

Design Standards for Small Wireless Facilities in the Right-of-Way

Location:

1. Siting: Preferred location for small wireless facilities is within non-residential neighborhoods or on streets with no fronting residences (500 feet away from residential zones). Should the location be within a residential neighborhood, reasonable efforts shall be made to ensure that the facility is not in direct view of residential living areas such as living rooms, bedrooms, etc.
 - a. Within 500 feet of a residential zone, noise limit from any small wireless facility shall be 5dBA above ambient sound, not to exceed 30 dBA as measured at the property line. Other federal, state, or city noise regulations may apply.
2. Small wireless facilities shall not be installed on electrical/electronic traffic control devices' poles/hardware such as traffic signals (including traffic signal poles with street lights), pedestrian hybrid beacons (formerly known as HAWK), Rectangular Rapid Flashing Beacons (RRFB), and flashing beacons. Small wireless facilities should be positioned on existing street light poles or new street light poles spaced per City standards.
3. All small wireless facilities and related equipment located within the City's ROW shall be located such that they meet ADA requirements and do not obstruct, impede, or hinder usual pedestrian or vehicular travel or interfere with the operation and maintenance of street lights, signage, street furniture, fire hydrants, other street appurtenances, or business district maintenance.
4. A maximum of one small wireless facility is permitted per pole.
5. Location of small wireless facilities shall provide appropriate clearance from existing utilities.

Facility and Support Equipment:

6. Wireless facilities shall be placed within an enclosure and concealed from view to the maximum extent possible.
7. Radiation certified to be at safe levels by a non-ionizing radiation electromagnetic radiation report (NIER) shall be submitted to the City and retained on file for equipment type and model.
8. Applicant shall submit a NIER report for each equipment type certifying that the non-ionizing and electromagnetic radiation emitted from the proposed small wireless facility is safe, and it shall be endorsed by a qualified professional. It shall specify minimum approach distances for the general public as well as electrical and communication workers that are not trained for working in an RF environment when accessing the pole by climbing, ladder or bucket.
9. A "disconnect" shall be required for both the power supply and the wireless antenna that can be easily accessed and operated by street lighting maintenance personnel.
10. Wireless facilities shall be designed, textured, and painted to match existing pole to minimize visual impacts.
11. "ABC": Antennas, brackets (mounting), and cabling should all have a uniform paint color and be painted to match the color of the equipment, including the fiber termination

enclosure.

Form and Placement:

12. **Narrow Vertical Alignment:** Wireless facilities shall require shrouds and equipment enclosures that are the same diameter as the post at a ratio of approximately 1:1 such that it reads as one contiguous streamlined form from the street level are preferred. Any tilted or cantilevered arrangements are not acceptable unless approved by the City Engineer.
13. **Antenna and Remote Radio Unit (RRU):**
 - a. Antenna designs should avoid placements that may impair light, air, or views from adjacent structure windows.
 - b. Antennas shall be generally cylindrical or rectangular in shape.
 - c. Each antenna shall be located inside an enclosure of no more than 6 cubic feet, or in the case of an antenna that has exposed elements, the antenna and its exposed elements should fit within an imaginary enclosure of no more than 6 cubic feet.
 - d. Antennas and RRUs shall be placed within the shroud above the pole. RRUs attached to the side of the pole are discouraged; but if required, it shall use the smallest RRU volume possible and be stacked vertically and close together with 6 inches maximum between the RRU housing and the pole.
 - e. Equipment should be secured by using steel/aluminum banding and not through bolting/drilling into pole. Drilling into an existing street light pole generally voids the pole's warranty.
 - f. Equipment shall be stacked close together and on the same side of the pole. If a long rectangular disconnect switch is used, the enclosure shall be rotated so the elements can be stacked closer together on the pole. Wide offsets (more than 4 inches) of equipment enclosure brackets from the pole shall be prohibited.
 - g. All equipment height shall be above the ground at least 8 feet. If the small wireless facility equipment is positioned toward the street, the attachment shall be installed no less than 16 feet above the ground.
 - h. Small wireless facility equipment shall not extend more than 8 inches from the pole exterior surface on the half of the pole facing the street side and 12 inches from the pole exterior surface the remaining half not facing the street.
14. **Wires and Cables:** Wires and cables shall be contained within the shroud and placed inside the pole to the maximum extent practicable with a maximum of 12 inches of exposed cable slack per equipment unit. Cabling and meters shall be inside the pole or shrouds to the maximum extent practicable. When feasible, provider may use existing City conduit(s) between City pull box and City street light pole/other pole to install small wireless facility wiring.
15. **Signage and Lights:**
 - a. Signage and lights are limited to what may be required by the FAA or FCC.
 - b. Signage and lights shall use the smallest and lowest visibility signs, including the radio-frequency warning sticker required by government or electric utility regulations, and placed as close to the antenna as possible.
 - c. Signage and lights shall use equipment that does not feature flashing lights that may be visible to the public.

16. **Electrical Meters:** A separate meter must be provided for small wireless facility. Electrical meters should be located on, within the pole or underground. In the case pole owner prohibits the use of a pole-mounted meter, and an above ground power meter box is required, then the meter box must be of the smallest footprint available and be approved by the City Engineer or designee.
17. **Utility Box:** Reasonable efforts must be made by provider to avoid the use of above ground utility boxes. If above ground utility boxes must be used, then they shall:
 - a. Use the smallest feasible footprint and not exceed 48-inches in height and 30-inches in width/depth.
 - b. Be secured to a concrete pad.
 - c. Deviations from these standards must be approved by City Engineer or designee.
18. **Pole Height:** Overall height of the pole shall be similar to the surrounding poles and/or not exceed 35 feet in height.

Ancillary Equipment:

19. **Plans and photo simulations** shall accurately show smaller equipment items such as duplexers, ground buss bars, PBX or J-Boxes. These elements shall be hidden in locations such as behind equipment enclosures or in mounting arms which feature recessed areas.

New Stand-alone Utility Pole Design Standards:

20. **City preference** is that all poles with proposed small wireless facilities include a luminaire and mast arm in accordance with City street light standards. However, the City may review stand-alone utility poles on a case-by-case basis. Any new stand-alone pole shall match the aesthetic of existing street light/poles adjacent to the new pole.
21. **Visual standards** for the pole include, but are not limited to, the following:
 - a. Any transition between an equipment cabinet at the base of the pole and the upper pole should have a proper transition (at least 2 inches vertical for every one inch change in diameter).
 - b. The equipment cabinet at the base of the pole shall not be larger than 28 cubic feet in size.
 - c. Upper pole shall be scaled to 50% to 75% of the size of the cabinet but not larger than 10 inches at the widest portion.
 - d. All hardware connections, including those between the cabinet and upper pole, shall be concealed from view. No horizontal flat spaces greater than 1.5 inches shall exist on the equipment cabinet to prevent placement of cups, trash, or other objects.

Placement of New Stand-alone Utility Poles:

22. **The placement** of new stand-alone utility poles shall be in accordance with the below standards (however, the City Engineer retains discretion for final approval of proposed stand-alone pole locations). New utility poles:
 - a. Shall be at least 10 feet from the triangle extension of an alleyway flare.
 - b. Shall not be located within 100 feet of the apron of a fire station or other adjacent

emergency service facility.

- c. Shall not impede or obstruct usual pedestrian or vehicular travel in accordance with City standards and ADA guidelines.
- d. Shall be located at intersecting property lines when possible.
- e. Shall be located on collector streets, when possible.
- f. Shall be located at least 15 feet away from tree trunks or outside of the drip line of the tree (whichever is greater) to prevent root disturbance.
- g. Shall be located at least 5 feet away from the widest point of a drive approach.
- h. Shall be located at least 50 feet from an existing electrical/electronic traffic control device.
 - i. No physical, electrical, or radio interference by the small wireless facility equipment shall be permitted.
 - ii. If required by the City, the provider will provide analysis that the proposed small wireless facility shall not cause any interference with the City public safety radio system, electrical/electronic traffic control devices, emergency signal control devices, “smart city” applications, or other City communications or electronic components.
- i. When located adjacent to a commercial establishment, reasonable efforts should be made to ensure that the facility is not in direct view of businesses’ main entrance, picture windows or other large openings including, but not limited to sliding glass doors or openings that create an indoor-outdoor dining experience.

Decorative Pole Placement:

- 23. Decorative poles, defined as a pole that is specially designed and placed for an aesthetic purpose, may be replaced by a wireless provider for the purpose of collocation if the replacement pole reasonably conforms to the design aesthetic of the displaced pole.
- 24. The decorative pole design must be approved by the City Engineer or designee.

Photo Simulations:

- 25. Ensure that all photo simulations appear realistic with respect to cabling/conduit, the RF warning and node ID stickers, and equipment offset from the pole. Verify whether a GPS antenna is needed; as submittals often feature (macro-sized) GPS antennas on simulations when none are shown on plans or needed.
- 26. If the existing pole is leaning and slated for replacement, the simulation should show a new upright pole.
- 27. Ensure photo simulations accurately show the offset of equipment cabinets from the pole. Many simulations depict flush-mounted installations when the actual site features a significant offset from the pole.