Peabody Municipal Light Plant

Technical and Aesthetic Standards for Small Cell Siting

December 2020

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1 Introduction

The Peabody Municipal Light Plant (PMLP) has established these technical and aesthetic standards (Standards) to govern access to and use of PMLP wooden utility poles by wireless carriers, infrastructure companies, or others (collectively referred to as "Attaching Entities" or "Applicants") for installation of Wireless Communication Facilities (WCF), as defined by the U.S. Federal Communications Commission. These facilities are commonly called "small cells." The small cells and all associated equipment are referred to in these standards as WCFs. "Wireless Communication Facilities."

These standards are intended to protect the primary purposes of wooden utility poles (that is, to support utility cables and equipment) and to ensure public safety and utility employee safety. The technical standards describe in detail whether and how a utility pole can be used for Wireless Communication Facilities attachment. After a proposed placement is determined to be acceptable according to the technical standards, the aesthetic standards then ensure that the technically feasible options are also aesthetically acceptable.

These Standards are part of an evolving process that considers the ongoing development of communications technologies as well as a recent FCC order entitled "Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment" (the Order).[1] The Standards may be amended to accommodate future technological and regulatory changes.

All Attaching Entities must follow the most current version of the National Electrical Safety Code (NESC) and all other applicable engineering standards, FCC standards, and other federal, state and local standards and codes. These PMLP standards use national safety standards and federal rules as a foundation, but PMLP's unique operational requirements, as well as local aesthetic requirements, also inform these Standards.

[1] "In the Matter of Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment," Declaratory Ruling and Third Report and Order, WT Docket No. 17-79, WC Docket No. 17-84, 2018 WL 4678555, (rel. September 27, 2018) ("Order") (available online: https://docs.fcc.gov/public/attachments/FCC-18-133A1.pdf).

2 Pre-Application Requirements

PMLP has created an application form that accompanies these Standards. The form may be downloaded at pmlp.com. Before PMLP will accept an application, Attaching Entities must complete the following steps and pay the application fee stated on the application form.

2.1 Execute Master License Agreement

Attaching Entities must execute a master license agreement with PMLP prior to making an application to install equipment on PMLP poles. Attaching entities must contact PMLP at (978)-531-5975 to obtain the forms and procedures. The master agreement contains the terms and conditions for Wireless Communication Facilities attachment on PMLP's wooden utility poles.

2.2 Submit a Complete Application

Applications must be fully completed before they will be considered by PMLP. Applications may be accessed from the PMLP website at: www.pmlp.com/forms-applications.html and submitted online there; or completed manually and emailed to WCFapplications@pmlp.com or sent to the following by US Mail:

Peabody Municipal Light Plant

Engineering Division

c/o Supervising Electrical Engineer

201 Warren St. Ext.

Peabody, MA 01960

3 Review, Approval, and Construction Process

PMLP will review the application submitted by the Applicant. If the application does not comply with these Standards, the previously executed master license agreement, and the "PMLP Small Cell Antenna Attachment Policy", PMLP will reject it and send it back. Terms, conditions, and procedures on make-ready, pole replacement, installation, and maintenance work are outlined in the master agreement. Pole replacement and structural analysis requirements are described in Section 4.3 of these Standards.

Once PMLP approves the application, the applicant will request PMLP to perform make-ready design work under terms in the master license agreement. If the applicant chooses to proceed with the make-ready work, the applicant will pay PMLP's estimate of the work in advance. If PMLP determines that the pole needs to be replaced to provide space and clearance or for other reasons, the Applicant shall pay for the cost of the pole replacement. If new poles are needed, PMLP shall install and own the new poles. In the portion of Peabody where Verizon sets the poles, Verizon determines whether and how to replace the pole.

For a pole that's replaced to accommodate a new Wireless Communication Facility, PMLP will notify Attaching Entities consistent with existing PMLP policies and will perform any required make ready work and replace utility poles as necessary in PMLP's custody area.

The Applicant shall provide OSHA-certified on-site training of PMLP personnel to safely install and maintain the Wireless Communication Facilities equipment, as well as RF occupational and safety training related to working in close proximity to this equipment.

PMLP shall perform all work in the Electric Supply Space, as defined in the master license agreement, including installation and maintenance. Once the make-ready work is done, PMLP will authorize the Attaching Entity to do the approved work in the assigned space on utility poles.

Construction drawings as defined in the application form and executed master license agreement identifying all electrical specifications and requirements for the Wireless Communication Facilities attachment shall be provided to PMLP and shall accompany every application.

PMLP shall consider complete applications received from multiple Attaching Entities to attach to the same Pole on a "first-come, first-served," non-discriminatory basis.

- If PMLP receives a subsequent application for the same pole from a second prospective Attaching Entity following acceptance of a complete application and prior to completing make-ready electrical construction or issuing a Site License on said first application, PMLP shall reject the second application and any subsequent applications for the same pole.

- PMLP will reconsider the rejected application if it is revised and resubmitted to eliminate the conflict with the first application previously approved.
- In the event the Attaching Entity fails to pay for make-ready construction within the timeline in the agreement, PMLP will reject the application and accept other applications for that pole.

4 Small Cell Equipment Standards

This section describes PMLP's technical and aesthetic requirements for small cells.

4.1 Pole-Mounted Equipment

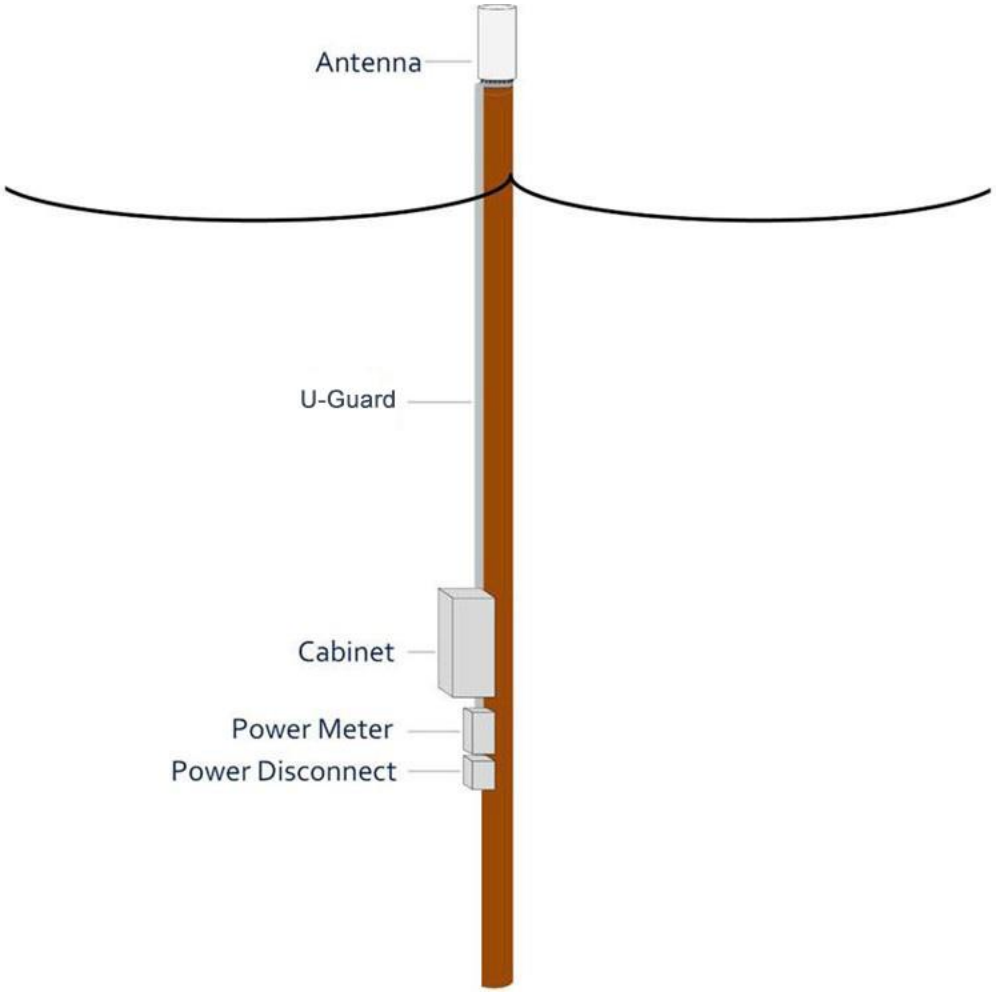
As of the date of this version of the Standards, typical pole-mounted small cell equipment comprises:

1. Antennas on the upper part of pole
2. Radios, fiber terminations, and other equipment located in enclosures or cabinets
3. A power meter and power disconnect switch, usually located in two separate, smaller enclosures
4. Power disconnect must be mounted outside areas that exceed occupational RF exposure limits as defined by FCC OET Bulletin 65.

Figures 1 is a conceptual drawing intended to demonstrate the basic elements of a small cell attachment and how they typically fit together on a utility pole; the drawing is not to scale or representative of actual structures.

Detailed drawings are provided in Appendix A.

Figure 1: Conceptual Drawing of a Small Cell on a Utility Pole



In all cases, the placement of small cells shall be consistent with existing structures and aesthetics, in harmony with the surroundings, and as unobtrusive as possible.

In the event an Applicant seeks to place a small cell in a manner that does not comply with the aesthetic standards, it must request a waiver.

4.2 Use of Wooden Utility Poles

PMLP's order of preference for siting Wireless Communication Facilities on wooden utility poles is contained in the following list. But if no such poles are available, Attaching Entities should submit an application for making attachments on poles they find suitable and PMLP will review the application and consider moving existing attachments at the Attaching Entity's cost. PMLP maintains sole discretion over the suitability of the pole.

1. Stub poles

2. Poles with no primary that are near a property line
3. Other poles without primary if the Applicant can show there is no other viable option

Only as a last resort, and only under PMLP's sole discretion will Wireless Communication Facilities be installed on:

- Poles with primary lines
- Poles containing controls such as fire alarm, police signal, or traffic signals;
- Poles with capacitor controls, regulator controls, recloser controls, air switch operating handles, or an existing overhead transformer;
- Poles with underground electric or communication riser conduits; poles not accessible to mechanized equipment (i.e., a bucket truck); or
- Double-circuit poles.
- Poles with cable nodes, power supplies, line amplifiers or fiber cabinets.

Messenger strand shall be bonded.

Additionally, WCFs shall be located to avoid any physical or visual obstruction to pedestrian or vehicular traffic or any other safety hazards to pedestrians, cyclists, or motorists. If PMLP determines that a proposed location would present any such hazards, PMLP shall require the Applicant to choose an alternate site.

4.3 Utility Pole Replacement or Structural Analysis Requirement

The standard and default approach for attaching to utility poles will be for the pole to be replaced by PMLP with a new pole that PMLP deems suitable, at the Attaching Entity's cost to accommodate a new wireless facility attachment. The Attaching Entity shall provide both an engineering design and Pole Loading Analysis (PLA) calculations for the new pole. Pole top extensions shall not be used. If additional height is needed a new pole shall be installed.

If the Attaching Entity believes an existing wooden utility pole may provide space and structural support for all existing attachments, plus the proposed Wireless Communication Facilities attachment, the Attaching Entity shall provide both an engineering design and PLA calculations specific to the pole in question to justify the use of the existing pole.

Each PLA must be undertaken by a Registered Professional Structural Engineer licensed in the Commonwealth of Massachusetts (Engineer) to undertake and complete the engineering design,

the physical testing of pole integrity, and PLA calculations. The report shall be stamped by this Engineer. PMLP reserves the right to approve the contractor selected to perform this work; such approval shall not be unreasonably withheld.

Acceptable software for PLA calculations shall be a commercially available product with general industry acceptance. Should the Applicant or its contractor use a commercially available software application that PMLP does not possess, the Applicant shall make available to PMLP at least one software license. The Applicant will gather the physical and technical information required to conduct a PLA.

5 General Technical and Aesthetic Requirements and Guidelines

- Subject to further discussions, Wireless Communication Facilities shall be installed with a minimum 30-foot setback from residential buildings and a minimum 20-foot setback from commercial buildings. In some circumstances, this requirement may be waived at PMLP's discretion.

- PMLP prefers the use of poles at street intersections and property lot lines.

- No new poles should be installed where poles do not currently exist, unless the Applicant can demonstrate to PMLP's satisfaction that there is no other option to provide service.

- If new poles are to be installed in the public right-of-way, the pole owner/custodian shall be solely responsible for obtaining all permits and approvals, related to the grant of location for the new pole, required under state law and/or local regulation at the applicant's expense. The prospective carrier is solely responsible for obtaining all other necessary permits and approvals for the WCF.

- Multiple Wireless Communication Facilities shall be installed with a minimum spacing of 500 feet in residential areas.

- PMLP prefers the use of stealth design elements, such as shapes and colors that match surrounding infrastructure and minimize adverse visual impacts.

- PMLP prefers the use of tapered shapes that smoothly integrate into structures (avoiding, for example, new rectangular boxes).

- The Applicant shall minimize the size and aesthetic difference between a replacement structure and the original pole.

- No facilities shall be installed in a park or in a right-of-way within 250 feet of a playground or park.

5.1 RF Exposure

Attaching Entities shall comply with all provisions and guidelines of the FCC OET Bulletin 65, as may be amended from time to time, and shall submit a report certifying FCC OET 65 compliance for each Wireless Communication Facilities installation.

The report should include an RF plot in the vertical plane showing both general and occupational limits. This should include any areas near the pole that either workers or the general public have access to. It should also itemize all necessary mitigations necessary to bring the site into compliance

The following elements, at a minimum, must be contained within the report and signed by the Engineer:

- A statement of compliance (or non-compliance);
- Date of the report;
- Date of statement of compliance;
- Pole number proposed for the Wireless Communication Facilities installation;
- Attaching Entity's site or identification number for the Wireless Communication Facilities installation;
- GPS coordinates of the proposed pole;
- Calculation of RF power at the radios or other electronics;
- Calculation of RF power at the antennas; and
- Location of the applicable signage with above ground level height listed.
- Upon request by PMLP, the Applicant shall perform RF field tests while the Wireless Facility is in operation, supervised by PMLP to demonstrate compliance with FCC OET 65.

5.2 RF Signage Requirements:

Approved signage compliant with FCC OET Bulletin 65 and OSHA standards shall be posted at each Pole hosting a Wireless Communication Facilities installation, and/or at multiple locations on such wooden utility pole as required by FCC OET 65.

The RF signage shall comply with the appropriate and predetermined exposure level applicable to: "General Public", "Occupational Worker", and "Specialized Worker" as shown in Figure 4 below. All signage shall be 8" x 12" and made of weather, corrosion, and Ultra-Violet (UV) resistant materials.

Figure 2: RF Signage

The Identification Cable Tags shall be made of polyethylene and polyvinyl chloride and have ultraviolet inhibitors. The tags will be yellow with black lettering. The size shall be 1 ¾" x 4" and 1 ¼ x x3". The tags will be placed on Licensee's equipment, including, but not limited to, antennas, cabinets, cables, guys, terminals, and terminal closures. The Identification Tag will read as follows: "CAUTION: Radio Frequency Fields." This tag will also have a place at the bottom on the tag to write-the owner's name using indelible ink. It is the responsibility of the Licensee to obtain, place and maintain Signage and Cable Identification tags.

At anchor and guy locations, the apparatus tag shall be placed between the device used to secure the strand (i.e., strandvise, guy, grips or clamps) and the eye of the rod. If a guy shield is in place, the apparatus tag can be attached at the top of the guy shield on the strand.

At terminal locations, the Identification tag shall be placed around the neck of the terminal, on the stub, An E-Z twist tie shall be used to attach this tag.

5.3 Emergency RF/ Power Shut-Off

Each approved Wireless Communication Facilities installation shall have a clearly marked disconnect switch adjacent to the electronics cabinet and located outside areas that exceed RF exposure limits. Once the shut-off switch is placed in the open position, the electronics equipment related to the installation shall not be energized by any source including any battery backup. Additionally, no RF transmissions shall be emitted by any antenna related to the installation.

5.4 Riser Cable

Riser cables to connect antennas and antenna accessory equipment, and backhaul services shall reside under u-guard, and power lines shall be in conduit on the back side of wooden utility poles with top side weatherheads. Power cables transporting AC power shall be in separate conduit from DC power or telecommunications cable.

5.5 Conduit Requirements

All conduit affixed to poles shall be at minimum Schedule 40 PVC. Any conduit passing through the power space shall be nonmetallic and non-conductive. These conduits shall not exceed a diameter of two inches (2”). Only the minimum number of conduits necessary for the attachment shall be placed. No exposed riser cable slack shall be stored externally. All slack shall be stored in junction boxes or equipment cabinets or on snowshoes on the aerial cable.

5.6 Licensed Frequencies

Antennas shall only transmit or receive frequencies that are licensed by the FCC to the Applicant or to the carrier the Applicant represents. In the event the Applicant wishes to change the carrier network using the Wireless Communication Facilities, the Applicant shall notify PMLP in writing of the change in frequencies.

Frequency bands listed by the FCC to be unlicensed and available for open use, may be transmitted or received, as long as they do not cause interference with another Attaching Entity, FCC-licensed entity, or PMLP. If there is any interference, the Attaching Entity will follow the remedy process outlined in the master license agreement.

5.7 Attachment Position and Defined Space

In no circumstance shall an antenna clearance be less than specified by the NESC. Radio equipment shall be housed in the wireless equipment cabinet. Non-antenna equipment shall not be mounted within the antenna area or Electric Supply Space.

5.8 Point of Demarcation

The Backhaul Network Interface Device and point of demarcation are to be clearly identified on the submitted engineering drawings, as required in the Application, with the provider of backhaul services clearly identified.

5.9 PMLP Work on a Pole

PMLP shall open the Service Disconnect Switch prior to performing any work on a PMLP pole in order to de-energize the Antenna. Any backup power shall also be disconnected when the Service Disconnect Switch is operated. PMLP shall de-energize Wireless Communication Facilities prior to performing any work on a pole structure and will provide prior notice to the Applicant when possible, as per the master license agreement.

5.10 Signage

Attaching Entities shall install 8" x 12" signs or decals made of weather, corrosion, and UV resistant materials easily visible from the ground level. At a minimum, each sign or decal shall indicate the Attaching Entity's name, emergency 24-hour contact number, and unique identifier for that site.

5.11 Pole-Mounted Antennas

The following requirements apply to pole-mounted antennas:

- Any Antenna in the Electric Supply Space must have 60 inches vertical clearance from the closest electrical conductor. U-Guard must cover the cables which run from a pole top antenna to the wireless equipment.
- The total volume of pole-mounted antennas must not exceed 3 cubic feet on a single pole.
- Pole-mounted antennas must be no taller than 48" (4 feet).
- Pole-mounted antennas must have a smooth cylindrical shape (ideally, a single canister, or multiple separate antennas placed inside sheeting that is flush with the pole, or a form factor in which multiple antennas merge into a single smooth shape). No separately mounted antennas will be allowed on a single installation (for example, physically separate panel antennas for each sector).
- Pole-mounted antennas must be flush-mounted or placed in line with the pole.
- Antennas on wooden utility poles must be gray or another neutral, unobtrusive color deemed acceptable by PMLP.

5.12 Pole-Mounted Cabinets

- Cabinets are allowed on the sidewalk side of wooden utility poles.
- Cabinets mounted on poles must have at least a 12-foot clearance from the ground, or the minimum clearance required by the latest edition of the National Electrical Safety Code (NESC), whichever is greater.
- Cabinets must be flush-mounted to poles.
- Rectangular cabinets on poles are limited to 48" (height) by 24" (width) by 18" (depth); cabinets that are non-rectangular in shape must be comparable or less in volume and visual impact.
- PMLP prefers placing pole-mounted equipment in enclosures with tapered shapes, which

are less obtrusive than rectangular cabinets.

- The power meter and power disconnect switch must be located below the cabinet
- Cabinets on wooden utility poles must be gray or another neutral, unobtrusive color deemed acceptable by PMLP. Total volume of all associated equipment, outside of antenna, must be less than or equal to 28 cubic feet.

5.13 Lighting and Noise

- No lighting is allowed on Wireless Communication Facilities attachments; if there are lights on the supplied equipment, they must be covered, removed, or deactivated.
- Wireless Communication Facilities attachments in residential neighborhoods may not create noise greater than 50 dB measured at 20 feet from the device, consistent with best practice.

5.14 Bonding and Grounding

Per the guidelines stated in the NESC, it is the policy and practice of PMLP to ground all Pole structures installed as part of PMLP's distribution system and streetlight service. Attaching Entities shall ground their equipment to the multi-ground neutral vertical provided by PMLP at the Attaching Entity's expense. All of the following defined Wireless Communication Facilities components, or pole appurtenance listed, must be bonded:

- Antenna(s)
- Antenna brackets (if applicable)
- Radios and other electronics
- Cable messenger strand

Appendix A: Pole-Mounted Wireless Communication Facilities Typical Drawings

Figure 3: Pole with Secondary Power and Antenna in Electric Supply Space with Pole-Mounted Equipment Cabinet

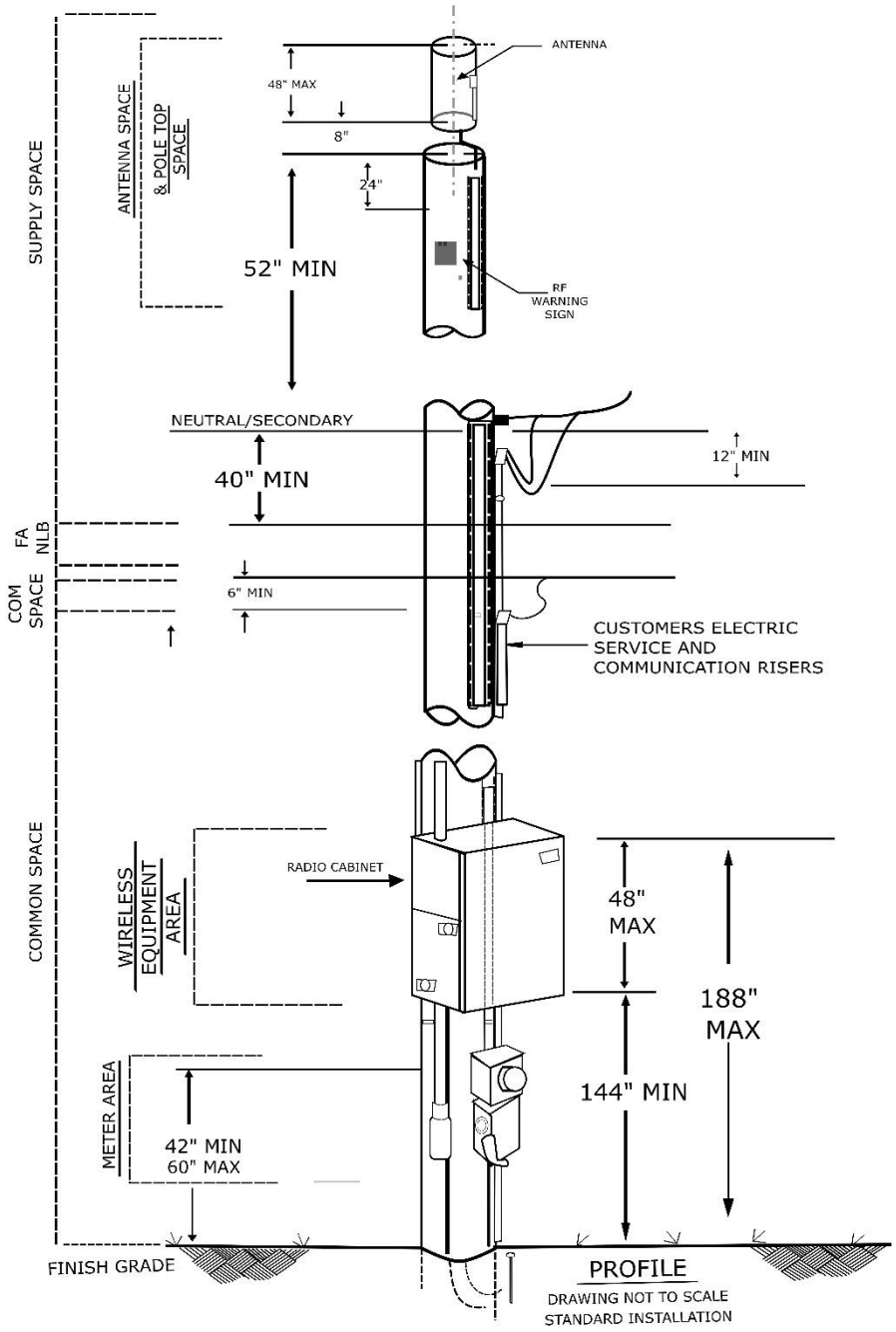


Figure 4: Pole with Secondary Power and Overhead-Fed Streetlight with Pole-Mounted Equipment Cabinet

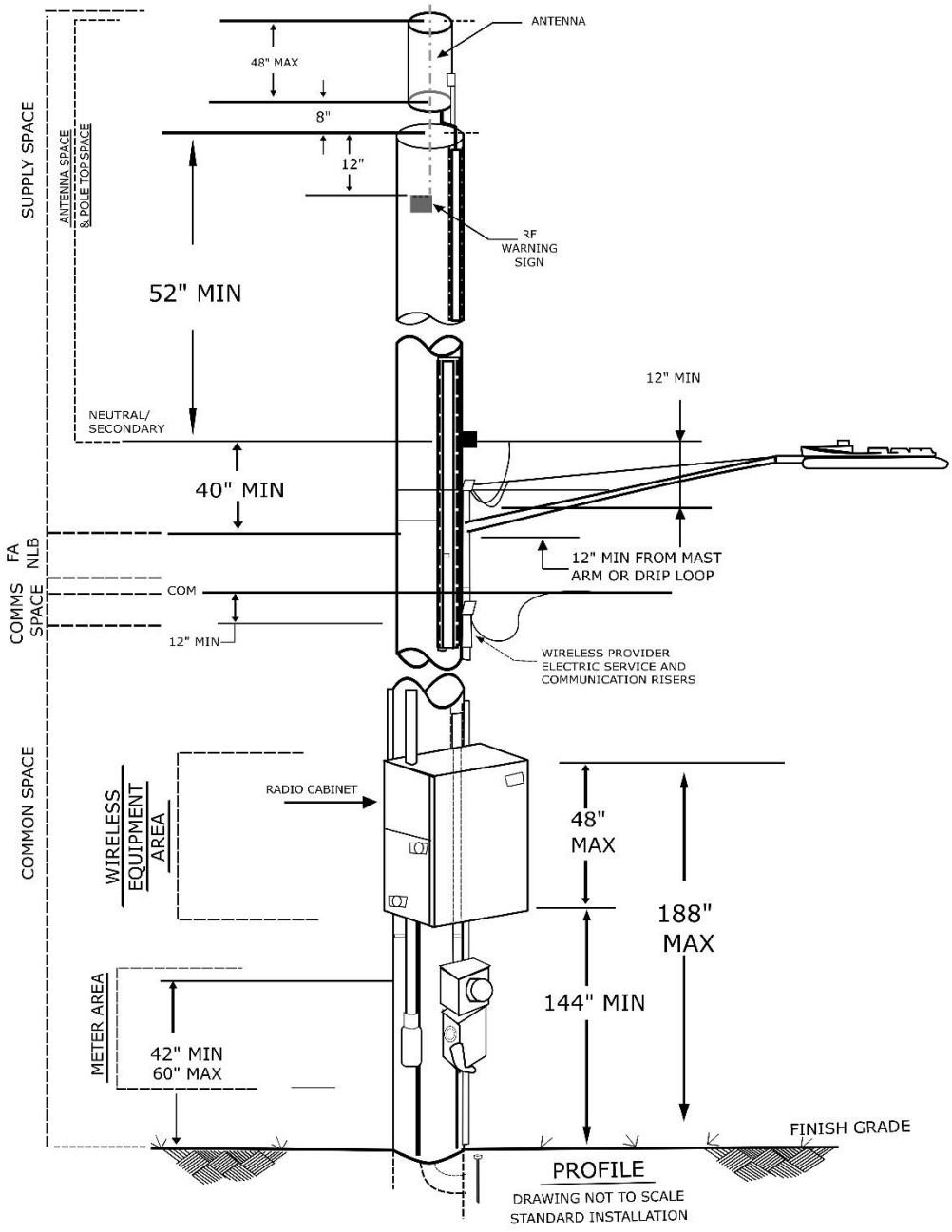


Figure 5: Pole with Primary Power and Antenna in Electric Supply Space with Pole-Mounted Equipment Cabinet

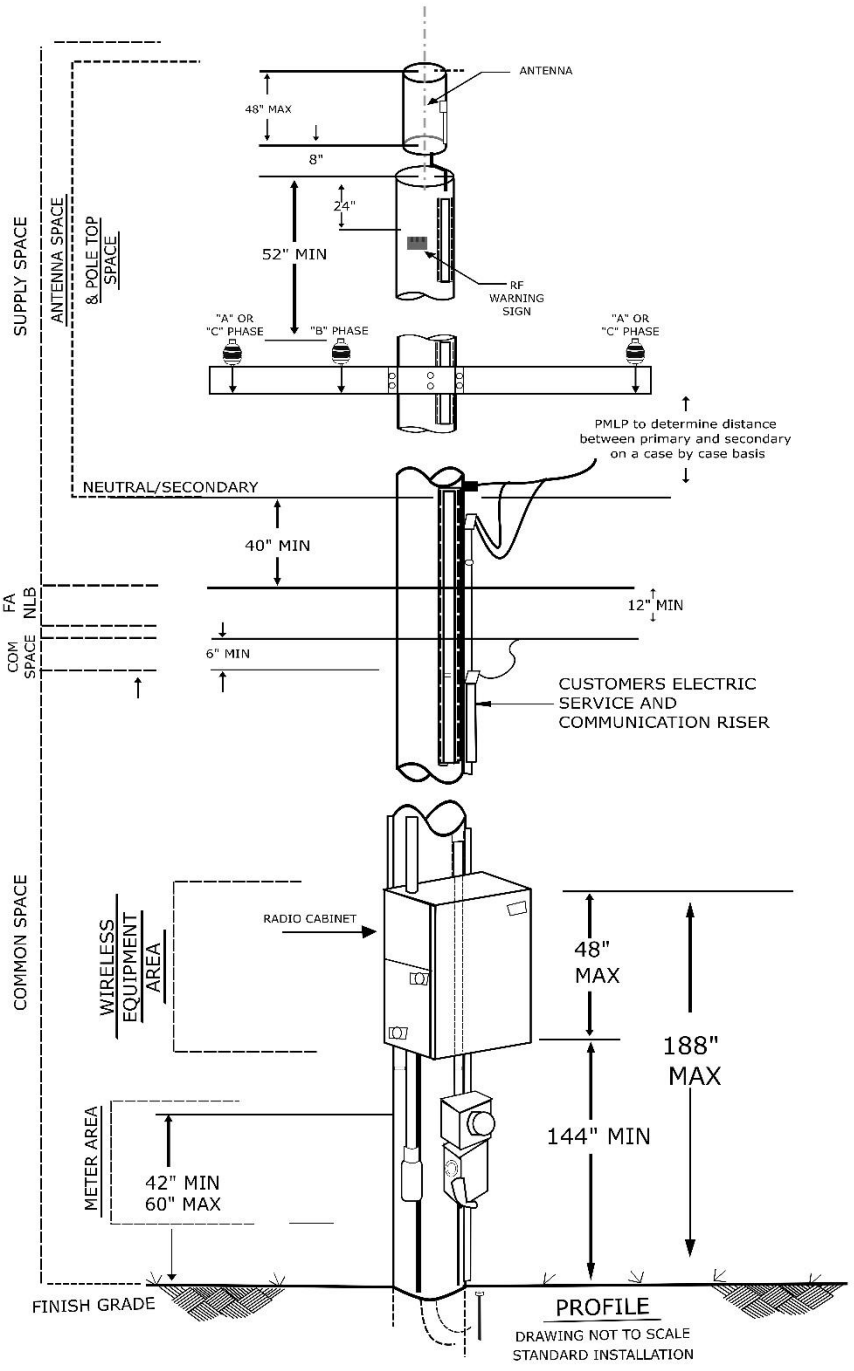


Figure 6: Pole with Hendrix Primary Power and Overhead-Fed Streetlight and Pole-Mounted Equipment Cabinet