



SMALL CELL DESIGN GUIDELINES

April 11, 2019

City of Greeley, Colorado



Table of Contents

I. Purpose	2
II. Definitions	2
III. Application Requirements	3
3.1 – Site Plan.....	3
3.2 – Right of Way Permit.....	4
3.3 – Master License Agreement & Supplemental Site License.....	4
IV. General Standards	4
4.1 – Preference for Locations and Methods.....	4
4.2 – Attachment to Existing Poles.....	4
4.3 – Installation of New Wireless Structures.....	6
4.4 – Additional Requirements of Collocated Equipment and New Poles.....	8
4.5 – Historic Properties and Districts.....	9



I. Purpose

1. Balance the deployment of small cell facilities and associated wireless support structures in the public right-of-way to provide fast, reliable coverage and capacity, while preserving the character, aesthetics, and pedestrian-friendly design of the City of Greeley's streetscapes;
2. Ensure that structures and facilities within the public right-of-way protect the health, safety, and welfare of the public by minimizing and reducing impacts to surrounding land uses and to the City, its residents and visitors;
3. Protect the integrity of neighborhoods, commercial areas, historically designated areas, and the downtown area and ensure that access to and occupancy or use of public right-of-way in such areas is technologically and aesthetically appropriate;
4. To require, in certain situations where new poles are proposed, that all equipment including wiring, be concealed inside the new pole;
5. Establish clear standards for use throughout the City; and
6. Foster partnerships to expedite the installation and operation of small cell facilities in order to enhance wireless service for commercial, residential, and institutional users in the city.

II. Definitions

- A. "Micro cell facility" means a small wireless facility that is no larger in dimensions than twenty-four inches in length, fifteen inches in width, and twelve inches in height and that has an exterior antenna, if any, that is no more than eleven inches in length.
- B. "Network" or collectively "Networks" means one or more of the wireless and fiber-based Wireless Communications Facilities operated by the Company to serve its customers in the City of Greeley.
- C. "Public Property" means any real property owned or controlled by the City, excluding the Public Right-of-Way.
- D. "Public Right-of-Way" or "ROW" means the surface, air space above the surface, and the area below any public street, way, alley, sidewalk, median, parkway, or boulevard now or hereafter held by the Licensor, or dedicated for use by the Licensor, use by the general public, or use compatible with the service or operations of the Wireless Communications Facilities.
- E. "Supplemental Site License" means a document, substantially in the form attached as Exhibit A within the Master License Agreement template. Each Wireless Site installation will be subject to a Supplemental Site License.
- F. "Small Cell Facility" means a Wireless Communications Facility where each Antenna is located inside an 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 exposed elements could fit within an imaginary enclosure of no more than three cubic feet; and primary equipment enclosures are no larger than seventeen cubic feet in volume. The following associated equipment may be located outside of the primary equipment enclosure and, if so located, is not included in the calculation of equipment volume: electric meter, concealment, telecommunications



demarcation box, ground-based enclosure, back-up power systems, grounding equipment, power transfer switch and cut-off switch. Small cells may be attached to Alternate Tower Structures, Replacement Pole, and Base Stations. The definition of a Small Cell Facility shall also include a Micro Cell or Micro Cell Facility.

- G. "Wireless Communications Facility" or "WCF" shall mean a facility used to provide personal Wireless Services as defined at 47 U.S.C. Section 332 (c)(7)(C); or wireless information services provided to the public or to such classes of users as to be effectively available directly to the public via licensed or unlicensed frequencies; or wireless utility monitoring and control services. A WCF does not include a facility entirely enclosed within a permitted building where the installation does not require a modification of the exterior of the building; nor does it include a device attached to a building, used for serving that building only and that is otherwise permitted under other provisions of the Code. AWFC includes an Antenna or Antennas, Base Stations, support equipment, Alternative Tower Structures, and Towers. The term does not include mobile transmitting devices used by wireless service subscribers, such as vehicle or hand held radios/telephones and their associated transmitting Antennas, nor does it include other facilities specifically excluded from coverage of this Title.
- H. "Wireless service" means data and telecommunications services, including commercial mobile services, commercial mobile data services, unlicensed wireless services, and common carrier wireless exchange access services, as all of these terms are defined by federal law and regulations.
- I. "Wireless Site" means a location on Public Rights-of-Way selected for the Company's deployment of Wireless Communications Facilities.

*Please see City of Greeley Development Code for additional definitions

III. Application Requirements

3.1 Site Plan

Site Plans and Structural Calculations: The applicant must submit fully-dimensioned site plans, elevation drawings and structural calculations prepared, sealed, stamped and signed by a Professional Engineer licensed and registered by the State of Colorado. Drawings must depict improvements and the proposed facility, with all proposed transmission equipment, power source, electrical service pedestal and other associated access or utility easements and setbacks. Please see the City of Greeley Development Code for additional submittal requirements.



All equipment depicted on the plans shall include:

1. Manufacturer's name and model number.
2. Physical dimensions including, without limitation, height, width, depth, volume and weight with mounts and other necessary hardware, and effective projected area (EPA).
3. Technical rendering of all external components, including enclosures and all attachment hardware, including a depiction of how much external wiring will exist.
4. The small wireless facility operator/permittee shall post its name, location identifying information, and emergency telephone number in an area on the cabinet of the small cell facility that is visible to the public. Signage required under this section shall not exceed 4 inches x 6 inches, unless otherwise require by law (e.g. RF ground notification signs) or the City. If no cabinet exists, the signage shall be placed at the base of the pole.

3.2 Right of Way (ROW) Permit

All work within the PROW requires a ROW Permit. Information for this permit can be found here: <http://greeleygov.com/docs/default-source/finance/licenses/right-of-way-application-packet.pdf>

3.3 Master License Agreement & Supplemental Site License

All work within the PROW requires a Master License Agreement. Information for this permit can be found here: <http://greeleygov.com/docs/default-source/community-development/wireless-communications-facilities/master-license-agreement-template.docx>

IV. General Standards

4.1 Preference for Locations and Methods

The preferred locations of Small Cell infrastructure, in order, are:

1. In unnamed alleys
2. Streetlights with cobra heads or on 3rd party poles.
3. Standalone poles on streets or named alleys.
4. Traffic signal poles



4.2 Attachment to Existing Poles (“Collocation”)

Streetlights

Many streetlights in the City of Greeley are owned by Xcel Energy or Poudre Valley REA. The Network provider must verify the owner of the pole on which they wish to locate equipment, and work with that entity to adhere to the applicable Small Cell Standards.

Existing Poles: Any attachment, including antenna(e), to an existing pole shall not extend the existing pole to a height of more than 44 feet or by more than 10 percent, whichever is greater.

Except when Small Cell infrastructure is attached to a wood pole, poles and all equipment must be the same color and finish as surrounding streetlight poles or 3rd party poles.

The network provider may be required to replace existing infrastructure and bring it up to applicable standards. This may include undergrounding utilities and replacing poles and luminaires.

City of Greeley Decorative Streetlights

Small cell equipment shall not be allowed to collocate on decorative streetlight poles or poles that have decorative luminaires that are owned by the City of Greeley. If no other option exists, the network provider will replace the structure with a similar decorative fixture.

Traffic Signal Poles

- A. Traffic signal poles already supporting police equipment are not eligible to be considered for Company’s WCF. Company’s WCF placed on traffic signal poles may be required to be relocated at any time if the Licensor-owned infrastructure is needed for placement of police equipment.
- B. Traffic signal poles are engineered structures designed to specific loading criteria and required AASHTO standards. Modifications to the loading will require an engineering analysis stamped by a Colorado licensed professional engineer.
- C. Installations on traffic signal poles cannot alter the poles in any way. Therefore, all attachments must be banded. Drilling and taping is not allowed.
- D. The Company’s WCF facilities on any traffic signal structure shall be encased in a separate conduit than the traffic light electronics.
- E. Installation of the Company’s WCF shall have a separate electric power connection than the traffic signal structure and shall have a separate access point.
- F. Any large WCF device, other than the antenna, mounted on the traffic signal pole shall be painted to match the existing pole. The paint shall be powder coated over zinc paint.
- G. All cabling must be external to the pole to eliminate the possibility of interference with existing signal cables and conductors.



- H. Cables, conduits and bands must not interfere with access to or operation of any of the traffic signal equipment. Specific clearances may be required and will be reviewed on a case-by-case basis.
- I. Analysis must be provided to show the proposed equipment will not interfere with the Licensor's wireless network operating in the 900 MHz, 5.8 GHz, or other frequencies utilized for traffic control purposes.
- J. For installations on traffic signal poles, involved personnel must hold at least a Level I IMSA Traffic Signal certification (level II preferred) to demonstrate comprehension of the implications of any negative impacts to the Licensor's traffic signal infrastructure.
- K. Any installation or servicing of WCF located on traffic signal poles shall be coordinated with the Licensor's Traffic Operations and Traffic Engineering groups a minimum of three business days in advance.
- L. WCF located on traffic signal poles may be required to be removed and/or reset at any time at the sole cost of the Company due to any work performed by or authorized by the Licensor. City staff shall have the ability to easily shut off radio signals and power while working on the pole.

4.3 Installation of New Wireless Structures

For the installation of new small cell structures within the public right-of-way the following standards apply.

Alignment- Align with existing streetlights and street trees to maintain a clear pedestrian zone.

Distance from building face- Must be a minimum of ten feet (10') from any above grade building face, including projecting windows.

ADA- Do not violate applicable local or federal law, including the 1990 Americans with Disabilities Act

Trees- Must be placed a minimum of fifteen (15') from a tree trunk, measured for the outside of the tree.

Fire Safety- Minimum of six feet (6') from an existing fire hydrant or a building's fire connections.

Traffic Signal Poles- Must be a minimum of fifteen (15') from a traffic signal pole.

Street Lights- Single use WCF shall be at least twenty feet (20') from existing streetlights.

Bike Racks- Placement a minimum of 3 feet from a bike rack and shall not impede access to and from bike rack or impede the use of the bike rack.

Clear Sight Line Distances- Poles shall not be located within a 30'x 30' sight distance triangle at any intersection.

Driveway- Maintain a minimum of fifteen feet (15') as measured from the edge line of the driveway.



Table 1. Spacing and Height Standards

Street Classification	Streetlight Spacing Standards	Minimum Spacing for Single Use WCF Poles	Layout	Limit per Carrier per Block Face	Existing Pole Height	Maximum Height	Color	Pole Design
Major Arterial	120-150 feet	60 feet	One side of block	1	40 feet	44 feet	Match adjacent fixtures	Match adjacent fixtures
Minor Arterial	150-250 feet	60 feet	One side of block	1	40 feet	44 feet	Match adjacent fixtures	Match adjacent fixtures
Collector	150-250 feet	60 feet	One side of block	1	40 feet	44 feet	Match adjacent fixtures	Match adjacent fixtures
Local	160-250 feet	60 feet	One side of block	1	20 feet	22 feet	Match adjacent fixtures	Match adjacent fixtures
Historic	75-100 feet	90 feet	Entire Block	1	20 feet	22 feet	Federal green	Acorn pole top
Alley	100-200 feet	60 feet	Entire Block	1	20 feet	22 feet	Match adjacent fixtures	Match adjacent fixtures

- a. City will notify applicant if upcoming roadway improvements will alter existing pole color/design.
- b. Shroud required to cover equipment if mounted to existing pole.
- c. Any attachment shall not exceed 44 feet or 10% of existing pole height.
- d. If locating on existing poles or constructing a dual use pole, fixtures must adhere to streetlight spacing standards.
- e. See Section 4.3 for additional standards.



4.4 Additional Requirements for Collocated Equipment and New Poles

Small Cell Antenna

The small cell antenna shall either be mounted internal to the pole, or top-mounted and concealed within a radome that also conceals the cable connections, antenna mount and other hardware. Any radome, shield or shroud shall meet the following requirements for concealing exposed cable and finish.

Antenna Shroud Requirements: A screening shroud shall be provided on the underside of the small cell antenna, mounted external to the pole, to conceal cable connections from public view. The shroud shall be firmly attached and sealed to prevent birds from entering and nesting.

Finish Requirements: The equipment shroud must be non-reflective and painted or color impregnated to match the color of the existing pole as close as possible.

Breakaway Requirements

Pole Requirements: All poles within the center median of any public street or those poles located on the outside of curb lines within the established clear zone requirements shall be breakaway in accordance with AASHTO standards, using approved breakaway couplings or frangible bases. The weight of a small cell pole, including all attached equipment, shall not exceed the total weight as recommended by either the pole manufacturer or manufacturer of the breakaway device. The breakaway pole device shall not exceed 12" in height.

Poles that are located on the outside curb lines beyond the clear zone as established by The City of Greeley Street Design Criteria and Construction Specifications are not required to be breakaway.

Cabling Requirements

All cabling shall primarily be internal to the pole. Any exposed cabling, external to the pole, shall be minimized. No cable shall be visible at the top of the pole near the antenna. External cables powering the pole mounted radios, cutoff switches or other devices shall be limited to a total length of 24", including drip loops, slack, etc. Any cable access point on the pole shall be sealed with a manufactured product to keep birds from entering and nesting. Duct seal or putty is not an approved product.

Utility Pole Requirements

At the approval of the local utility company, small cell equipment may be installed on wood or steel utility poles as long as they meet the clearance requirements to power lines or other requirements or regulations of the local utility.



Antenna and Utility Pole Height: The maximum height from the finished ground surface to the top of the antenna mounted on a utility pole may be 10' greater than the height of the existing pole, but shall not exceed 50' in any circumstance. (This is intended to be a one-time height increase allowance. If multiple height increases are made, they should not cumulatively exceed 10' higher than the original pole height.)

Electrical Meter and Cabinet Requirements

The electrical meter shall not be installed on the pole. Any necessary meter or other accessory cabinet shall be installed on the outside edges of the street, behind the sidewalk, bicycle or multi-use trail, and said cabinet shall meet all location and landscaping requirements of the City's Development Code. The provider shall be required to maintain any required vegetative landscaping to ensure a neat appearance and to mitigate sight distance obstructions. When the installation occurs in an area where the adjacent poles are painted, the City may require that the electrical meter cabinet be painted to match the color of the poles.

Duty to Repair

Any PROW, Public Property or private property that is disturbed or damaged during, or as a result of, the construction, reconstruction, repair, replacement, removal, relocation, operation or maintenance of any WCFs by Company or its agents or contractors shall be promptly repaired by Company at its sole expense.

4.5 Historic Properties and Districts

In recognition of the special character of Greeley and the impact that the right-of-way has on the character of historic districts, no new Wireless Communication Facilities (WCF) shall be located in the rights-of-way within any historic district or collocated on an existing wireless support structure in any historic district unless it complies with the following design standards:

- A. All WCFs shall be designed to be visually unobtrusive.
- B. All WCFs must utilize building materials, colors, textures, screening and landscaping that effectively blend the facilities within the surrounding natural setting and built environment to the greatest extent possible. The WCF shall have limited exposed cabling and mounting hardware.
- C. The applicant shall comply with any reasonable conditions imposed by the city to accommodate the particular design, appearance or intended purpose of the WCFs to avoid the intangible public harm of unsightly or out-of-character deployments.
- D. Placement of any required warning signs or signs related to equipment information shall be directed away from adjacent residential structures and out of direct sight lines whenever possible.
- E. Network provider must obtain a Certificate of Approval from the Historic Preservation Commission for Wireless Communication Facilities located in historic districts or on properties individually designated on the Greeley Historic Register.
- F. Concealment or camouflage options should be presented with the application to minimize the impact of the WCF on the historic property or district. A concealed or camouflaged WCF would be one that is painted, covered, disguised or concealed so that it



blends into the surrounding environment. It could be painted or hidden beneath a façade, blend with the design of the area, or be disguised as a tree or piece of public art.

- G. The Network provider must comply with and observe all applicable City, State and federal historic preservation laws and requirements.
- H. A Network provider is discouraged from installing a WCF within 300 feet of a historic site or structure or historic district recognized by the City, state or federal government, as of the date of the submission of the permit. It is recommended that each permit application disclose if it is within 300 feet of such a structure or district.