better state.

Commented [RE3]: Per Jim D, pending a "Town standard" TBD

Commented [JE4]: Jim/Bill: Appendix A will be created when Town has decided on their preferred pole designs. Please see other attachments to my email for sample designs.

b. All equipment and mounting hardware shall be removed.

c. Holes shall be patched and painted to match the color and texture of the structure.

Application Requirements

The chart below indicates the required submittals that must accompany an application for a Small Cell Facility. The submittal requirements are identified for each application type.

Field Name	Description	New	Replacement	Minor modification	Collocation
COMPLETE APPLICATION	Checklist	x	x	x	x
CONSTRUCTION DRAWING	Stamped by a Delaware P.E.	x	x	x	x
MAP	Attach map of the general area, calling out the location of the site	x	x	x	x
MANUFACTURER SPECIFICATIONS	Upload manufacturer's cut-sheets for all proposed radios, antennas and accessories listed in application	x	x	x	X
STRUCTURAL ANALYSIS	Stamped by a Delaware P.E.	x	x	x	x
RF PROPAGATION STUDIES	1. Provide copy of RF propagation contour maps showing site with/without calculated signal levels in color at the target signal level, and ± 5 dB 2. Include a legend that shows what signal each color represents 3. Include maps showing coverage at the proposed antenna elevation and at 10 ft below the proposed elevation 4. Maps must be legible and in sufficient detail	x	x	-	-
PROPERTY OWNER CONSENT	1. Attach evidence that the owner has provided consent to use their structure for the proposed Small Cell Facility 2. Include unique pole number 3. If the proposed wireless support structure is located along a State road or in the State right-of-way, documentation of tentative or firm approval by DelDot must be submitted.	x	x	-	x

Commented [RE5]: Jim; add any specifics on what you want required to be included in this documentation here.

PHOTOS / PHOTO SIMULATIONS	For all applications, photo simulations from at least three reasonable line-of-site locations near the proposed project site must be included. The photo simulations must be taken from the viewpoints of the greatest pedestrian or vehicular traffic. Angle of photo simulation separation must be at least 90 degrees or greater and provide a full profile depiction.	x	x	x	x
RF ANALYSIS (EME REPORT)	Required unless the RF analysis is categorically excluded	x	x	x	x

Radio Frequency (RF) Analysis

As a condition of approval for small cell wireless facilities, Applicants must provide an evaluation of proposed wireless equipment being installed to prove its compliance with FCC guidelines for human exposure to radio frequency fields. Evaluations shall include uncontrolled exposure in the near-field and far-field regions.

At a minimum, evaluations of proposed wireless equipment must contain the following:

1. A statement of compliance.

2. Date of the report.

3. Date of statement of compliance.

4. Location proposed for the Small Wireless Facility installation.

5. Applicant site or identification number for the Small Wireless Facility installation.

6. GPS coordinates of the existing or proposed Pole.

7. Calculation of radio frequency power at the radios or other electronics.

8. Calculation of radio frequency power at the Antennas.

9. Calculation of radio frequency power within 6 ft. of ground level, and at ground level.

10. Calculation of radio frequency power at windows of residences and businesses in closest proximity to the Small Wireless Facility.

11. Calculation of radio frequency power of the closest area that can be occupied by the general public in the main lobe of the Antenna, if within 50 ft.

12. Location of the applicable signage with above-ground-level height listed.

TELECOMMUNICATIONS TOWER STANDARDS

The following standards apply to all Tower sites above 50 ft.:

Maximum Height Standards

a. The maximum height of a Tower shall be 150 feet including any lighting rod.

b. The height of any Tower shall include the support structure and any attached Antennas proposed at the time of application.

Tower Design

a. Lattice Towers and any guyed wires are prohibited.

b. The proposed Tower shall be designed to allow for co-location of two (2) other carriers.

c. All Towers and required fencing shall be equipped with appropriate anti-climbing devices.

d. The perimeter of the Tower and anchors shall be enclosed by a fence or wall at least six feet in height.

e. The tower and equipment shall comply with the floodplain regulations.

Painting

~~a.~~ Towers shall be painted or finished in a manner which blends with the dominant color of the background except where otherwise required by the FAA. The applicant and/or operator of the facility shall have a continuing duty to maintain such paint or finish.

Setbacks

~~a.~~ A Tower located in nonresidential zoning districts shall be set back a minimum of the height of the tower from any other zoning district boundaries. A Tower located within a residential zoning district shall be set back a minimum of twice the height of the tower from any existing dwelling unit.

View Protection

A Tower shall not be located in such a fashion as to negatively impact views from public parks and recreation areas.

Site

a. A Site Plan shall be submitted for the compound with the placement of the Tower, cabinets and any other equipment.

b. All equipment, Tower, cabinet, etc. shall be located within the compound.

c. The compound shall be large enough to allow for the co-location of at least two (2) other carriers.

Lighting

a. ~~a.~~ All lighting shall comply with FAA requirements.

Formatted: List Paragraph, Numbered + Level: 1 + Numbering Style: a, b, c, … + Start at: 1 + Alignment: Left + Aligned at: 0.25" + Indent at: 0.5"

APPENDIX A: Preferred Pole Designs

[[TO BE ADDED WHEN DETERMINED BY TOWN OF DEWEY]]

Formatted: Font: 14 pt