

1910

JOINT USE

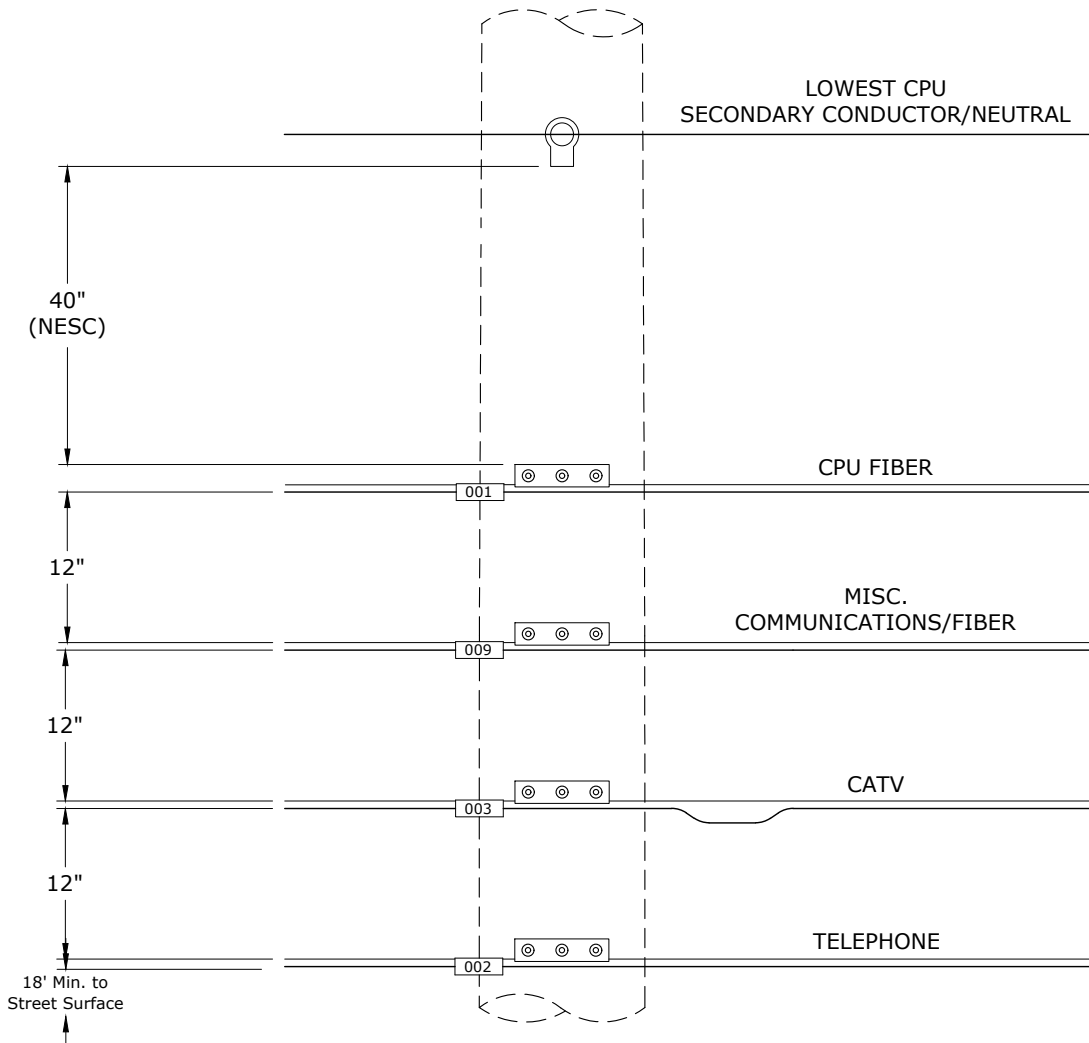
12/19/19

~	JU1	Joint Use Labeling
~	JU2	Joint Use Pole Attachment Guidelines
~	JU3	Joint Use Temporary (30 Day) Attachment
C	JU4	Joint Use Guidelines for Communication Antenna Attachments


N	New Standard
R	Redrawn Standard
C	Changed Standard
~	No Change

**STANDARD UTILITY POLE
ATTACHMENTS**
(Typical Pole Details, Not to Scale)

1. Identification of attachments is necessary to assist in repair of third party or storm damage to cables, equipment cabinets, conduit and other pole attachments.
2. Nothing herein shall be construed so as to require CPU to tag or label any electrical distribution circuit or facilities. The tagging requirement for CPU pertains to fiber optic and other communications facilities.
3. Tags shall be applied to each attachment on every pole. A separate tag shall be attached to each fiberglass crossarm by the communications company that installed it.
4. Tag shall be securely attached and clearly visible from the ground.
5. Acceptable tags are Tech Products "Everlast" 1-inch tags with type ELHY numbers and PH 103 holder or Almetek Series 1001 E-Z tags with type UE-H 1-inch black numbers on yellow background with TH-3P holder or equivalent approved by CPU.
6. Tags shall be applied on all new construction and whenever work is being done on existing plant.




Rev. 12 - Replaced J&N Cable with NocTel Communications at 007.

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Standard Utility Pole Attachment Identification Codes

001	Clark Public Utilities Fiber
002	(Was Qwest before bought out by CenturyLink)
003	Comcast
004	Frontier Communications
005	TDS Telecom
006	CenturyLink
007	NocTel Communications
008	Structured Cabling
009	ZAYO
010	Level(3)
011	Clark County Information Services
012	WSDOT
013	City Of Vancouver
014	Wave
015	City of Battleground
016	City of Ridgefield
017	Eman Networks (out of business)
018	City of Camas
019	NoaNet
020	Silver Star Telecom
021	Wave
022	MCIMETRO
023	Port of Ridgefield
024	AT&T
025	Ridgefield School District
026	La Center School District

Rev. 12 - Replaced J&N Cable with NocTel Communications at 007.

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1. Reference Standards

All clearances between conductors and climbing/working space requirements and construction shall meet the minimum requirements of the latest editions of the Washington Administrative Code (WAC) 296 or the National Electrical Safety Code (NESC) whichever is greater.

2. Definitions

CPU - Clark Public Utilities

Joint Ownership - Refers to poles which are jointly owned by CPU and CenturyLink.

Third Party - Any communication company (except CenturyLink) that attaches to a CPU/CenturyLink jointly-owned pole.

Supply Space - The vertical space on a pole that is occupied by the electric supply conductors and/or hardware. The bottom of the supply space is the bottom of the lowest supply-owned equipment.

Communications Space - The vertical space on a pole below the 40-inch separation space which is occupied by communication lines (as defined by the NESC, communication lines include, but are not limited to, telephone, CATV, and fiber optic lines).

Communication Worker Safety Zone* - The vertical space (40 inches per NESC 235C4*) on a pole separating the supply space and the communications space. This space is intended to provide a safe working clearance for workers in the communication space.

Pole Face - The side or half of the pole that contains the pole gain.

Pole Gain - The notch in the pole that contains the pole manufacturing information. The pole gain is located 10 feet from the butt of the pole.

3. General Attachment Requirements

3.1. Laminated Poles

Attachment to laminated poles must be approved by CPU Engineering to ensure the pole is strong enough for the additional load.

3.2. Cables and Guys

Communication lines shall be attached to the same side of the pole as the power neutral conductor. If the power neutral conductor is on a primary crossarm, communication cables shall be installed on the road side of the pole (See Figure 3.1).

Communication lines shall be tensioned or guyed in a way that does not alter the angle of existing structures or change the sag characteristics of power conductors.

Communication companies must provide their own anchor. Anchors must be a minimum of 5 feet apart. If the 5 foot spacing is not possible, or a sidewalk guy is needed, the communication company will contact CPU for an engineering review of the anchor strength. If there is sufficient strength, permission will be given to the communication company to attach to the CPU anchor.

All guys shall have strain insulators and yellow guy markers* installed.

3.3. Pole Drilling

Field drilled pole holes shall be treated with CPU-approved wood preservative.

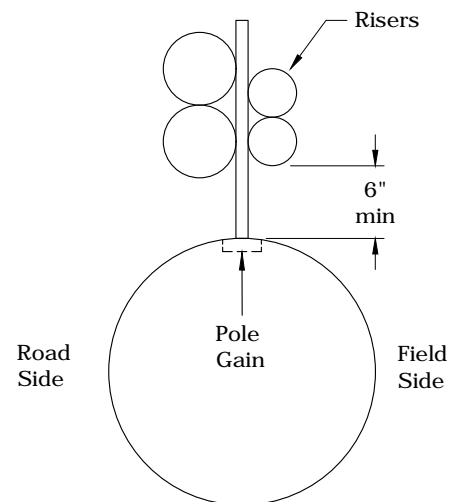


Figure 3.1

Rev. 2 - Updated to 2017 NESC, removed Qwest, and updated paragraphs marked by "*".

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3.4. Equipment Mounting

Through bolt ends shall not protrude more than two inches beyond the nut on the other side of the pole. Attachments to steel poles shall be banded. *Galvanized surfaces damaged during attachment shall be recoated.

3.5. Risers

Communication cables transitioning from overhead to underground shall be mounted in riser conduits. Conduit must be a minimum of schedule 40 PVC and shall be gray.

Communication risers shall be installed on the pole face (see Figure 3.1). All risers shall be installed in conduit and mounted on 10 1/2 inch standoff brackets to provide a minimum 6 inch clearance from the pole. Existing standoff brackets shall be used when available. If new brackets are needed, the communications company shall provide and install brackets as approved by CPU. The lower most bracket shall be no lower than 8 feet above ground line. The top bracket shall be 6" below the top of the riser. The middle bracket shall be halfway between the top and bottom bracket (see Figure 3.2).

The 40" communication worker safety space must be maintained between the lowest exposed secondary (including drip loops or the top of the conduit) and the highest communication attachment (see Figure 3.3). Contact CPU Engineering regarding source and riser for communication power supplies.*

3.6. Enclosures

Communication enclosures and power supplies shall not be mounted on any CPU pole or installed within 6 feet of the pole.

3.7. Grounding

Conductive communications messengers shall be bonded when CPU pole grounds are present. The pole ground shall not be cut or damaged when connecting communication company grounds. If a CPU pole ground is not present, the communication company will run its own pole ground and install its own ground rod.*

3.8. Decorative Object Attachments

All decorative object attachments, such as banners, hanging flower baskets or Christmas lights, require CPU approval.*

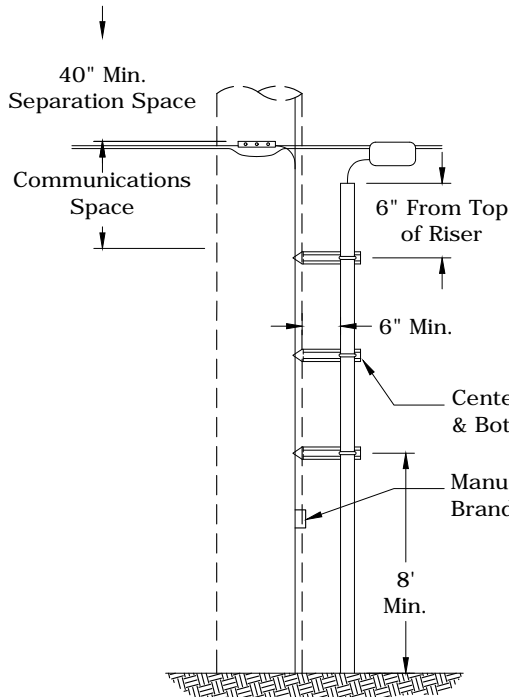


Figure 3.2

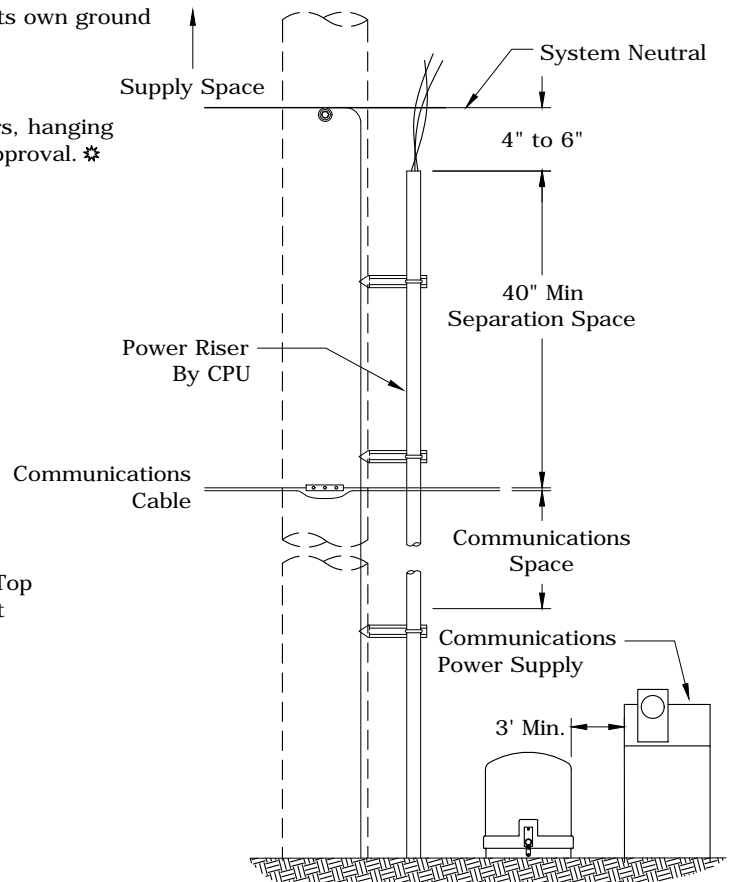



Figure 3.3

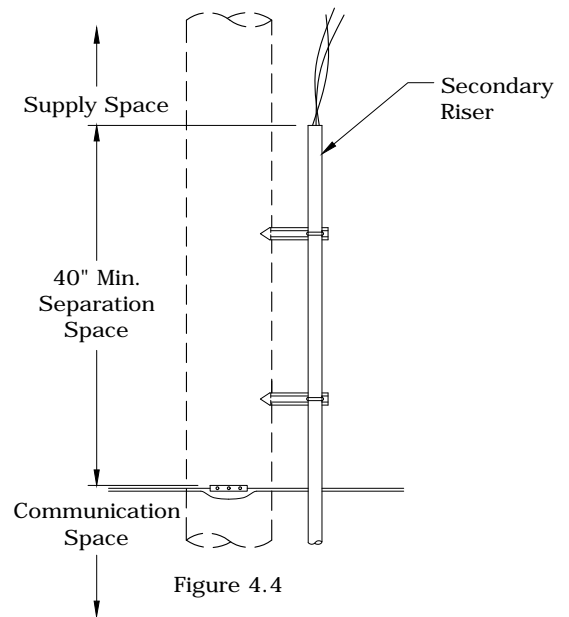
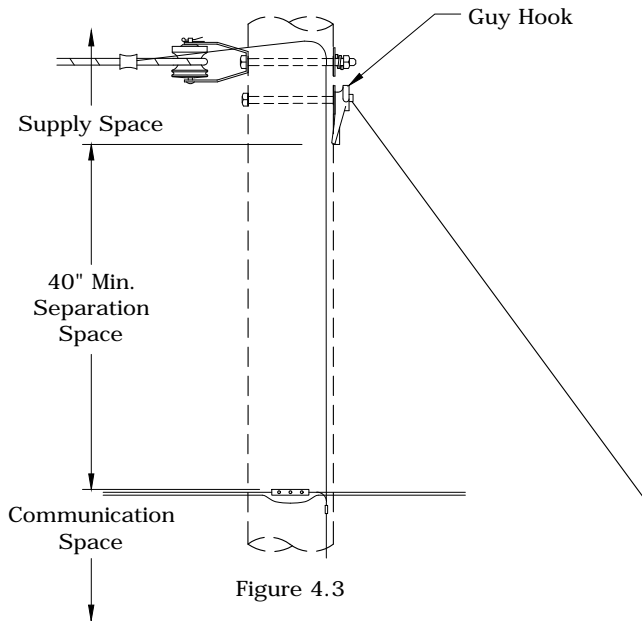
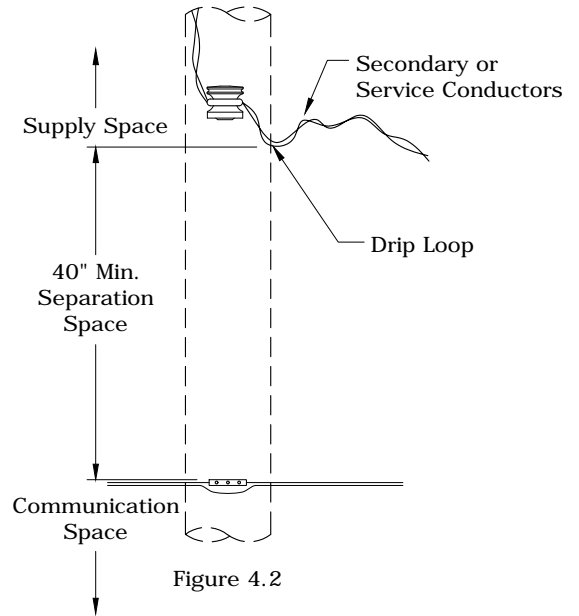
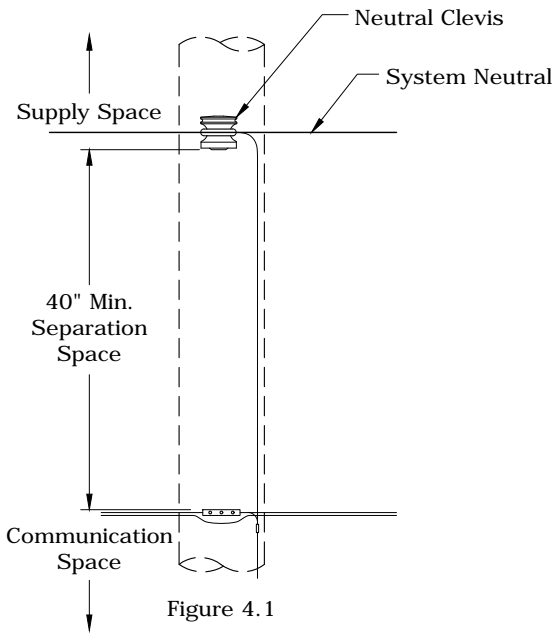
Rev. 2 - Updated to 2017 NESC, removed Qwest, and updated paragraphs marked by "*."

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4. Clearance Requirements

4.1. Distribution Clearances at Supports

A minimum clearance of 40 inches must be maintained between the bottom of the supply space and the top of the communication space. The supply space begins at the bottom of the lowest piece of supply equipment. Supply equipment includes, but is not limited to, neutral and secondary clevises, bare and insulated secondary wires (except for streetlight wire drip loops), guy hardware and equipment platforms (see Figure 4.1 - Figure 4.4).



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4.1. Distribution Clearances at Supports (CONTINUED)

If the primary and neutral conductors are mounted on a crossarm at the same level and there is no other supply equipment mounted below the primary arm, then the minimum clearance between the supply conductors and the communication space is 7 feet (see Figure 4.5).

Note: When working near energized wires, equipment or parts, refer to WAC 296 for minimum clearance requirements.

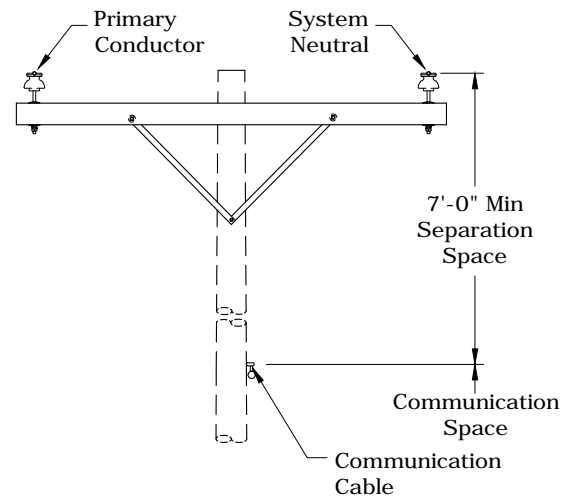


Figure 4.5

4.2. Midspan Distribution Clearances

Midspan clearance between the supply space and the communications space at any point in the span cannot be less than 30 inches from effectively grounded neutral conductors (NESC 238B) and 5 feet 3 inches from primary conductors (see Figures 4.6 & 4.7).

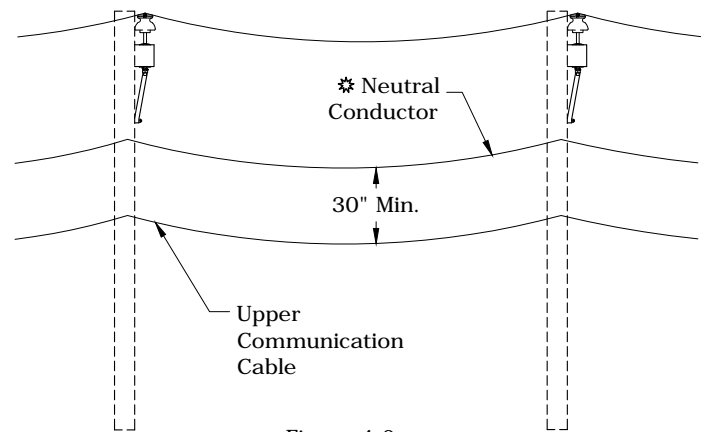


Figure 4.6

4.3. Transmission Clearances

Clearances on transmission poles that have no distribution underbuild will be reviewed and approved by CPU engineering and stipulated on the attachment permit.

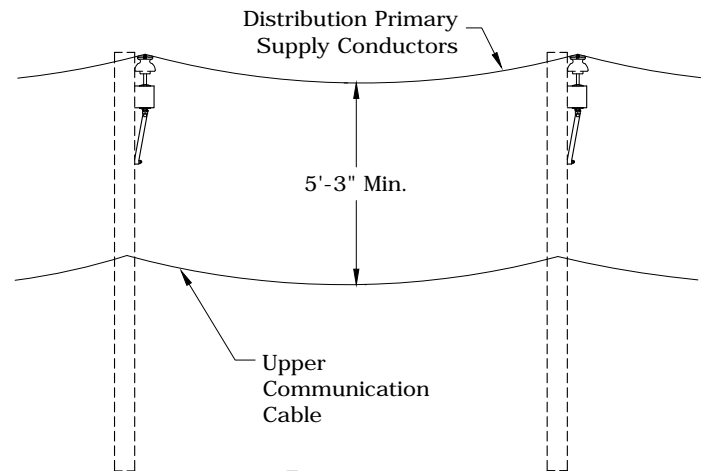



Figure 4.7

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4.4. Streetlight Clearances

Provided certain minimum clearances are met, streetlights may be mounted in the communication worker safety zone or below the communication space. When streetlights are mounted above communication cables, a minimum of 12 inches of clearance must be maintained between the top of the communication space and the bottom of the streetlight drip loop. This may be reduced to 3 inches if the drip loop is covered and a non-conductive covering extending at least 2 inches beyond the drip loop. A minimum of 40* inches of clearance must be maintained between the top of the communication space and the bottom of the streetlight mast arm. This may be reduced to 4 inches if the mast arm is effectively grounded (see Figure 4.8 and NESC 238C).

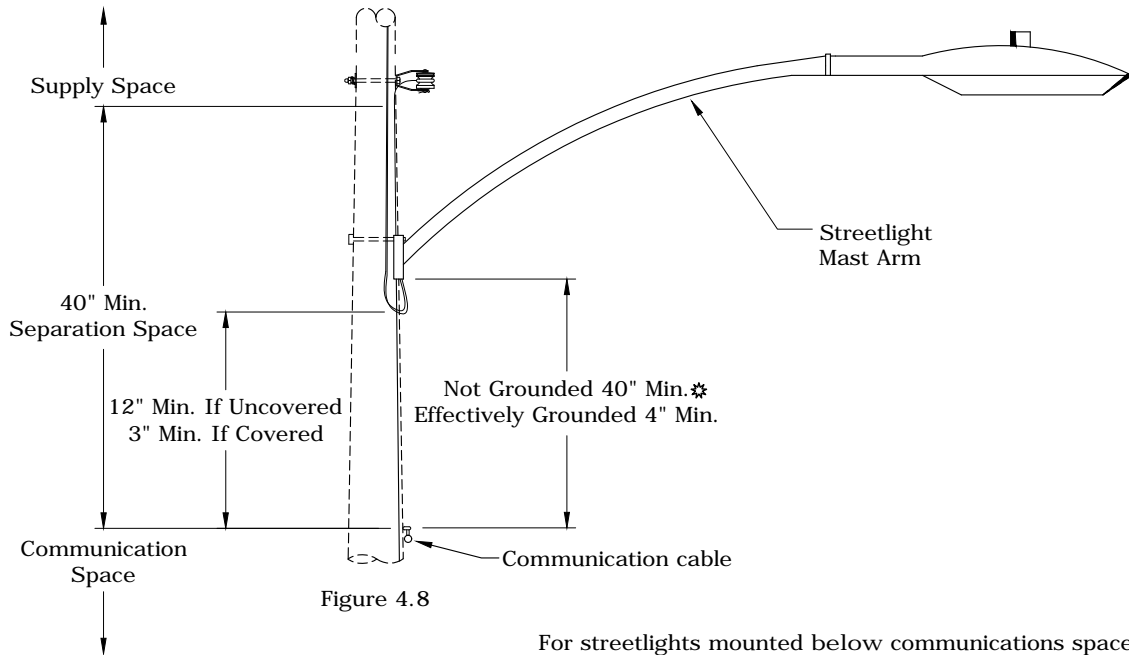


Figure 4.8

For streetlights mounted below communications space, a minimum of 40* inches of clearance must be maintained between the bottom of the communication space and the top of the streetlight bracket. This may be reduced to 4 inches if the mast arm is effectively grounded. A minimum of 40 inches of clearance must be maintained between the bottom of the communication space and uncovered streetlight conductors. A protective moulding will be used to cover energized streetlight conductors passing through the communication space (see Figure 4.9).

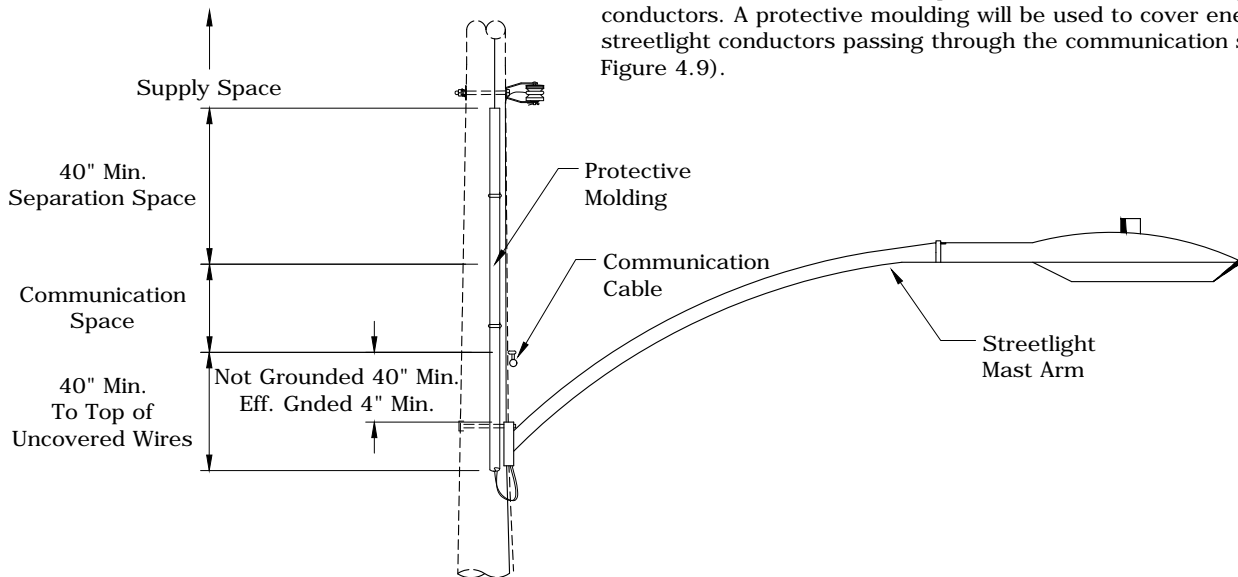


Figure 4.9

Rev. 2 - Updated to 2017 NESC, removed Qwest, and updated paragraphs marked by "*".

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4.5. Service Entrance Clearance

Communication service drops shall have a minimum 12 inch clearance from CPU service drops at any point in the span down to their point of attachment at the customer's service entrance (see Figure 4.10 and Figure 4.10A). This applies to service entrance attachments at buildings and meter poles. Minimum clearance at a CPU service pole or distribution pole is 40 inches (See Figure 4.10B).

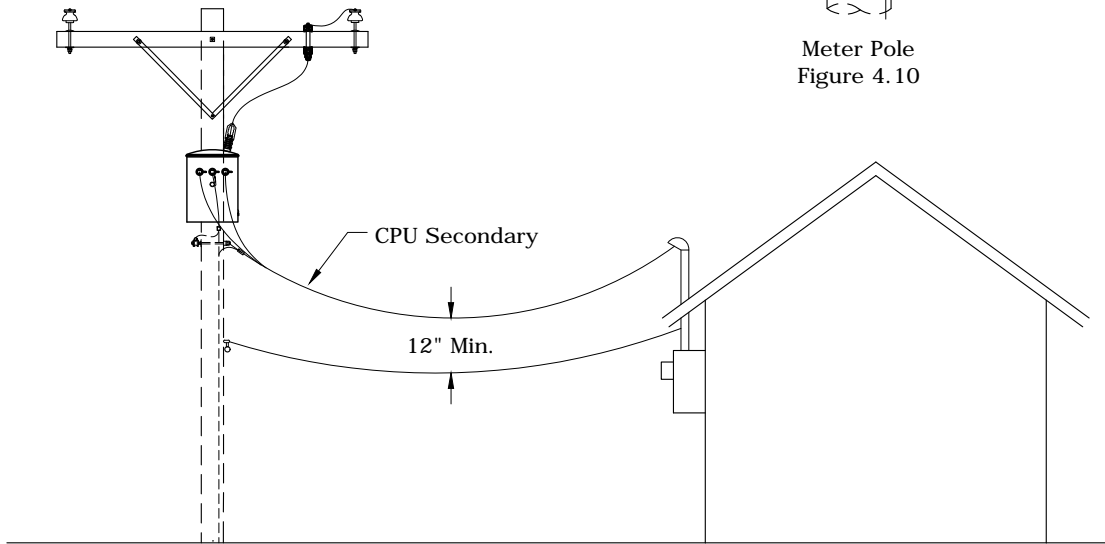
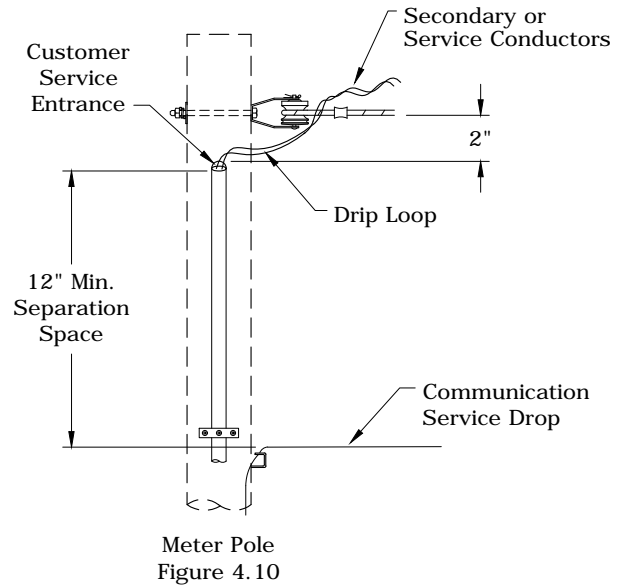


Figure 4.10A

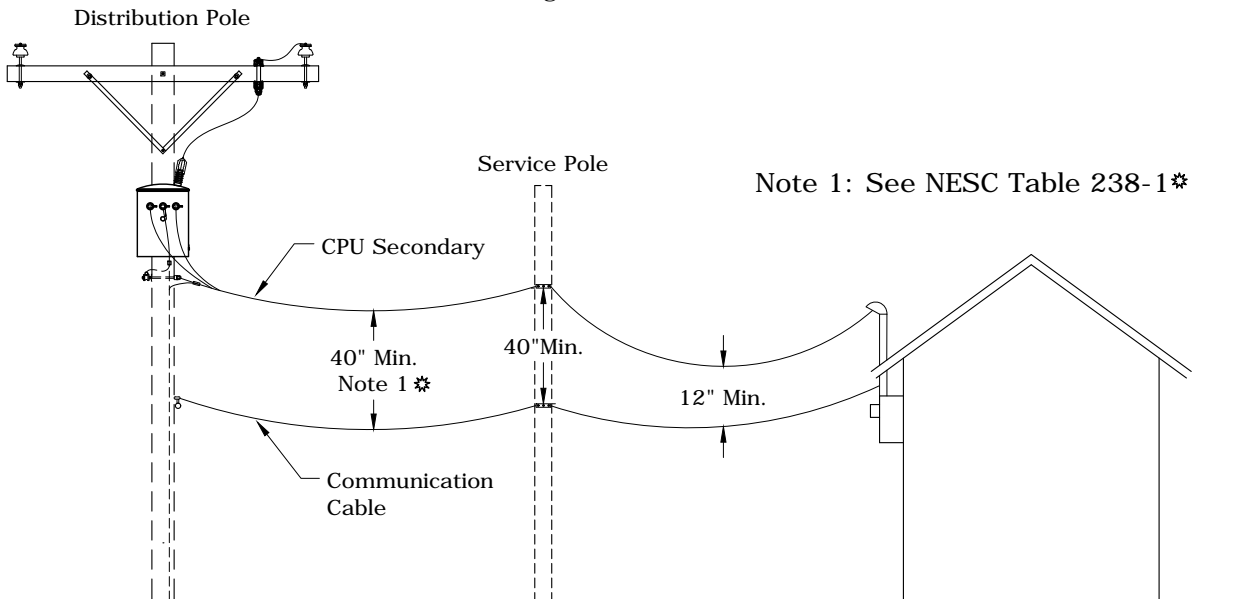


Figure 4.10B

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4.6. Climbing Space

To provide adequate clearances on the pole for safe ascent and descent by line personnel, a clear climbing space of 24 inches between communication cables must be provided (see Figure 4.11). This space must extend 40 inches above and below the limiting cables (see Figure 4.11A). The climbing space may be rotated around the pole for continued climbing if the climbing spaces in different quadrants overlap.

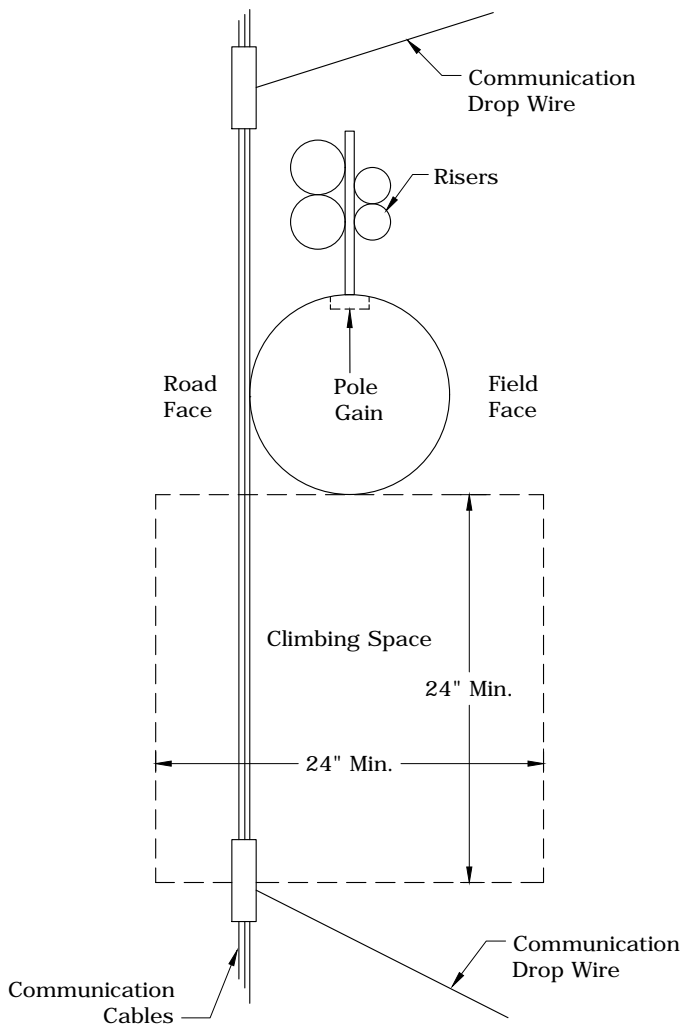


Figure 4.11

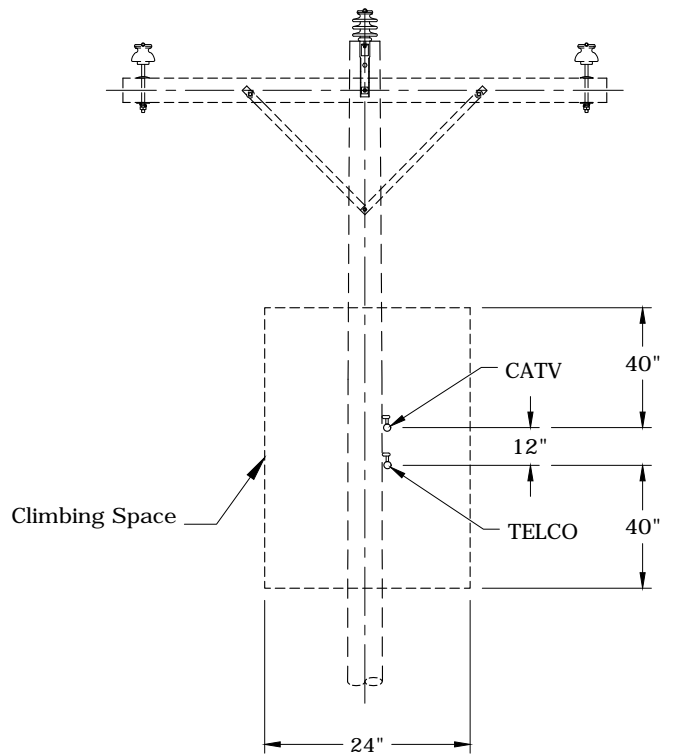



Figure 4.11A

Rev. 2 - Updated to 2017 NESC, removed Qwest, and updated paragraphs marked by "✱."

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5. Pole Space Allocation

5.1. Jointly-Owned CPU or CenturyLink Poles

Some distribution poles in CPU's system are jointly owned. CPU, CenturyLink and third party communication attachments on typical 45 foot joint distribution poles are shown in Figure 5.1.

A 4-foot space is reserved to third party communication attachments. This space extends from 23 feet to 27 feet above grade. No third party attachments shall be made above or below this space. A 12-inch clearance shall be maintained between attachments in this space. New attachments must be made at the highest available position in the communication space.

5.2. Boxing-In

Boxing-in CPU's poles shall be avoided, if possible. If boxing-in is necessary, the communication company will request approval from CPU before the boxing-in attachment is constructed. CPU reserves the right to refuse any requests for boxing-in a jointly owned pole.

Joint CPU/CenturyLink 45' Pole

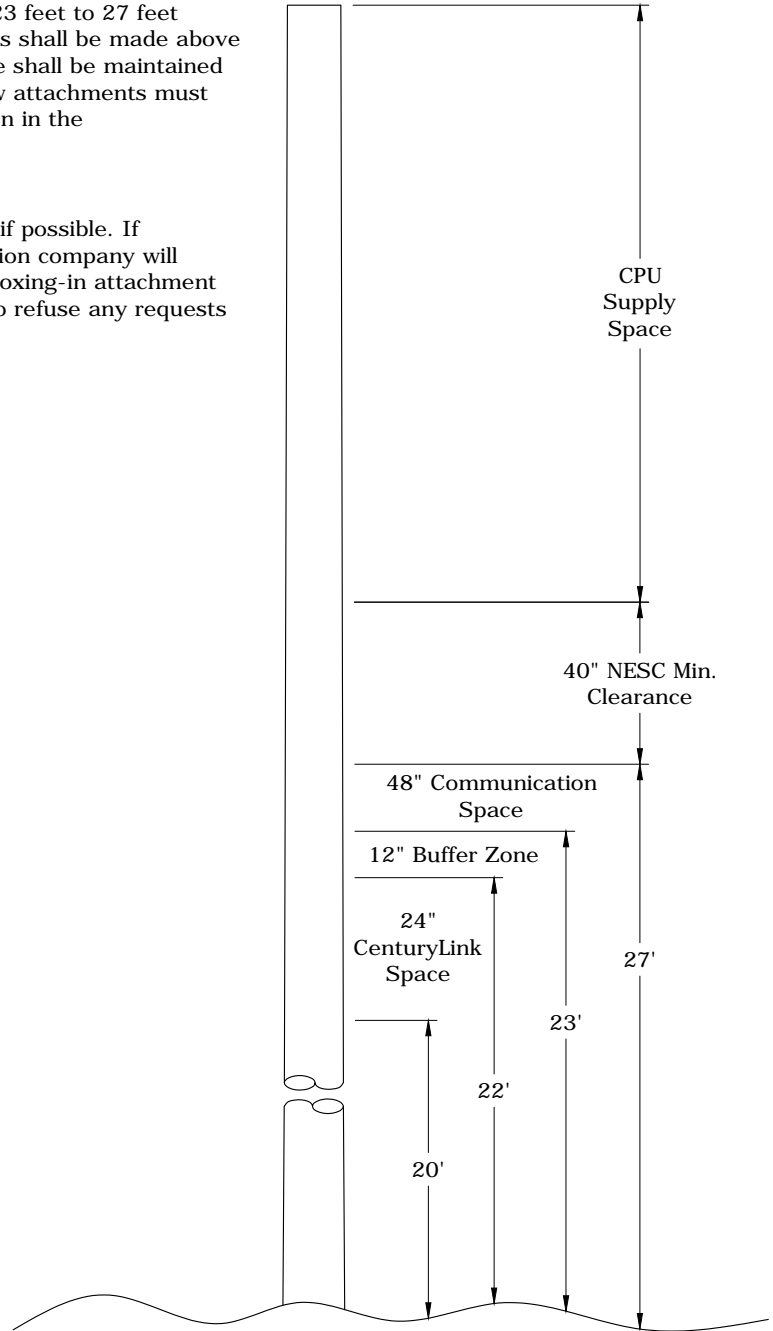



Figure 5.1

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5.3. CPU Solely-Owned Distribution Poles

Some CPU distribution poles and most of the CPU transmission poles are 100% CPU-owned. All communication company attachments on these poles are subject to the CPU Pole Attachment Agreement. Space allocation on a new 45-foot CPU-owned pole is shown in Figure 5.2.

A 7-foot space is reserved for third party communication attachments. This space extends from 20 feet to 27 feet above grade. No non-CPU communication attachments shall be made above or below this space. A 12-inch clearance shall be maintained between attachments in this space. New attachments must be made at the highest available position in the communication space with the exception of telephone attachments. Telephone cables shall be attached at the lowest available position in the communications space that provides adequate clearance and is consistent with telephone attachments on adjacent joint-owned CPU/CenturyLink poles.

5.4. Boxing-In

Boxing-in CPU's poles shall be avoided, if possible. If boxing-in is necessary, the communication company will request approval from CPU before the boxing-in attachment is constructed. CPU reserves the right to refuse any requests for boxing-in a CPU owned pole.

CPU Owned 45' Pole

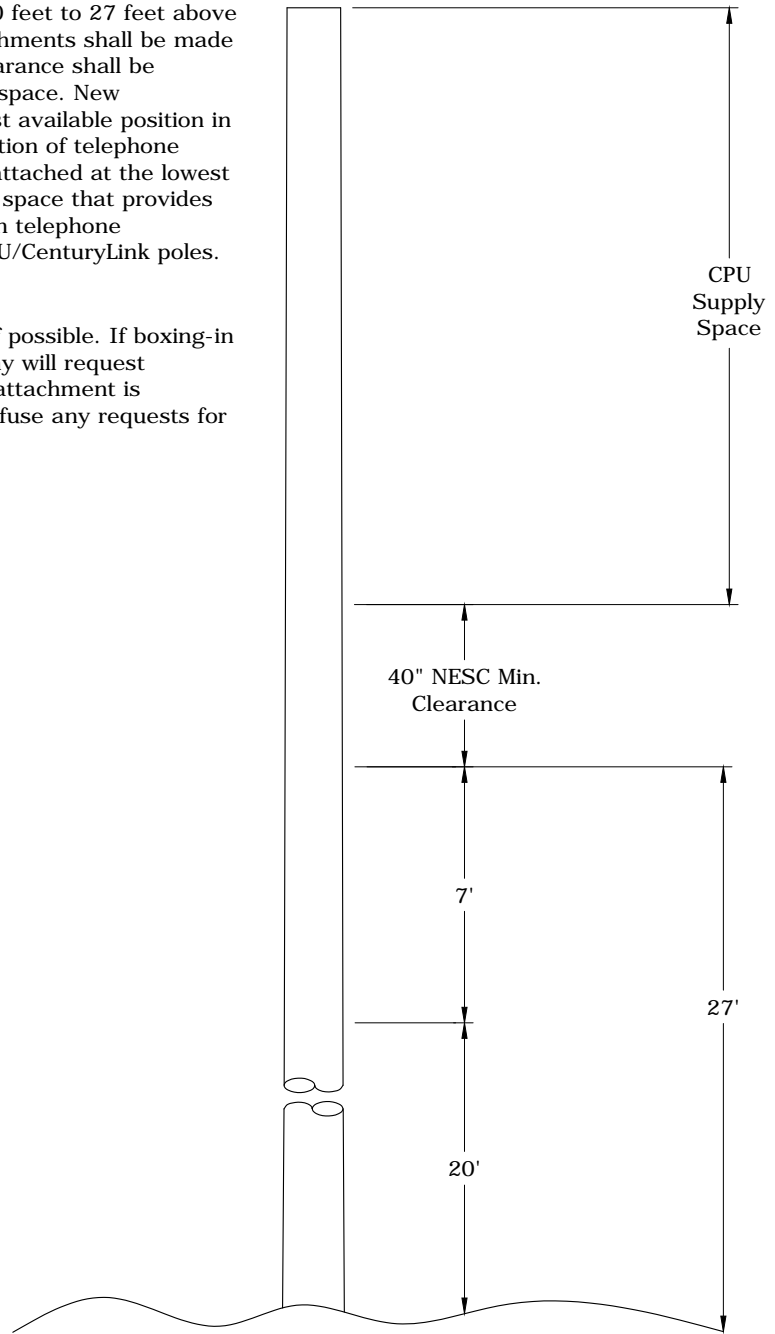

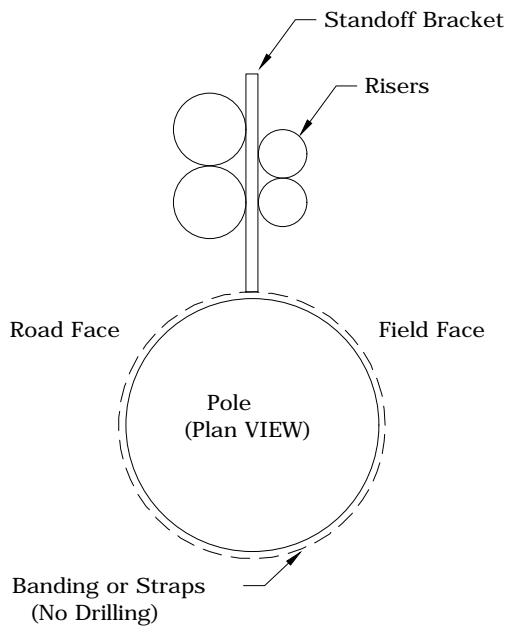


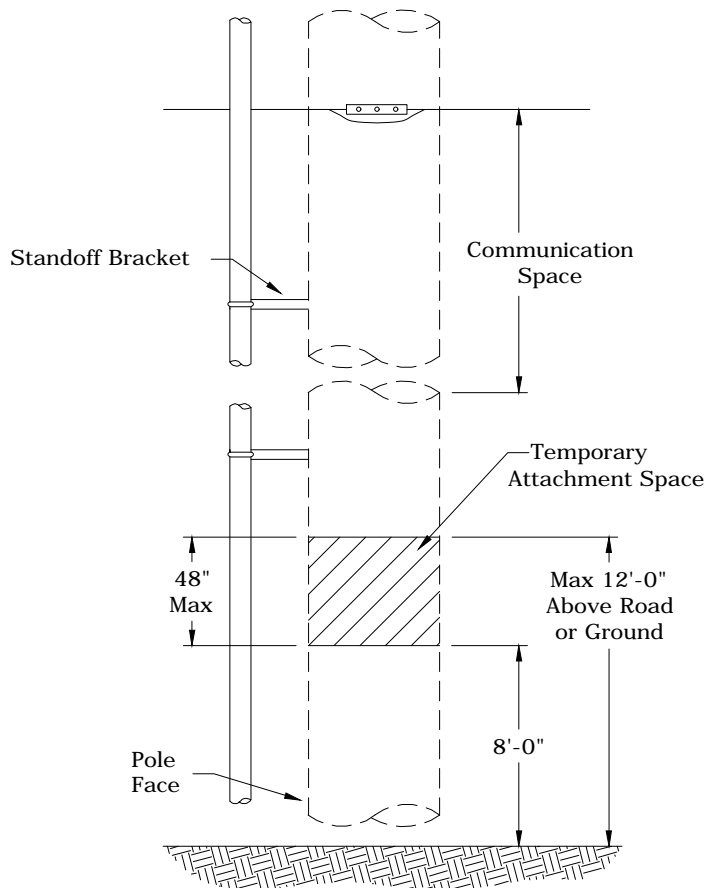
Figure 5.2

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Plan View



Elevation View

Note: OK to remove camera from pole if needed to climb.

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1. General

This standard covers the following wireless communication antenna assemblies: Macrocell and small cell antennas installed on the pole. All installations must meet all requirements of the National Electric Safety Code (NESC), Clark Public Utilities' (CPU's) Construction Standards, and all regulations of the State of Washington and other regulatory bodies that have jurisdiction.

2. Macrocell


2.1. Location

- A. Antenna installations will be allowed in commercial/industrial areas of Clark County. Due to aesthetic considerations and the effect on property value, macrocell antennas may not be allowed in residential neighborhoods.
- B. Antenna installations will require a taller pole than the existing pole. Several jurisdictions within Clark County have height restrictions.
 - Clark County Ordinance 40.260.250 covers unincorporated Clark County. A pole being replaced for an antenna can only be 20 feet taller than the existing pole. The antenna and lightning rods are included in this additional 20 feet.
 - The City of Vancouver Municipal Code, Title 20.890 (as of 1/26/2004), allows the new pole to be 15 feet taller than the existing. The antenna is included in this 15 feet. There is also an additional 10 feet above the 15 feet that is allowed for lightning rods or FAA required lighting.
- C. The antenna company will be responsible for getting any zoning clearance, building permit(s), and any other applicable permits where required.

2.2. Design

- A. Each antenna installation will be a unique design. The pole design will be done by the CPU Design Engineer. The antenna company shall supply the CPU Design Engineer with the following information when applying for service:
 - The pole number and location that the antenna company would like the antenna installed on,
 - The antenna array wind loading in the transverse and longitudinal directions under all NESC Heavy Loading conditions,
 - Total weight of the antenna assembly without ice and with 1/2" coating of ice,
 - The location above ground of the resulting load vector,
 - Electrical loading, and
 - Means of disconnecting the service.
- B. All antenna installations in the supply space must have a quick means of RF radiation disconnect for emergency work on the pole by utility or communication workers. Such means of disconnect will also prevent backup sources from energizing the antenna. For normal maintenance work, Clark or the communication company will contact the antenna company to schedule the de-energization of the antenna.

Rev. 2 - Updated for small cell antennas and Clark Co. Ordinance change.

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2.2. Design (Continued)

- C. Antennas shall be installed and operated in a manner that communication and electrical workers can perform normal work on their respective facilities without requiring special training or knowledge of RF antennas. Electrical workers shall not need to wear RF detectors to warn them of potentially changing levels of EMF exposure when performing normal work on the electrical system. All antennas in the supply space will be on steel poles. The cables for the antenna will come up the inside of the pole. Since existing steel poles were designed only for the load they were originally installed for, most likely the pole will have to be replaced with a stronger one for the antenna installation. Drilling to mount the antenna on an existing steel pole will weaken the pole shaft and may result in corrosion. Steel poles with static wire cannot be used for antenna installations.
- D. Poles that shall be avoided are
- Poles with existing antennas,
 - Poles with switches,
 - Poles with risers,
 - Poles that will be used for risers in the future,
 - Poles with transformers,
 - Poles with capacitor banks,
 - Poles with regulators,
 - Poles with reclosers,
 - Deadend poles,
 - Poles with static wire,
 - Poles with extreme angles,
 - Poles at a traffic intersection,
 - Streetlight poles, and
 - Poles inaccessible by truck.
- E. The antenna company will be responsible for performing a TOWAIR (or Landing Slope Facility Calculator) study. TOWAIR allows antenna structure owners to determine whether their structures are close enough to an airport or heliport to require an aeronautical study by the Federal Aviation Administration (FAA) and registration with the FCC. If it is determined that the designated structure must be registered, an Antenna Structure Registration (ASR) number must be obtained from the FCC. This number is required in order for the antenna company to begin construction at the site. If the FAA determines that the structure must be painted or lighted, the antenna company will be responsible for the painting or lighting.
- F. All antenna equipment cabinets, boxes, and enclosures shall be clearly marked with
- The antenna equipment owner's name,
 - A 24-hour contact phone number, and
 - Identifying alpha/numeric designation that the antenna owner can associate with the installation address, type of equipment, and function.
- G. The antenna company shall ensure the appropriate OSHA-required radio-frequency radiation hazard warning sign(s) are installed.

2.3. Clearance

- A. The minimum clearance from distribution or transmission to the antenna is shown in Figure 1.
- B. Communication equipment cabinets must not block access to the pole. The preferred location is on adjacent private property, if possible, at least 25 feet away from the pole. Conduits shall be run underground between the pole and the cabinet.

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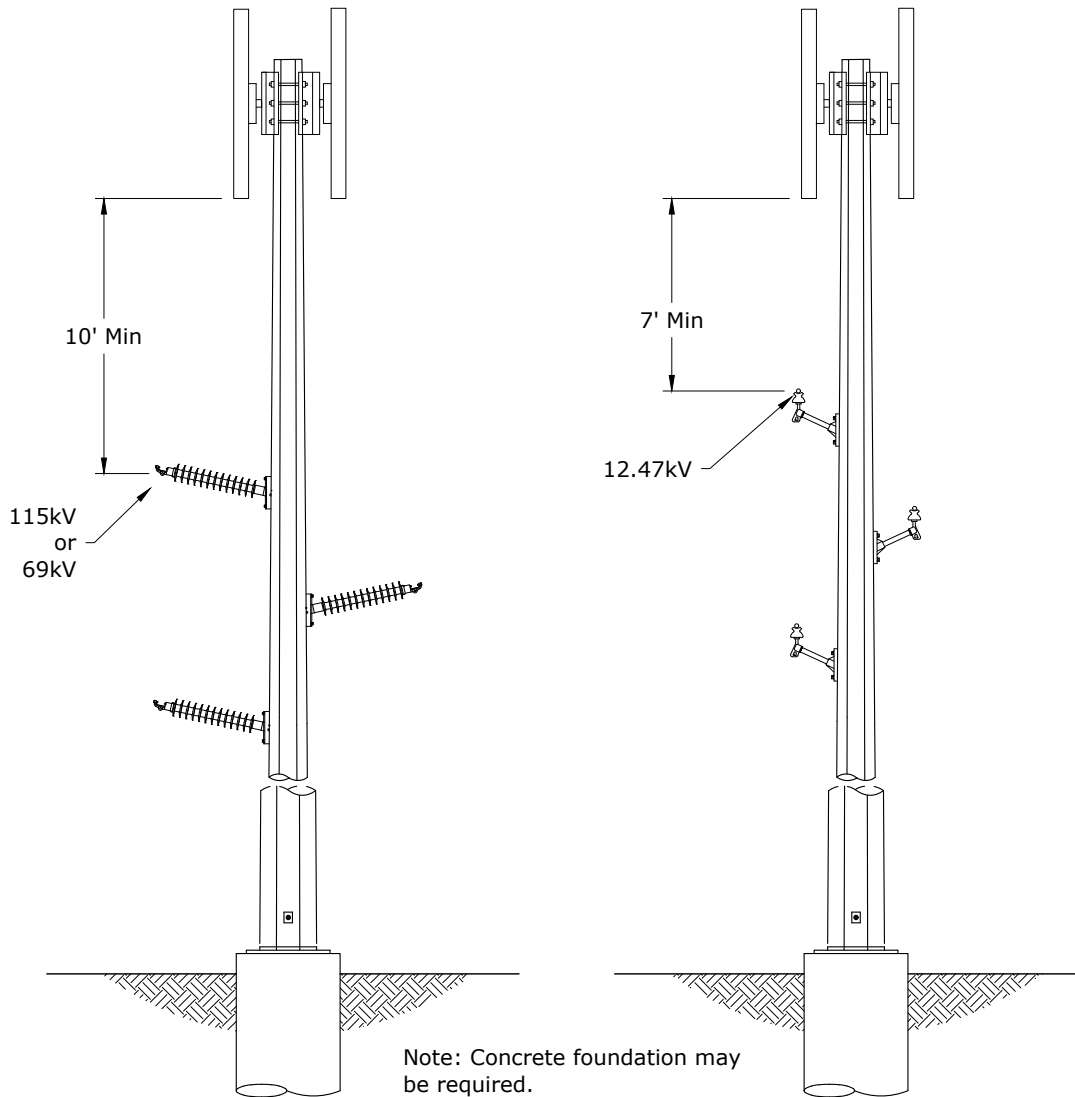



Figure 1: Macrocell clearances.

2.4. Installation & Maintenance

- A. Antennas located in the supply space shall be installed and maintained by qualified line workers only. The antenna company will have to coordinate with CPU on all installation and maintenance work.
- B. The antenna company must notify the surrounding landowners of the pole modifications prior to installation.

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3. Small Cell on Poles*

3.1. Location

- A. The preferred poles for small cell antenna installations in order of preference are
1. Secondary pole,
 2. Wood streetlight pole, and
 3. Distribution pole
- B. Poles that are restricted and require special consideration are
- Poles with secondary risers,
 - Poles reserved for CPU risers,
 - Poles with one transformer,
 - Deadend poles,
 - Poles with extreme angles (30° or more),
 - Poles at a traffic intersection,
 - Decorative streetlight poles,
 - Fiberglass or aluminum streetlight poles, and
 - Transmission poles with or without distribution.
- C. Poles that shall be avoided are
- Poles with primary risers,
 - Poles with existing antennas,
 - Poles with switches,
 - Poles with transformer banks,
 - Poles with capacitor banks,
 - Poles with regulators,
 - Poles with reclosers, and
 - Poles inaccessible by truck.
- D. The antenna company will have to obtain easements from the property owner for any poles on private property.
- E. The antenna company shall consider proximity to residential structures, aesthetics, and effects on property values. Proposed sites that will be closer than 30' to a residential building or 50' to a school building shall be subject to additional review by CPU. Installations on poles directly in front of a residence should be avoided when other possibilities are available.
- F. The antenna company will be responsible for getting any zoning clearance, building permit(s), and any other applicable permits where required.

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3.2. Design

- A. Each antenna installation will be a unique design. Antennas shall be installed in the supply space only. The pole design will be done by an engineering firm licensed and registered in Washington State and hired by the antenna company. The antenna company shall supply the CPU Design Engineer with the following information when submitting for a Site License Agreement (SLA):
- The pole number and location that the antenna company would like the antenna installed on
 - The size, weight, and color of all equipment in the proposal
 - The antenna and associated equipment wind loading in the transverse and longitudinal directions under all NESC Heavy Loading conditions
 - Total weight of the antenna and associated equipment without ice and with 1/2" coating of ice
 - The location above ground of the resulting load vector
 - Electrical loading
 - Means of disconnecting the service
- B. Small cell antennas and mounting bracket will be no higher than 42". The antenna diameter will be no more than 16".
- C. Equipment should be installed on the roadside of the pole. If this is not possible, other locations may be used with CPU's prior approval. Each piece of equipment must be no more than 42" high x 24" wide x 18" deep and must be installed below the communication space between 10 feet and 18 feet above groundline (see Figure 2). Climbing space must be maintained as specified in WAC 296-45-045. There shall be no more than two pieces of equipment for a total volume of 12 cu ft. The equipment must be between 4 inches and 6 inches off of the pole surface and must fit within one pole quadrant as shown in Figure 3. See Std. JU2 - Joint Use Pole Attachment Guidelines for required clearances. Meters, when used, must be padmounted at least 6 feet from the pole.
- D. Antennas and pole-mounted equipment shall be Light Gray Number 70, Munsell Notation 5BG 7.0/0.4 unless otherwise approved or required by CPU.

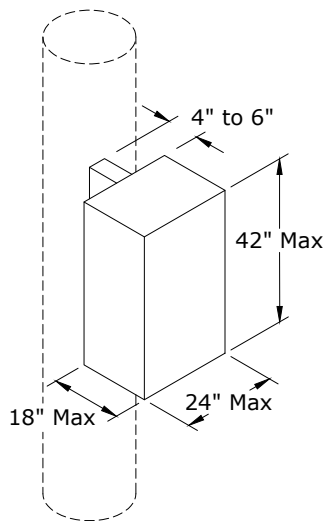


Figure 2: Allowable size of equipment below communication space.

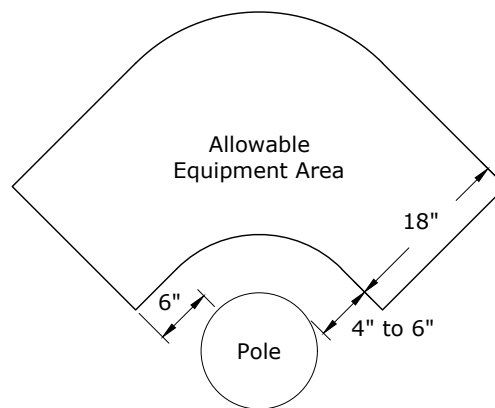



Figure 3: Allowable equipment area below communication space.

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3.2. Design (Continued)

- E. For installations in the supply space see Figure 4 and Figure 5. The existing pole may need to be replaced with a taller or stronger pole. Pole-top extensions will not be allowed.
- F. All antenna equipment cabinets, boxes, and enclosures shall be clearly marked with
 - The antenna equipment owner's name,
 - 24-hour contact phone number,
 - Identifying alpha/numeric designation that the antenna owner can associate with the installation address, type of equipment, and function, and
 - SLA numbers (decals provided by CPU).
- G. The antenna company shall ensure the appropriate OSHA-required radio-frequency radiation hazard warning sign(s) are installed.
- H. No antennas or equipment will be allowed in the communication worker safety zone per the NESC.
- I. All risers, except those above the primary conductors, shall be mounted on standoff brackets that provide a minimum of 6 inches between the surface of the conduit and the pole. U-guard risers are not allowed. The first standoff bracket must be at least 8' above grade per NESC. Standoffs shall not be closer together than 8' unless one is necessary to support the end of a conduit. Existing standoffs are to be used if present.

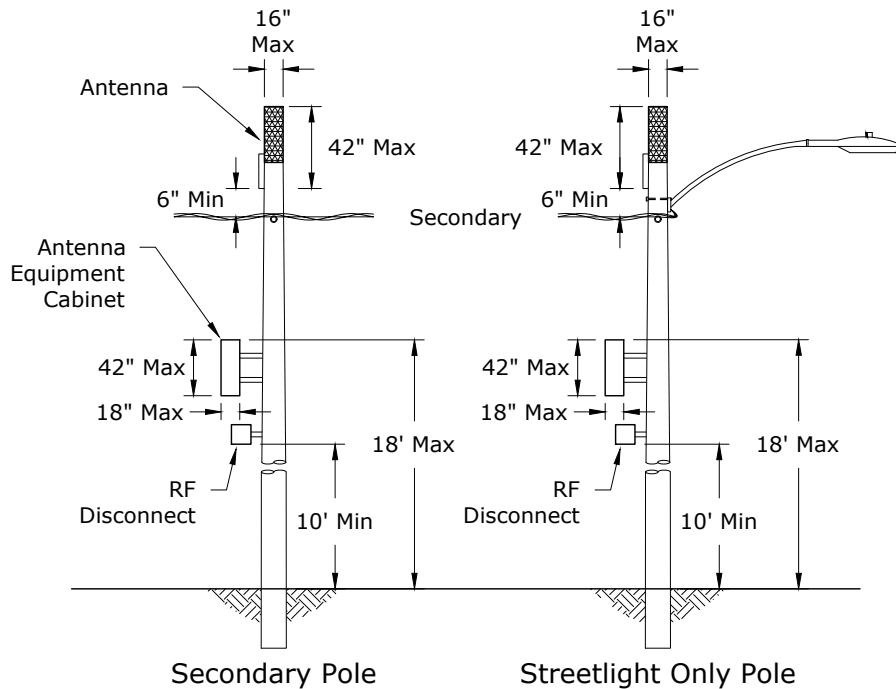


Figure 4: Small cell antenna installation clearances on secondary poles.

Note: Other antenna and mounting styles may be acceptable. Clearances shown shall remain.

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3.2. Design (Continued)

- J. All riser cables shall be in conduit. No more than three conduits per pole shall be used. All conduits shall be
 - 3 inches or less in diameter, and
 - Gray, UL-listed, Schedule 80 PVC.
- K. Communication equipment cabinets located on the ground shall not block access to the pole and are required to be at least 6 feet away from the pole. Conduits shall be run underground between the pole and the cabinet.

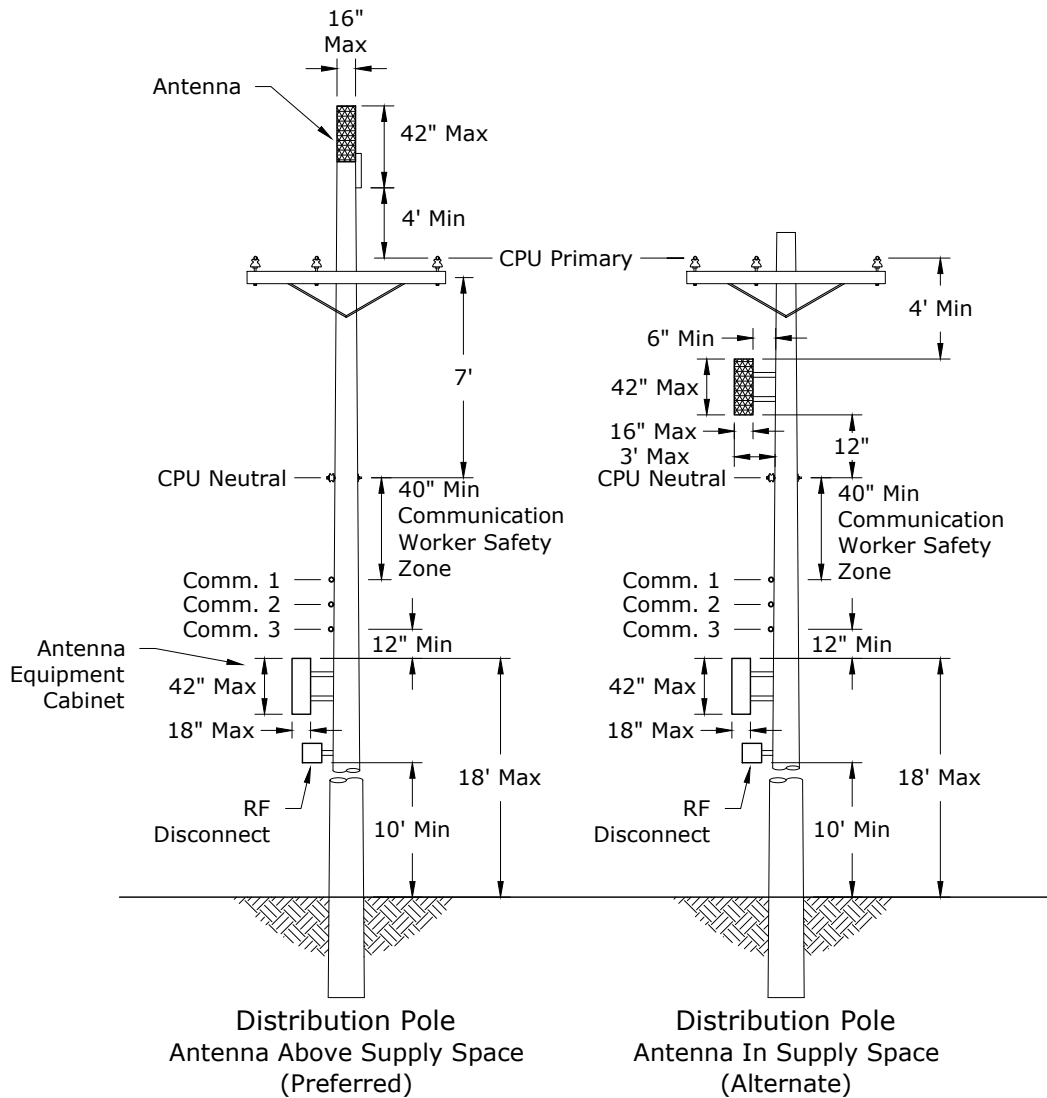


Figure 5: Small cell antenna installations in the supply space.

Note: Other antenna and mounting styles may be acceptable. Clearances shown shall remain.

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3.2. Design (Continued)

- L. All antenna installations must have a quick means of RF radiation disconnect for emergency work on the pole by utility or communication workers. Such means of disconnect will also prevent backup sources from energizing the antenna. The disconnect on the pole must be clearly marked "RF Disconnect." Antennas shall be installed and operated in a manner that communication and electrical workers can perform normal work on their respective facilities without requiring special training or knowledge of RF antennas. Electrical workers shall not need to wear RF detectors to warn them of potentially changing levels of RF exposure when performing normal work on the electrical system.

3.3. Installation & Maintenance

- A. Small cell installations should be as neat and condensed as possible. Lessees shall be responsible for installing each new type of installation on a pole in CPU's training yard prior to permitting for such types of installations on CPU's poles. To be the same type the antenna, equipment cabinet, disconnect, and mounting hardware must be the same and located in the same area of the pole as those that will be permitted. It is not necessary that they have the same heights from ground measurements. Each must include conduits that will be installed. The wires, fibers or cables installed between the equipment and the antenna on an installation may be required at CPU's discretion. Lessee may provide a location where the same type is currently installed and operating that is within 30 driving miles of CPU's border instead of installing one in the training yard.
- B. Antennas located in the supply space shall be installed and maintained by qualified line workers only. The antenna company will have to coordinate with CPU on all installation and maintenance work.
- C. The antenna company must notify the surrounding landowners of the pole modifications prior to installation.
- D. The pole may not be shaved or cut. Equipment mounts must be sized to account for variation in wood pole dimensions.
- E. Field drilled pole holes shall be treated with CPU-approved wood preservative.
- F. No storage loops of wires shall be allowed.
- G. Area between equipment and the pole surface is to remain clear for climbing safety.

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