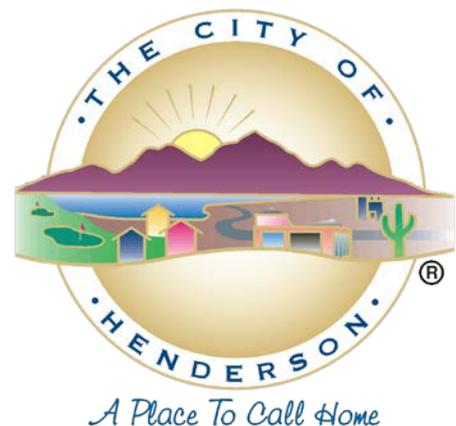


APPENDIX A:

City of Henderson Small Cell Infrastructure Design Guidelines



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1 PURPOSE

These City of Henderson Small Cell Infrastructure Design Guidelines are incorporated into and made a part of the City's *Telecommunications Facility Policies and Procedures Manual*. The purpose of these Design Guidelines is to provide the aesthetic requirements and specifications that all small cell telecommunications facilities must meet prior to installation in the City of Henderson and otherwise supplement the Standards Manual and HMC. The Design Guidelines are not intended to conflict with any provision of the HMC or the Standards Manual. In the event of any conflict with the HMC, the applicable provision of the HMC prevails. Capitalized terms have the meaning ascribed to such terms in the HMC and the Standards Manual, except as otherwise defined hereunder. The Department of Public Works may update the Design Guidelines from time to time at the discretion of the Director of Public Works. These Design Guidelines are published on the City's Public Works website (www.cityofhenderson.com/public-works/telecommunications-agreements-leases). The public is encouraged to check this website regularly for updates.

1.1 Type 1 Attachments to Utility Poles

The Attachments to Utility Poles chapter establishes the specification requirements and design guidelines for small cell equipment that will be attached to existing wooden utility poles located in the City's Right of Way.

Figure 1- 1 and Figure 1- 2 below show both a pole mounted enclosure and strand mounted enclosure.

Figure 1- 1: Type 1A - Utility Pole Mounted Shroud

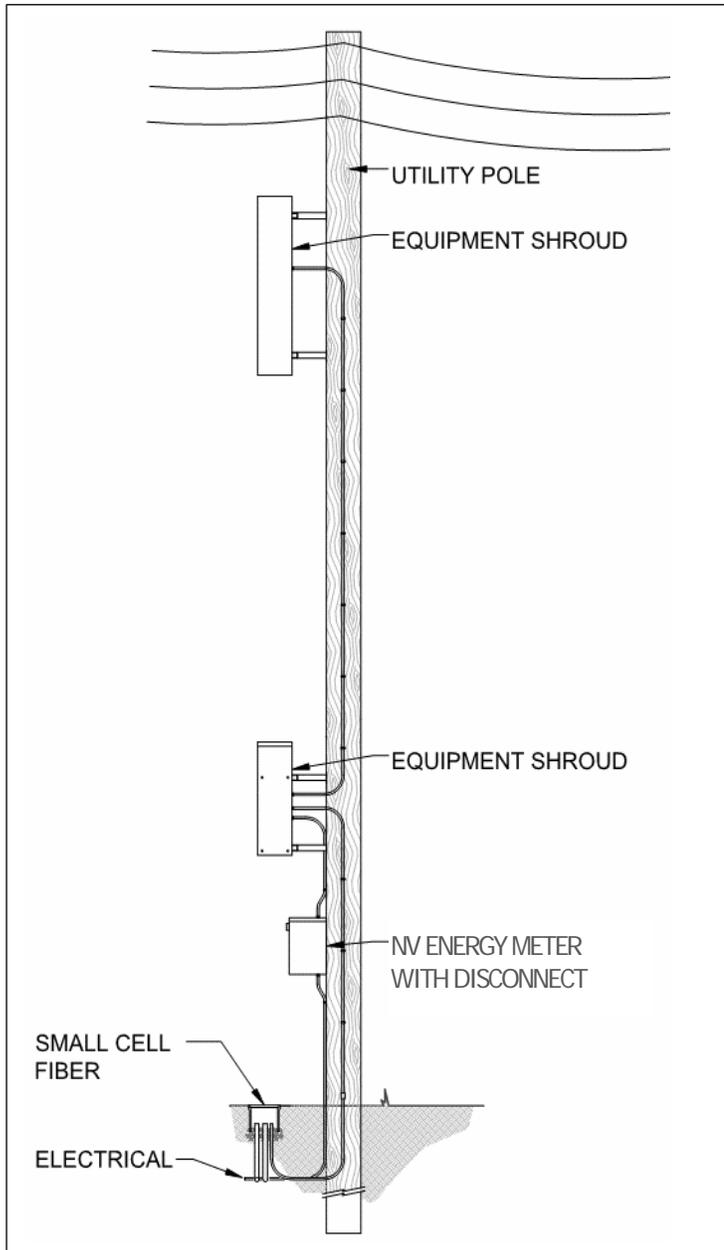
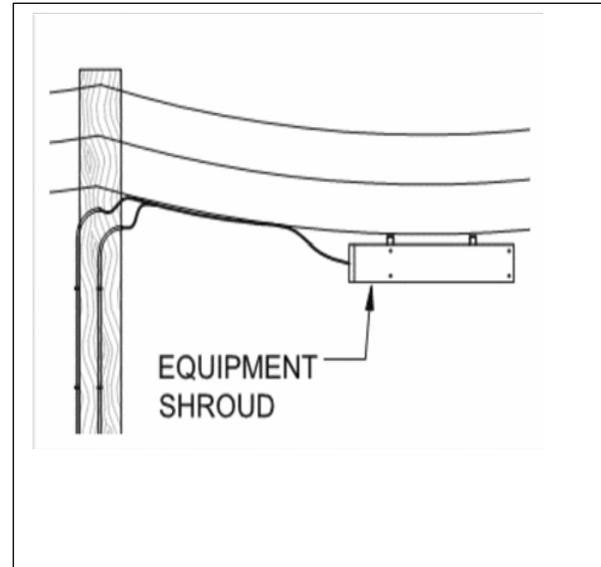


Figure 1- 2: Type 1B - Strand Mounted Shroud

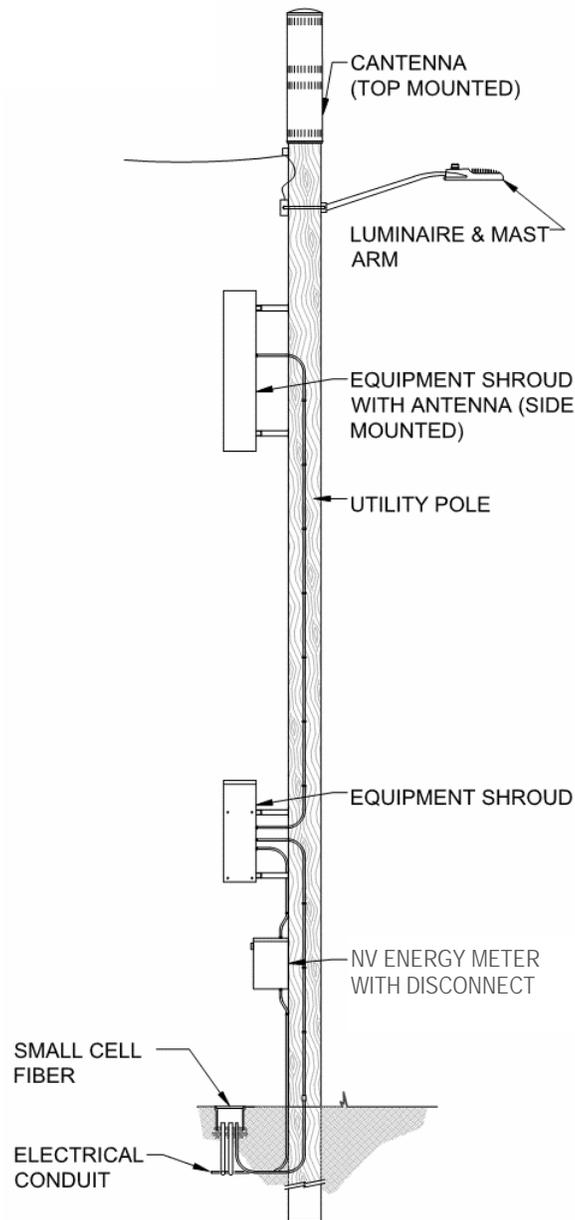


1.2 Type 2 Small Cell on Existing Wooden Pole with Streetlight

The Attachments to Wooden Streetlight Pole chapter establishes the specification requirements and design guidelines for small cell equipment that will be attached to existing wooden streetlight poles within the public ROW.

Figure 1- 3 below shows an attachment to a wooden streetlight pole.

Figure 1- 3: Type 2 - Attachment to Wooden Streetlight Pole

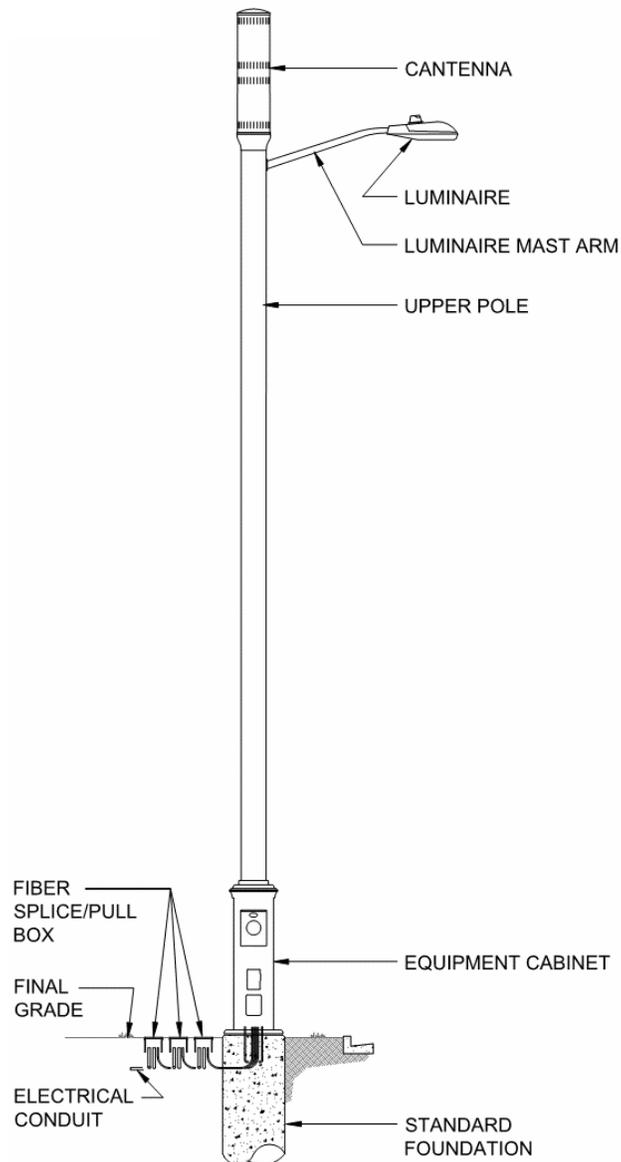


1.3 Type 3 Combination Small Cell and Streetlight

The Combination Small Cell and Streetlight Assembly chapter establishes requirements when removing existing metal streetlight poles in the public ROW and replacing with combination small cell and streetlight poles. Three variations of the combination pole are shown in Figure 1-4 through Figure 1-6. Only one carrier may be installed per pole.

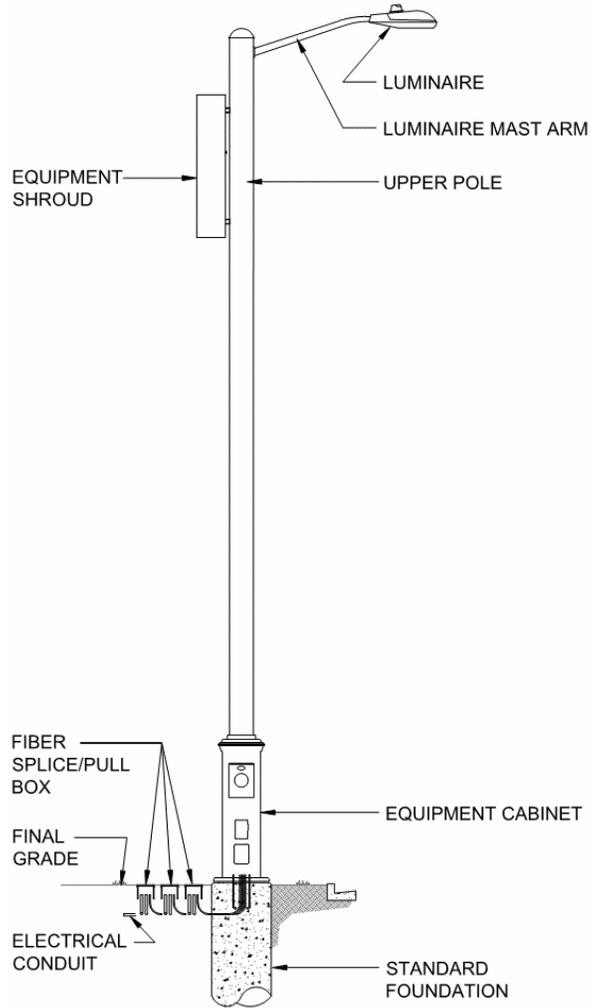
Small Cell Type 3A, shown in Figure 1-4, is intended for a single carrier installation. This pole type includes a antenna and no externally mounted equipment.

Figure 1- 4: Type 3A - Combination Pole with Antenna



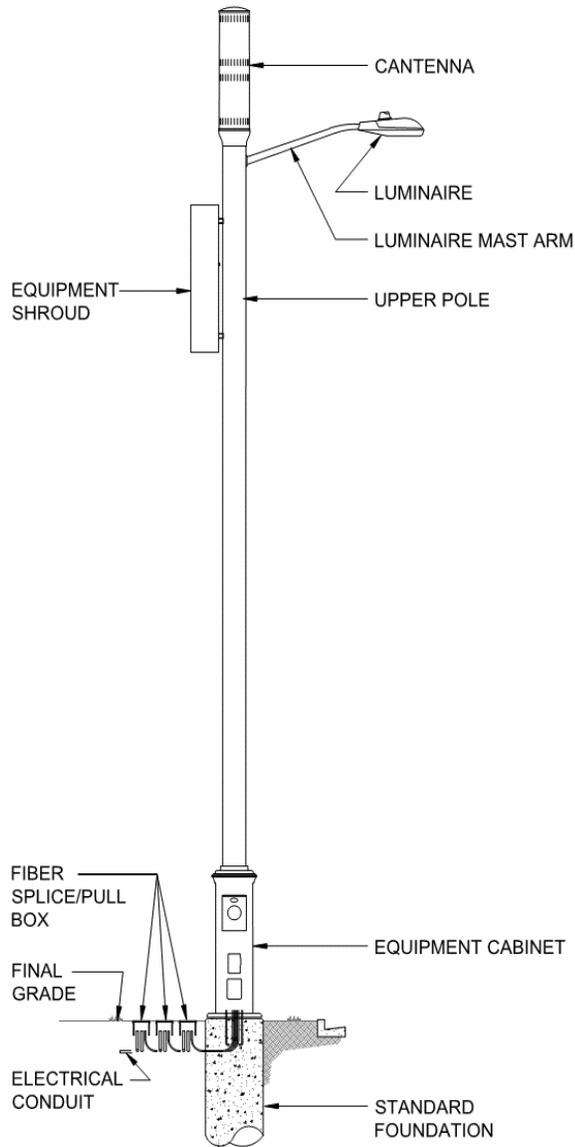
A Type 3 combination pole with a single external shroud mounted to the pole will be allowed in place of a cantenna. The shroud shall be strapped to the pole in such a way that the wiring, cables, and equipment is hidden from view. The shroud shall be colored to match the pole.

Figure 1- 5: Type 3B - Combination Pole with Equipment Shroud



A Type 3 combination pole with both a cantenna and a single shroud mounted to the pole is allowed when various small cell technologies (ie: LTE and 5G) provided by a single carrier are installed on the same pole. The shroud shall be strapped to the pole in such a way that the wiring, cables, and equipment is hidden from view. The cantenna and shroud shall be colored to match the pole.

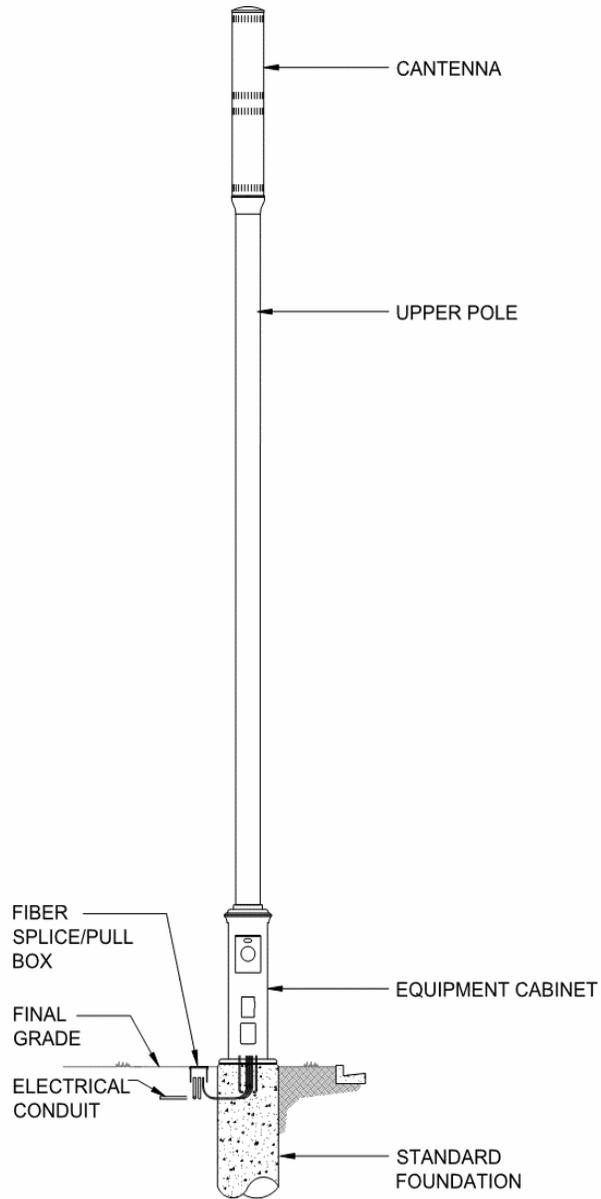
Figure 1- 6: Type 3C - Combination Pole with Cantenna and Equipment Shroud



1.4 Type 4 Freestanding Small Cell

The Freestanding Small Cell chapter establishes specification requirements and design guidelines for installing privately-owned freestanding small cell poles in the public ROW.

Figure 1- 7: Type 4 - Freestanding Small Cell



2 ATTACHMENTS TO UTILITY POLES AND UTILITY LINES

2.1 Purpose

This chapter of the Design Guidelines is to be used when locating small cell attachments on existing utility poles or utility lines. Refer to Chapter 3 for projects involving existing wooden streetlight small cell attachments.

2.2 General Guidance

All attachments to utility poles shall be approved by the City and the pole owner prior to installation. All equipment shall meet the requirements of the City's Standards Manual.

All small cell carrier equipment shall be shrouded. Only two enclosures including the disconnect and antenna shall be installed at each utility pole location. No ground mounted enclosures, including backup power supply, shall be allowed. All equipment located within the public ROW and not attached to the utility pole, shall be installed underground subject to applicable Requirements.

All carrier equipment shall be removed and relocated at no cost to the City if the City or the pole owner decides to underground the utility lines in the future. The equipment must be removed within a reasonable time frame determined by the pole owner. A reasonable time frame refers to a period of time that does not delay the removal of the utility poles and lines.

No strand-mounted small cell devices shall be installed on poles with mounted streetlights. Deviations from this guideline shall be approved on a case-by-case basis by the City prior to installation.

2.3 Utility Pole Small Cell Attachments Specification Overview

Prior to submitting a permitting application, the pole owner shall ensure the supporting poles are appropriately sized and have sufficient strength to accommodate the additional small cell equipment loads. The small cell equipment loads shall be provided by the network provider.

A non-ionizing radiation electromagnetic radiation report (NIER) shall be submitted to the pole owner and retained on file for equipment type and model. The NIER report shall be endorsed by an RF PE licensed in the State of Nevada. It shall specify minimum approach distances to the general public as well as electrical and communication works that are not trained for working in an RF environment (uncontrolled) when accessing the pole by climbing or bucket.

All installations shall meet or exceed all applicable structural standards, clearance standards, and provisions of the latest National Electrical Safety Code (NESC), or applicable City construction standards. In case of conflict, the most stringent requirements shall prevail. All necessary permits shall be obtained by the wireless carrier owner and provided to the pole owner and City.

Figure 2- 1: Utility Pole Attachment

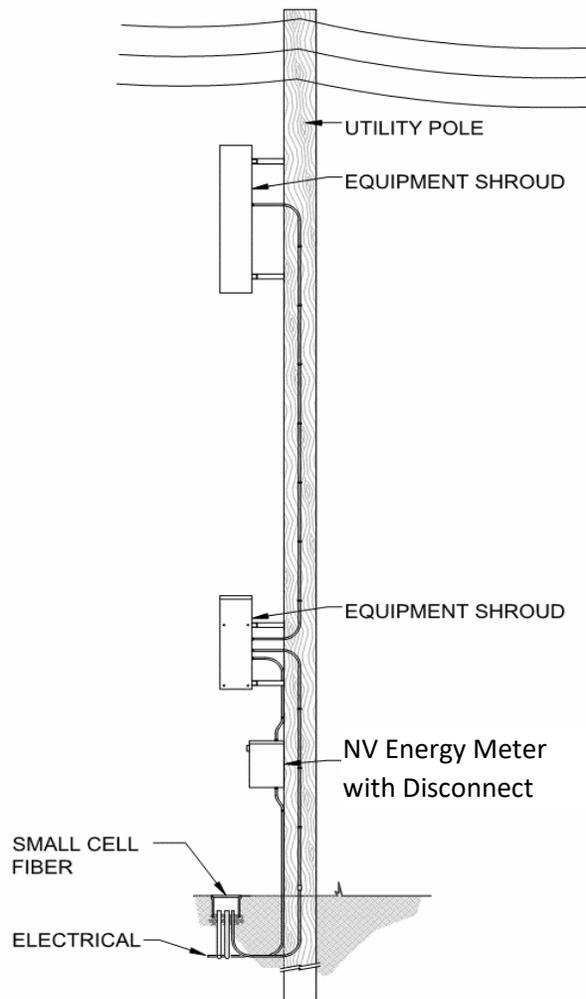


Table 2- 1: Small Cell Attachments to Utility Pole Specification Overview

Electrical Service	Per City and NV Energy’s requirements.
Grounding	Per City and NV Energy’s requirements
Separation of Service	All new electrical conduit and fiber shall be separated by Owner
Utility Equipment	Per NV Energy
Equipment Color	Visible attachments and hardware shall be colored to match pole, or colored gray (7047) if located on a wooden pole.
Equipment Shroud	38”H x 16”W x 12”D maximum Only one equipment shroud, containing all required small cell equipment, shall be installed per pole. Except, one additional equipment shroud shall be allowed per pole if the antenna is located within the second equipment shroud. Equipment shall be located such that it meets the Americans with Disabilities Act of 1990 and does not obstruct, impede, or hinder the usual pedestrian or vehicular travel way.
Cantenna	If a cantenna is located on top of the pole the outer diameter shall be 14” maximum and the cantenna shall be no more than thirty-six (36) inches above the height of any structure on which the equipment is installed, including antenna, radio head, mounting bracket, and all other hardware necessary for a complete installation.
RF Equipment Disconnect	Radio frequency equipment shall have a disconnect that meets or exceeds NV Energy’s requirements.
Pole Mounted Warning Label	If required, radio frequency warning labels shall be mounted exterior to Licensee’s equipment.
Strand Mounted Warning Label	Radio frequency warning labels shall be mounted on the equipment, and clearly marked and be visible from the ground.
Owner Identification	A 4-inch by 6-inch (maximum) plate with the Licensee’s name, location identifying information, and emergency telephone number shall be permanently fixed to the shroud.

2.4 Strand Mounted Small Cell Attachments Specification Overview

Prior to submitting a permitting application, the strand owner shall ensure the supporting poles are appropriately sized and have sufficient strength to accommodate the additional equipment loads.

A non-ionizing radiation electromagnetic radiation report (NIER) shall be submitted to the strand owner and retained on file for equipment type and model. The NIER report shall be endorsed by an RF PE licensed in the State of Nevada. It shall specify minimum approach distances to the general public as well as electrical and communication workers that are not trained for working in an RF environment (uncontrolled) when accessing the pole by climbing or bucket.

All installations shall meet or exceed all applicable structural standards, clearance standards, and provisions of the latest NESC or applicable City construction standards. In case of conflict, the most stringent requirements shall prevail. All necessary permits shall be obtained by the wireless carrier owner and provided to the utility owner and City.

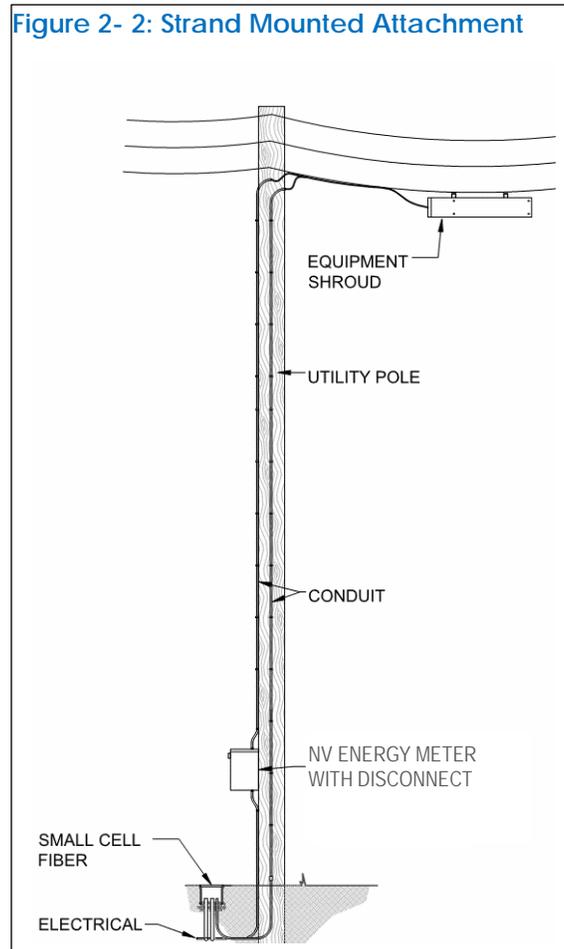


Table 2- 2: Small Cell Attachments to Utility Pole and Utility Lines Specification Overview

Electrical Service	Per City and NV Energy's requirements.
Grounding	Per City and NV Energy's requirements.
Separation of Service	All new electrical conduit and fiber shall be separated by Owner
Utility Equipment	Per NV Energy
Equipment Color	Visible attachments and hardware shall be colored gray (RAL 7047)
Strand Mount Equipment Shroud	5.5 cubic feet maximum strand mount equipment shroud. Only one equipment shroud shall be installed per permit location.
RF Equipment Disconnect	Radio frequency equipment shall have a disconnect that meets or exceeds NV Energy's requirements.
Pole Mounted Warning Label	If required, radio frequency warning labels shall be mounted exterior to Licensee's equipment.
Strand Mounted Warning Label	Radio frequency warning labels shall be mounted on the equipment, and clearly marked and be visible from the ground.
Owner Identification	A 4-inch by 6-inch (maximum) plate with the Licensee's name, location identifying information, and emergency telephone number shall be permanently fixed to the shroud.

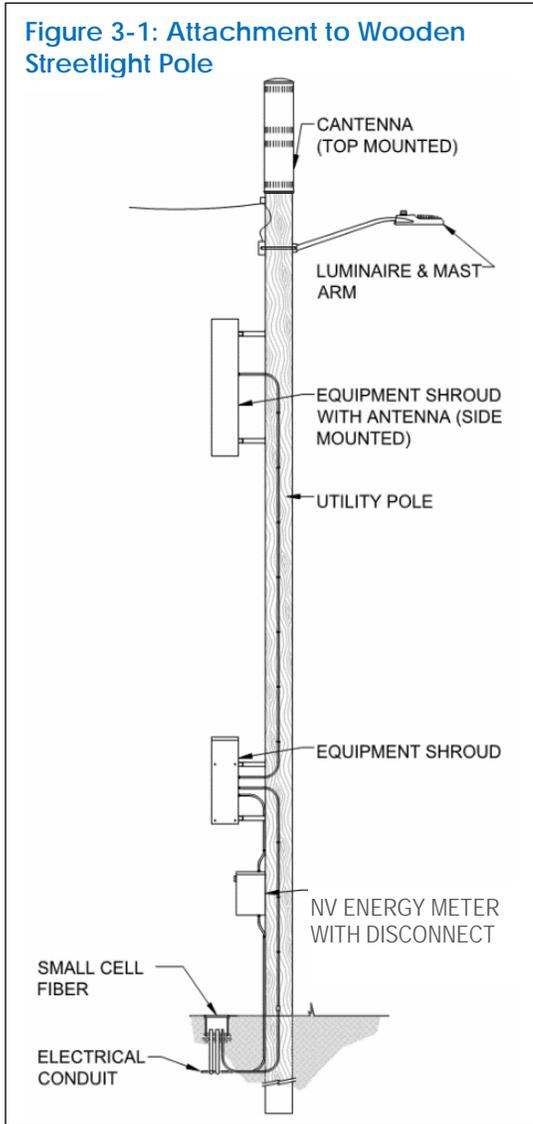
2.5 Small Cell Attachments to Utility Poles and Utility Lines Placement Requirements

Small cell shall be located such that all new equipment, including but not limited to Network Provider small cell equipment and NV Energy equipment, meets ADA requirements. NV Energy, and the City when applicable, shall approve all fiber and power source locations prior to installation.

3 ATTACHMENTS TO WOODEN STREETLIGHT POLES

3.1 Purpose

This chapter of the Design Guidelines is to be used when locating small cell equipment on existing wooden streetlights. If an existing wooden streetlight pole, that small cell equipment is proposed upon, requires replacement, the applicant shall be required to replace said pole with a Type 3 installation.



3.2 General Guidance

All attachments to wooden streetlights shall be approved by the City prior to installation. All equipment shall meet applicable Requirements. All equipment located within the public ROW shall be located such that it meets ADA requirements and does not obstruct, impede, or hinder usual pedestrian or vehicular travel. All small cell carrier equipment shall be mounted behind a shroud. Only two shrouds, including the disconnect and antenna, shall be installed at each location. No ground mounted equipment, including backup power supply, shall be allowed. No small cell devices shall be installed without confirming that the intended installation has no impact on the streetlight’s operational performance.

The lighting design shall meet the luminaire specifications and design requirements set forth in the *Regional Transportation Commission Uniform Standard Specifications and Drawings, as amended*.

All carrier equipment shall be removed and relocated at no cost to City if City or pole owner decides to remove the wooden pole and streetlight in the future. The equipment must be removed within a reasonable time frame determined by the pole owner. A reasonable time frame refers to a duration of time that does not delay the removal of the utility poles and lines.

Deviations from any Requirements shall be approved on a case-by-case basis by the City prior to installation.

3.3 Wooden Streetlight with Small Cell Specification Overview

Prior to submitting a permitting application, the applicant shall ensure the supporting poles are appropriately sized and have sufficient strength to accommodate the additional small cell equipment loads. All installations shall meet or exceed all applicable structural standards, clearance standards, and provisions of the latest NESC or City construction standards. In case of conflict, the most stringent requirements shall prevail. All necessary permits shall be obtained by the wireless carrier owner and provided to the pole owner and the City.

A non-ionizing radiation electromagnetic radiation report (NIER) shall be submitted to the pole owner and retained on file for equipment type and model. The NIER report shall be endorsed by an RF PE licensed in the State of Nevada. It shall specify minimum approach distances to the general public as well as electrical and communication workers that are not trained for working in an RF environment (uncontrolled) when accessing the pole by climbing or bucket.

Table 3-1: Wooden Streetlight Attachments Specification Overview

Luminaire	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i>
Luminaire Mast Arm	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i>
Luminaire Mounting Height	All luminaires shall be the same height as surrounding streetlights
Electrical Service	Per City and NV Energy’s requirements
Grounding	Per City and NV Energy’s requirements
Separation of Service	All new electrical conduit and fiber shall be separated by Owner, in pull/splice boxes located adjacent to the wooden streetlight pole.
Utility Equipment	Per NV Energy’s requirements
Color	Small cell equipment shall be colored gray (RAL 7074)
Equipment Shroud	38”H x 16”W x 12”D maximum
Cantenna	If a cantenna is located on top of the pole the outer diameter shall be 14” maximum and the cantenna shall be no more than thirty-six (36) inches tall, including antenna, radio head, mounting bracket, and all other hardware necessary for a complete installation.
RF Equipment Disconnect	Radio frequency equipment shall have a disconnect that meets or exceeds NV Energy’s requirements.
Warning Label	Radio frequency warning labels shall be mounted on the equipment and clearly marked and be visible from the ground.
Owner Identification	A 4-inch by 6-inch (maximum) plate with the Licensee’s name, location identifying information, and emergency telephone number shall be permanently fixed to the equipment.

3.4 Wooden Streetlight with Small Cell Placement Requirements

Small cell shall be located such that all new equipment, including but not limited to Network Provider small cell equipment and NV Energy equipment, meets ADA requirements. NV Energy, and City when applicable, shall approval all fiber and power source locations prior to installation.

4 COMBINATION SMALL CELL AND STREETLIGHT

4.1 Purpose

This chapter of the Guidelines is to be used when replacing an existing streetlight pole with a combination small cell and streetlight pole. Combination small cell and streetlight poles are often referred to as “combination poles”, “Type 3 poles”, or “removed and replaced poles” in these Guidelines. Refer to Chapter 5 for projects involving freestanding small cell installations.

A Type 3 combination small cell and streetlight pole should only be located where an existing streetlight pole can be removed and replaced, or at a new location where it has been identified that a streetlight is necessary. Existing streetlights are owned by the City; City-owned Type 3 combination poles that replace existing streetlights shall meet City standards. Privately-owned Type 3 combination poles shall be approved via City’s permitting process.

4.2 General Guidance

Combination small cell and streetlight permitting applications and aesthetics shall be approved by the City prior to installation. All equipment shall meet the City’s utility requirements and design aesthetics. The same small cell pole aesthetic is to be used in the same area to maintain a cohesive appearance. Combination small cell aesthetics and proposed locations shall meet all applicable Requirements. The lighting design shall follow the luminaire specifications and design requirements set forth in the *RTC Uniform Standard Specifications and Drawings, as amended*.

The *RTC Uniform Standard Specifications and Drawings, as amended* provide guidance on luminaire design aesthetics, lighting level criteria, typical streetlight spacing, streetlight specifications, and electrical and streetlight details. The applicant shall provide all documentation required by the *RTC Uniform Standard Specifications and Drawings, as amended* to the City during the permitting process.

All small cell carrier equipment shall be housed internal to the pole or hidden behind an exterior shroud. No network provider equipment shall be mounted to the exterior of the pole unless it meets the Type 3B and Type 3C requirements in Section 4.3. Deviations from these Guidelines shall be approved on a case-by-case basis by the City prior to installation.

4.3 Basis of Design

The following pages describe the small cell requirements for installation in the City.

The combination pole design shall match the aesthetics of existing streetlights installed adjacent to the pole. The Licensee shall perform a visual inspection prior to submitting a permitting application to determine existing aesthetics.

The combination pole components include the foundation, equipment cabinet, upper pole, luminaire, mast arm, luminaire control node if applicable, antenna or antenna enclosure, and all hardware and electrical equipment necessary for a complete assembly.

The small cell components shall also be sized to be visually pleasing. For a combination pole to be considered visually pleasing, the transition between the equipment cabinet and upper pole should be considered. A decorative transition shall be installed over the equipment cabinet upper bolts, or decorative base cover shall be installed to match the equipment cabinet size. The upper pole shall be scaled to 0.5 to 0.75 the size of the equipment cabinet, with a 10-inch minimum outer diameter. All hardware connections shall be hidden from view. No horizontal flat spaces greater than 1.5 inches shall exist on the equipment cabinet to prevent cups, trash, and other objects from being placed on the equipment cabinet. Each

pole component shall be architecturally compatible to create a cohesive aesthetic. An example of an unacceptable small cell installation, and acceptable installation can be found in Figures 4-1 and 4-2.

Three variations of combination small cell equipment attachments will be considered for installation in the City. These equipment attachments include a single cantenna, a single equipment shroud, or cantenna and a single exterior equipment shroud when multiple cellular technologies provided by a single carrier are installed on a single pole (ie: LTE and 5G). Each type can be found in Figures 4-3 through 4-5.

Decorative Streetlight Pole means any Streetlight Pole that: (a) is made from a material other than metal; or (b) incorporates artistic design elements not typically found in standard metal Streetlight Poles per *RTC Uniform Standard Specifications and Drawings, as amended*. The term Decorative Streetlight Pole includes any historically or architecturally significant or designated Streetlight Poles.

Installation on Municipal Facilities. City shall verify that the proposed telecommunications facilities submitted by Licensee comply with a Designated Configuration, if applicable, and Requirements. Decorative Streetlight Poles may not be used for the installation of Communications Facilities without prior written approval by the City Manager or City Manager's designee, and review by the homeowner's association, if any such Decorative Streetlight Pole is located within a community regulated by a homeowner's association and such installation shall conform to camouflaging such that Communications Facility is located in a camouflaged pedestal at the base of the Decorative Streetlight and camouflaged antenna mounted on top in the Decorative Streetlight.

Figure 4-1: Unacceptable Type 3 Installation



Conduit, mounting bracket, and other hardware must be hidden from view



Cantenna must include a smooth transition between upper pole and Cantenna attachment

Upper pole shall be smooth and straight, with 1.5-inch (max.) of flat surface where mounted to the equipment cabinet

Equipment cabinet shall be round. 16-inch diameter is preferred, 20-inch diameter max.

Figure 4.2: Acceptable Type 3 Installation

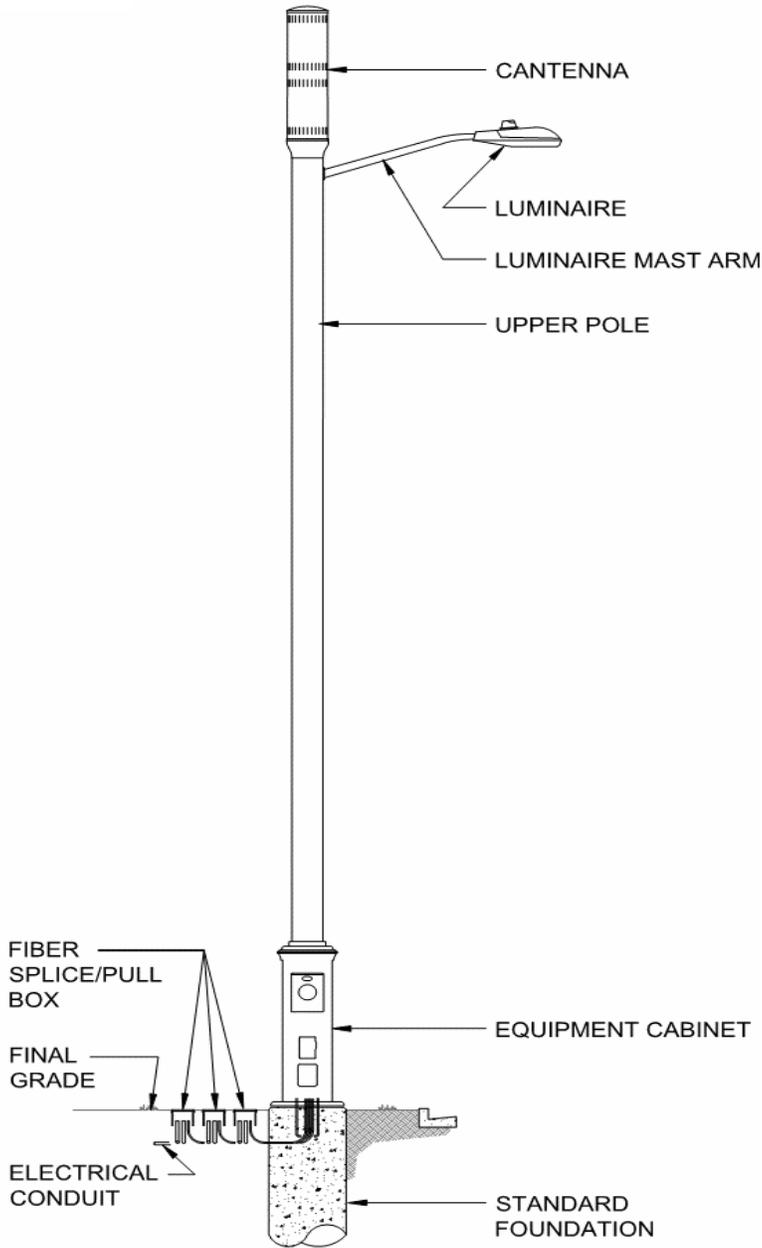


1 Images courtesy of Aero Wireless Group

4.3.1 Type 3A Combination Pole

The Type 3A combination pole is composed of an equipment cabinet, upper pole, streetlight, and antenna. All equipment shall be located internal, or recessed per City requirements, to the appropriate enclosure.

Figure 4-3: Type 3A - Combination Pole with Antenna

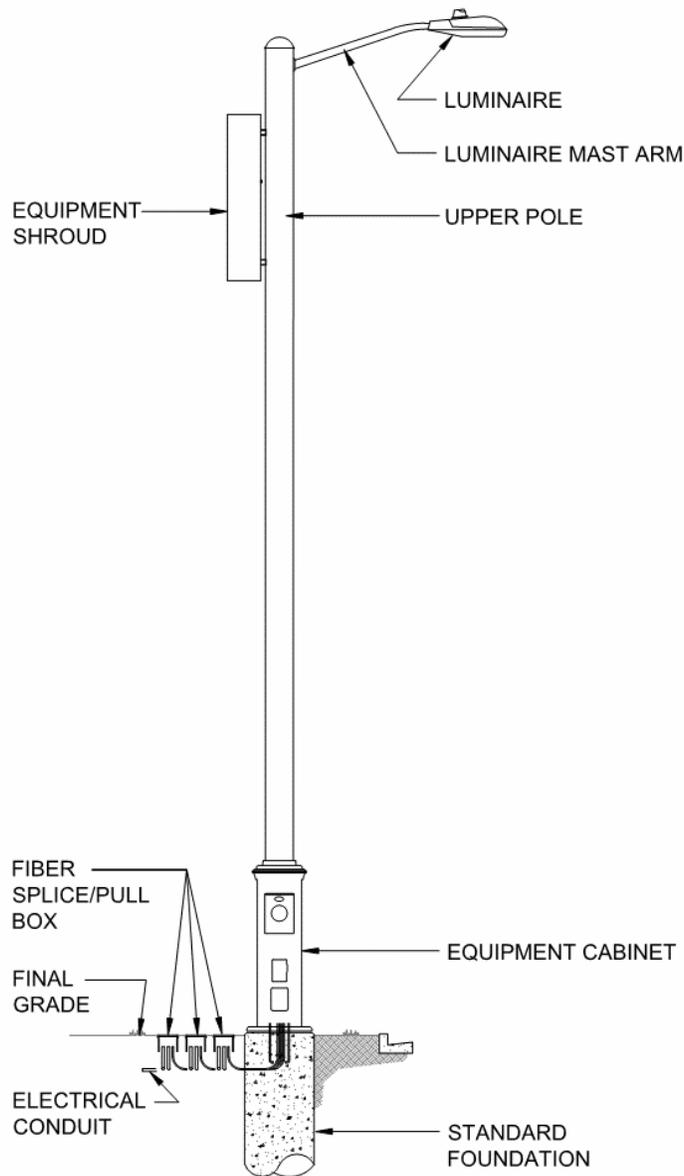


4.3.2 Type 3B Combination Pole

The Type 3B combination pole is composed of an equipment cabinet, upper pole, streetlight, and externally mounted equipment shroud. This type of pole shall only be used if a Type 3A combination pole is physically unable to be used. Licensee must demonstrate that the technology cannot be integrated into the equipment cabinet or the antenna. All equipment shall be located internal, shrouded, or recessed per City requirements, to the appropriate housing. The antenna, radio head, mounting brackets, and all hardware necessary for a complete installation shall be located inside an aesthetically pleasing equipment shroud, securely strapped to the pole.

Wires and cabling shall be hidden from view. Cables and wires shall internal to the pole until it reaches a cable grommet. Weatherproof grommets shall be installed at all cable entry points. All pole openings shall be weatherproofed to prevent interior rusting of the pole.

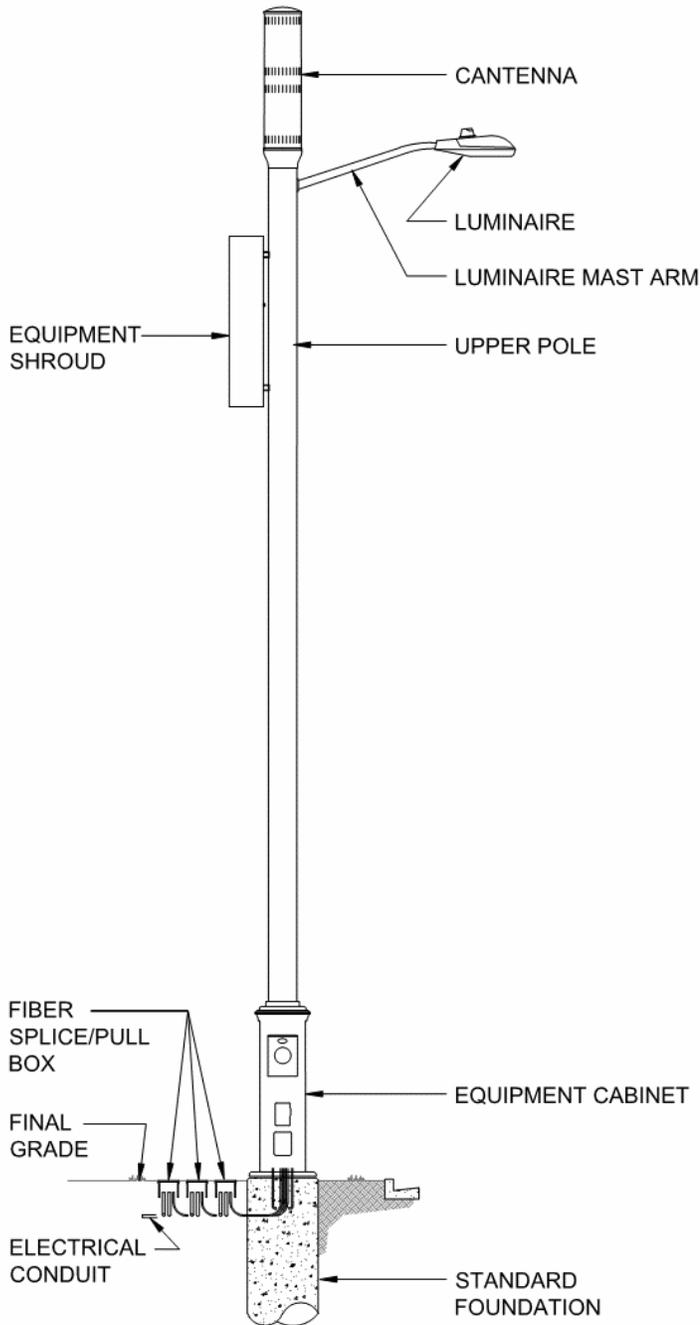
Figure 4-4: Type 3B - Combination Pole with Equipment Shroud



4.3.3 Type 3C Combination Pole

The Type 3C combination pole will be allowed when multiple technologies offered by the same carrier are installed on a single pole. To qualify for this permit, the Licensee must demonstrate that the additional technology cannot be integrated into the equipment cabinet or the antenna. This Type 3C pole is composed of a single equipment cabinet, upper pole, streetlight, antenna, and a single externally mounted equipment shroud.

Figure 4-5: Type 3C - Combination Pole with Antenna and Equipment Shroud



The additional equipment shroud shall match the combination pole aesthetics. Care should be taken to integrate the mounting attachments into the enclosure design. The enclosure shall be securely strapped to the pole.

A combination small cell and streetlight specification overview is found in Section 4.4. Details showing conduit burial; pull box dimensions; light standard foundations; grounding; and pole bases can be found in *RTC Uniform Standard Specifications and Drawings, as amended*

4.4 Combination Small Cell and Streetlight Specifications Overview

Table 4-1: Streetlight Specification Overview

Luminaire	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i>
Luminaire Mast Arm	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i>
Electrical Service	Per City and NV Energy's requirements
Grounding	Per City and NV Energy's requirements
Pole Requirements	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i> At least 15% of the pole design structural capacity shall be reserved for future City IOT installations.
Pole Type	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i>
Pole Color	Equipment cabinet and pole shall be galvanized in accordance with <i>RTC Uniform Standard Specifications and Drawings, as amended</i> . If the pole is painted to match existing streetlight aesthetics, paint shall be powder coated over zinc paint (Pole and equipment cabinet shall still be galvanized).
Combination Pole Height	The top of the cantenna shall be no higher than thirty-six (36) inches above the top of the pole, and the combination of pole and cantenna shall be no greater than thirty-five (35) feet tall. All luminaires shall be the same height as adjacent streetlights. Luminaires shall be installed as shown in <i>RTC Uniform Standard Specifications and Drawings, as amended</i> .
Design Wind Velocity	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i> .
Foundation	Precast concrete or cast-in-place pole foundations shall be designed per <i>RTC Uniform Standard Specifications and Drawings, as amended</i> .
Conduit Sweeps in Foundation	Eight (8) 2" PVC conduit sweeps shall be installed. Conduit shall accommodate City electrical, City fiber, and Small cell carrier electrical and fiber with up to four (4) spare sweeps for future service.
Bolt Circle	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i> .
Anchor Bolt Shroud	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i> .

Table 4-2: Equipment Cabinet Specification Overview

Equipment Cabinet Style	Round to match diameter below. Other shapes subject to City approval.		
Diameter	16 inches is preferred, 20 inches maximum.		
Height	5' maximum		
Shroud/Cover	All hardware attachments shall be hidden. Equipment cabinet and/or equipment cabinet cover shall not have a flat, horizontal surface larger than 1.5 inches.		
Color	Equipment cabinet and pole shall be galvanized in accordance with AASHTO M 111. If the pole is painted to match existing streetlight aesthetics, paint shall be powder coated over zinc paint (Pole and equipment cabinet shall still be galvanized).		
	Utility access	City access	Licensee access
	Per NV Energy's meter access requirements. The meter shall be recessed as much as possible into the pole base.	Hand hole	Lockable access door sized to install, maintain, and remove all small cell equipment as needed
Required Equipment	Utility Equipment*	City Equipment*	Licensee Equipment*
	Per NV Energy's requirements	Fused power disconnect	Per small cell carrier requirements
	*All equipment shall be located internal to the equipment cabinet or recessed in the equipment cabinet to meet Utility requirements. All equipment shall be mounted per the Owner's requirements. Pole bases shall be sized to handle the listed equipment and all other equipment required by the Owner.		
Equipment separation	All equipment shall be separated by owner. All access doors shall be secured by owner requirements.		
Ventilation	Passive louvers and/or other passive ventilation systems shall be provided as the primary means of temperature control.		
Motorized Ventilation	If required, fan(s) shall not emit noise greater than forty-five (45) dBA measured from three (3) feet away (as measured at the height of the Equipment).		

Table 4-3: Upper Pole Specification Overview

Upper Pole Type	Per <i>RTC Uniform Standard Specifications and Drawings, as amended</i> .
Potential Shroud	All fixed connections shall be hidden from view.
Upper Pole Diameter	The upper pole shall be scaled to 0.5 to 0.75 times the size of the equipment cabinet with 10" minimum outer diameter. the City prefers a 10" upper pole diameter. The pole diameter shall be scaled such that no flat, horizontal surface larger than 1.5 inches exists between the equipment cabinet and upper pole.
Electrical Separation	An internal divider shall separate electrical wiring and fiber, per Owner. Separation of service shall meet City requirements.
Grommets	Weatherproof grommets shall be integrated into the pole design to allow cable to exit the pole, for external shrouds, without water seeping into the pole.
Hand Holes	A hand hole shall be provided at the top of the extension pole to maintain City fiber and electrical service for streetlights and future IOT attachments. An optional hand hole may be provided at the bottom of the upper pole.

Table 4-4: Cantenna Specification Overview

Cantenna Diameter	14-inch maximum outer diameter with shroud.
Cantenna Height	The cantenna height - including antenna, radio equipment, conduit or wires, brackets, transition shroud, and all other hardware required for a complete installation - from the top of the pole to the top of the cantenna shall not exceed thirty-six (36) inches.
Antenna Enclosure	If an antenna is located on the side of the pole, the antenna, radio equipment, brackets, and all other hardware required for a complete installation shall fit behind a 38”H x 16”W x 12”D maximum shroud, securely strapped to the pole.
Shroud	The antenna and antenna pole attachment shall be shrouded to meet City’s aesthetics. A tapered transition between the upper pole and cantenna shall be included.
Color	Antenna shroud shall be colored to match pole.
Warning Label	If required, radio frequency warning labels shall be mounted exterior to the pole.
Owner Identification	A 4-inch by 6-inch (maximum) plate with the Licensee’s name, location identifying information, and emergency telephone number shall be permanently fixed to the pole.

4.5 Placement Requirements

A Type 3 combination small cell and streetlight pole should only be located where an existing pole can be removed and replaced, or at a new location where it has been identified that a streetlight is necessary. Type 3 poles shall be owned by the applicant. When submitting to the City as a privately-owned Type 3 pole, the pole shall be located as follows:

- In a manner that does not impede, obstruct, or hinder pedestrian or vehicular travel.
- In alignment with existing utility poles, and streetlights.
- With appropriate clearance from existing utilities.
- Outside of clear zones at intersection corners per *RTC Uniform Standard Specifications and Drawings, as amended*. Any new Type 3 pole general location and spacing shall be as determined by the *RTC Uniform Standard Specifications and Drawings, as amended*.

5 FREESTANDING SMALL CELL INFRASTRUCTURE

5.1 Purpose

This chapter of the Guidelines is to be used when installing a freestanding small cell. Refer to Chapter 4 for projects involving combination small cell installations.

5.2 General Guidance

The specifications provided in this chapter are for single carrier with single technology installations within the public ROW only. Dual carrier, dual technology installations, or small cell locations not in the public ROW may vary from these guidelines with City approval.

Figure 5-1: Freestanding Small Cell Pole



Photo courtesy of Aero Wireless Group

All freestanding small cell permitting applications shall be approved by the City prior to installation. All equipment shall meet the City’s design aesthetics. The same small cell pole aesthetic is to be used along adjacent blocks to maintain a cohesive appearance. Freestanding small cell aesthetics and proposed locations shall meet Requirements. All small cell carrier equipment shall be housed internal to the equipment cabinet or hidden behind the antenna. No network provider equipment shall be strapped to the outside of the pole. If a dual-carrier pole is approved by the City, all the network provider equipment shall be located internal to the pole and antenna.

Deviations from these Guidelines shall be approved on a case-by-case basis by the City prior to installation

5.3 Basis of Design

The following pages describe the small cell requirements for installation in the City’s ROW.

The pole design shall match the aesthetics of existing streetlights installed adjacent to the pole. The Licensee shall perform a visual inspection prior to submitting a permitting application to determine existing aesthetics.

The small cell components shall be sized to be visually pleasing. For a pole to be considered visually pleasing, the transition between the equipment cabinet and upper pole should be considered. A decorative transition shall be installed over the equipment cabinet upper bolts, or decorative base cover shall be installed to match the equipment cabinet size. The upper pole shall be per the *RTC Uniform Standard Specifications and Drawings, as amended*. All hardware connections shall be hidden from view. No horizontal flat spaces greater than 1.5 inches shall exist on the equipment cabinet to prevent cups, trash, and other objects from being placed on the equipment cabinet. Each pole component shall be architecturally compatible to create a cohesive aesthetic. An example of an unacceptable small cell installation, and acceptable installation can be found in Figures 5-2 and 5-3.

Figure 5-2: Unacceptable Type 4 Installation

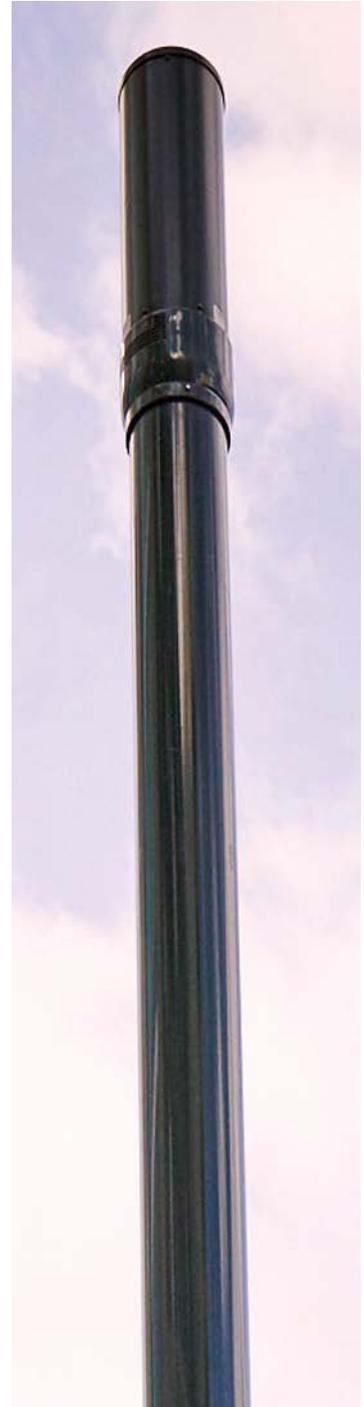


Cantenna must include a smooth transition between upper pole and cantenna.

Conduit, mounting bracket, and other hardware must be hidden behind a cantenna or in a shroud

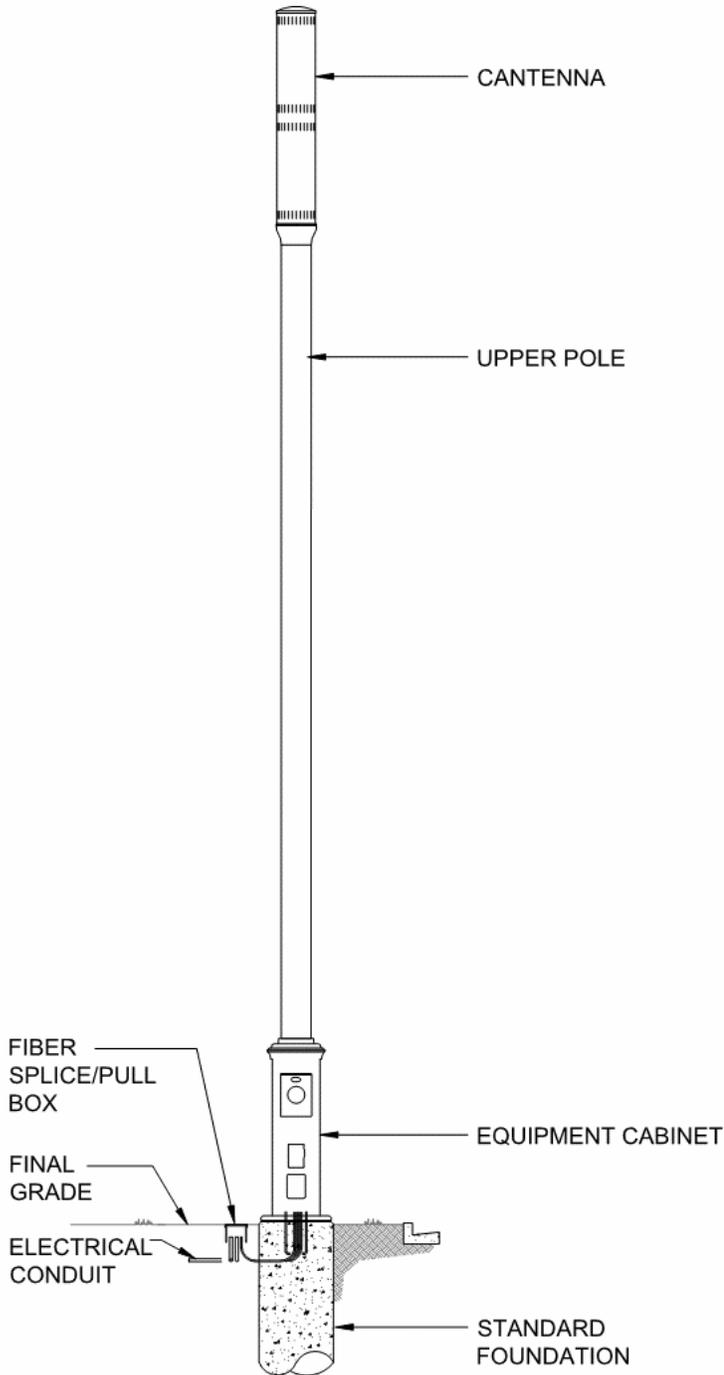
All conduit, wires, and other hardware shall be located internal to the upper pole

Figure 5-3: Acceptable Type 4 Installation



Freestanding small cell pole components include the foundation, equipment cabinet, upper pole, antenna, and all hardware and electrical equipment necessary for a complete assembly, as shown in Figure 5-4.

Figure 5-4: Freestanding Small Cell Assembly



5.4 Freestanding Small Cell Specification Overview

Table 5-1: Freestanding Small Cell Infrastructure Specification Overview

Electrical Service	Per City and NV Energy's requirements	
Pole Type	Per the <i>RTC Uniform Standard Specifications and Drawings, as amended</i>	
Pole Color	Per the <i>RTC Uniform Standard Specifications and Drawings, as amended</i> . If the pole is painted to match existing streetlight aesthetics, paint shall be powder coated over zinc paint (Pole and equipment cabinet shall still be galvanized).	
Pole Height	The freestanding small cell shall not exceed thirty-five (35) feet. Pole shall be measured from the top of the foundation to the top of the cantenna.	
Design Wind Velocity	Per the <i>RTC Uniform Standard Specifications and Drawings, as amended</i>	
Foundation	Per the <i>RTC Uniform Standard Specifications and Drawings, as amended</i>	
Conduit Sweeps in Foundation	Eight (8) 2" PVC conduit sweeps shall be required. Conduit shall accommodate small cell carrier electrical and fiber with up to four (4) spare sweeps for future service.	
Bolt Circle	Per the <i>RTC Uniform Standard Specifications and Drawings, as amended</i>	
Anchor Bolt Shroud	Anchor bolts shall either be hidden from view, preferred, or treated and painted to match the pole color with City approval.	
Equipment Cabinet Style	Round to match diameter below. Other shapes subject to City approval.	
Equipment Cabinet Diameter	16 inches is preferred, 20 inches maximum.	
Equipment Cabinet Height	5' maximum	
Equipment Cabinet Shroud/Cover	All hardware attachments shall be hidden. Equipment cabinet and equipment cabinet cover shall not have a flat, horizontal surface larger than 1.5 inches.	
Equipment Cabinet Access Doors	Lockable access door sized to install, maintain, and remove all small cell equipment as needed shall meet Licensee's requirements. Utility access shall be per NV Energy's requirements. The meter shall be recessed into the pole base.	
Equipment Cabinet Required Equipment	All equipment shall be located internal to the equipment cabinet or recessed as much as possible in the equipment cabinet to meet Utility requirements. All equipment shall be mounted per the Owner's requirements. Pole bases shall be sized to handle the listed equipment and all other equipment required by the Owner.	
	Utility Equipment	Licensee Equipment
	Per NV Energy requirements	Per small cell carrier requirements
Ventilation	Passive louvers and/or other passive ventilation systems shall be provided as the primary means of temperature control.	
Motorized Ventilation	If required, fan(s) shall not emit noise greater than forty-five (45) dBA measured from three (3) feet away (as measured at the height of the Equipment).	
Upper Pole Diameter	Per the <i>RTC Uniform Standard Specifications and Drawings, as amended</i> . The pole diameter shall be scaled such that no flat, horizontal surface larger than 1.5 inches exists between the equipment cabinet and upper pole.	
Cantenna	Antenna and pole attachment shall be shrouded to meet City aesthetics. A tapered transition between the upper pole and cantenna shall be included	
Cantenna Diameter	14-inch maximum outer diameter with shroud	
Cantenna Height	The cantenna height - including antenna, radio equipment, brackets, transition shroud, and all other hardware required for a complete installation - to the pole shall not exceed thirty-six (36) inches.	
Cantenna Color	Antenna shroud shall be colored to match pole	
Warning Label	If required, radio frequency warning labels shall be mounted exterior to the pole.	

Owner Identification	A 4-inch by 6-inch (maximum) plate with the Licensee's name, location identifying information, and emergency telephone number shall be permanently fixed to the pole.
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5.5 Placement Requirements

All Type 4 freestanding small cell poles shall be privately owned and must be permitted by the City per the Requirements

- In a manner that does not impede, obstruct, or hinder pedestrian or vehicular travel.
- So as not to be located along the frontage of a Historic building, deemed historic on a federal, state, or local level.
- So as not to significantly create a new obstruction to property sight lines.
- At the intersection of property lines, or along secondary property street facing.
- In alignment with existing utility poles, and streetlights.
- With appropriate clearance from existing utilities.
- Outside of clear zones at intersection corners per *RTC Uniform Standard Specifications and Drawings, as amended*.