Section 103 Index
Joint Use

Approved: DocuSigned by: Akin Oyekunu 1404BF5E67C748D, Distribution Standards Manager

General Requirements for Installation of Attachments on Oncor Poles

1.0 General Requirements for Installation of Attachments on Oncor Poles

1.1 Where Communication attachments are necessary and approved, the requirements of this section shall be applied in conjunction with the requirements in the Joint Use attachment agreements to ensure that construction meets Oncor requirements and guidelines generally accepted by the electric utility industry.

1.2 Oncor requirements for third party Supply and Communication attachments are based in part on the latest revision of the National Electrical Safety Code (NESC). Where Oncor requirements exceed the NESC, Oncor requirements shall govern.

1.3 The lawful requirements of state or local authorities shall govern where they exceed Oncor and NESC requirements.

1.4 Installations shall be made in accordance with Oncor Distribution Construction Standards (Standards) and other Oncor requirements. If specific installations are not covered by the Standards, the latest revision of the NESC shall apply.

1.5 Existing installations, including maintenance replacements, which comply with the clearance requirements at the time of their original installation, do not have to be reconstructed or modified to comply with the current clearance requirements except as required for safety reasons.

1.6 Communication line and equipment attachments shall be designed, constructed, and maintained in accordance with the NESC, including but not limited to, the clearance and strength/loading requirements. The following NESC loading requirements shall be evaluated with the loading case that provides the worst case load governing:

1.6.1 NESC Grade B and C construction as specified, except all Grade C construction shall comply with the requirements defined for Grade C “at crossing”.
1.6.2 NESC 250B – Heavy loading.
1.6.3 NESC 250C – High wind with basic wind speed of 94 mph, where applicable.
1.6.4 NESC 250D – Extreme Ice with concurrent wind loading, where applicable.
1.6.5 At deadends with spans in each direction from the deadend structure, the unbalanced pull used to design the structure shall not be the difference in tensions. Rather the unbalanced pull shall be determined by disregarding the impact of the offsetting conductor.

1.7 No new poles may be installed in an Oncor easement unless approved in writing by the municipality and landowner. Such written approval and copy of executed easement document must be submitted to Oncor with initial permit application.

1.8 Communication lines or equipment shall not be installed on historical, decorative, metal, or fiberglass street light poles.

1.9 No work shall be initiated in the Supply space, as defined by the NESC and shown on 103-105, without providing Oncor prior notice and obtaining the approval of Oncor. Any work completed in the Supply space must be performed by an Oncor employee or an Oncor approved contractor that is qualified to work in the Supply space.

1.10 Attachments (including lines, risers, and equipment) shall be installed in a configuration which complies with NESC and Oncor requirements for climbing/working space and, in the opinion of Oncor, preserves the climbability of the pole.

1.11 Oncor will consider, but not necessarily allow, attachments to non-wood distribution poles (i.e. concrete, steel, and fiberglass). Where such attachments are requested, the attacher shall provide all information required by Oncor for the completion of a detailed engineering analysis. With Oncor approval, a maximum of four (4) Communication attachments will be allowed on each non-wood pole. The pole shall not be replaced to allow for more attachments. The attachment will not be allowed if adequate information regarding the attachment, the existing facilities, or the pole is not provided or is unavailable.

1.12 Pole attachments shall be made with galvanized bolted connections in a permanent manner. Attachments utilizing stainless steel banding may be allowed with prior approval by Oncor.

1.13 Prior to beginning work on a pole the attaching party's qualified person shall at a minimum:

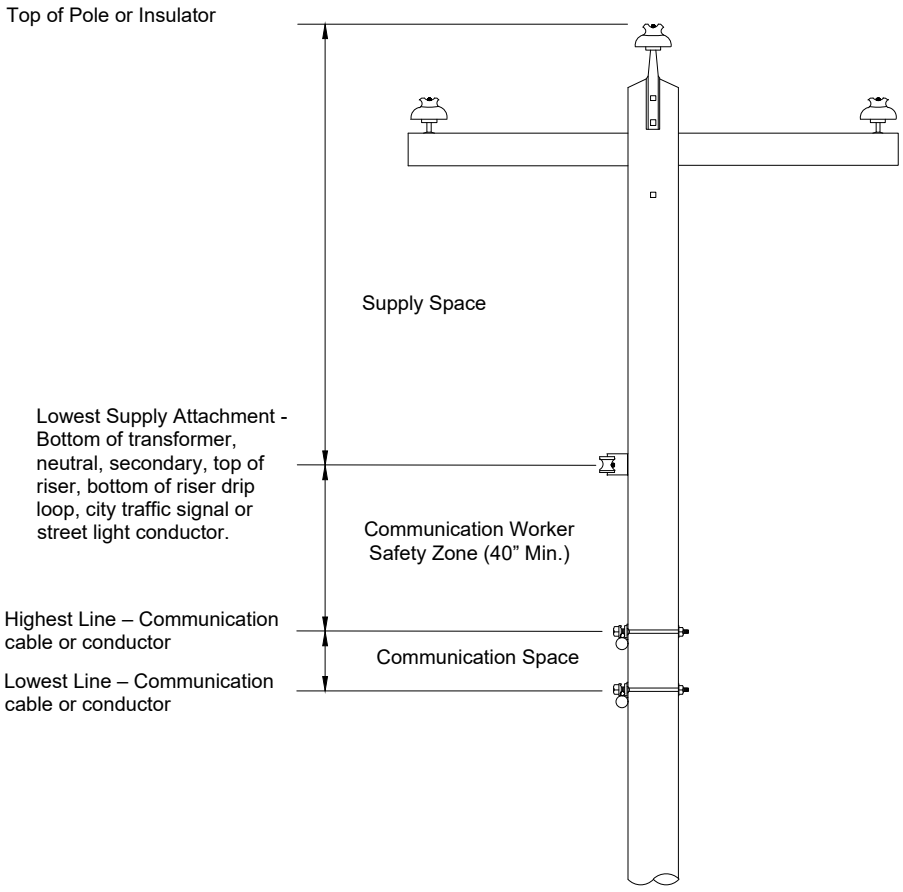
1.13.1 Survey the work location, having in mind what work is to be done and the dangers that exist.

1.13.2 Inspect the entire pole to ensure the integrity of the pole.

1.13.3 Ensure the pole is in good condition and supported in such a way that the work can be completed safely.

1.14 Communication lines, messengers, down guys, equipment (including antennas), and support arms shall be bonded to the pole ground with #6 soft drawn bare copper wire or copper clad steel on each pole. In the case where a pole ground is damaged or missing, Oncor or approved contractor shall restore the pole ground before work can proceed. A minimum 2" clearance of air or wood between all hardware and ground wires shall be maintained.

Supply and Communication Space



Notes:

A. The Communication worker safety zone is between facilities located in the Supply space and facilities located in the Communication space, both at the structure and in the span between structures.

B. Nothing shall be located in the Communication worker safety zone, except for the following:
   1. Span wires or brackets carrying luminaires, traffic signals, or trolley wires which are effectively grounded and meet NESC clearance requirements.
   2. A drip loop for a luminaire or traffic signal provided a clearance of not less than 12 inches is maintained between the drip loop and the Communication cable, through bolt, or other equipment.
   3. Vertical risers guarded with suitable conduit.

C. No work shall be initiated in the Supply space without providing Oncor prior notice and obtaining approval from Oncor. Any work completed in the Supply space must be performed by an Oncor employee or approved contractor that is qualified to work in the Supply space.

2.0 Communication Lines Installed on Oncor Poles

2.1 Communication lines shall not be installed in Supply space.

2.2 Any Communication line passing within 36 inches of a pole must be attached to the pole.

2.3 Oncor Construction Standards Section 106 defines span length limitations for NESC Grade B and C construction. When the addition of a Communication line to a pole causes the span length limitations to be exceeded, the line attachment will only be allowed if:

2.3.1 The pole is changed out to an appropriate class of pole, or

2.3.2 An engineering analysis demonstrating structural sufficiency is performed using approved Oncor analysis methodology. When required, analysis documentation must be submitted with permit application, reviewed and approved by Oncor prior to attachment, or

2.3.3 The installation of an inter-span pole to reduce the span lengths. Prior to the installation of an inter-span pole, the location must be reviewed and approved by local Oncor representatives. The practice of installing inter-span poles should be limited.

2.4 Communication lines shall be arranged vertically and mounted directly to the pole.

2.5 Crossarms, extension arms, and standoff brackets shall not be utilized for Communication line attachment.

2.6 New Communication line attachments shall be installed on the pole in accordance with the following:

2.6.1 If a pole already has Supply and/or Communication lines installed on opposite sides of the pole (i.e. the pole is boxed), the new line attachment shall always be made on the street side of the pole.

2.6.2 If a pole is not already boxed, the new line attachment shall always be made on the same side of the pole as the existing attachments.

2.7 Emergency attachment of Communication lines on poles with tangent construction can be completed with the use of a j-hook. Emergency attachments shall be converted to permanent attachments in a period of time deemed reasonable by Oncor.

2.8 Transitioning attachment height on the same pole should be avoided. All same pole transitions must be reviewed and approved by Oncor before construction. Unbalanced loads shall be guyed in accordance with the standards.

2.9 The distance between holes used to mount Communication lines shall not be less than 6 inches, with the exception of the distance between holes on guy plates.

2.10 Each company installing facilities on Oncor poles shall install independent guys and anchors for their respective facilities. Guying is required in all cases where such facilities add an unbalanced tension load to a pole.

2.10.1 Guys and anchors shall be placed in accordance with the Standards. Reference Standard 103-245 for an illustration of correct placement.

2.10.2 Guy markers shall be installed on all down guys.

2.10.3 Attachment of down guys to the pole with banding is prohibited.

2.10.4 The top hole of the guy plate shall be 6 inches from the bottom hole of the mounting hardware supporting the tension load.

2.11 Communication slack span lines shall comply with the following requirements:

2.11.1 Oncor reserves the right to not allow the attachment of slack spans to a pole or to require a larger ANSI pole classification than required by the Standards. The decision will be based on project specifics including, but not limited to, pole condition, pole and line and configuration, size and quantity of existing and proposed Supply Communication lines.

2.11.2 No more than two (2) Communication slack span lines shall be installed on a pole.

2.11.3 Communication slack span lines will only be permitted on Oncor poles which are not leaning or bowed. In addition, Oncor poles must have the required guys and anchors installed.

2.11.4 The maximum mounting height of a Communication slack span line, without the completion of a detailed loading analysis, shall not exceed 30 feet above the ground.

2.11.5 The maximum Communication slack span line tension is 250 lbs in accordance with NESC 250B for Heavy District Loading. A CommScope (or equivalent) tension computation report shall be submitted to verify tension limitation.

2.11.6 Maximum Communication slack span line length is 100 feet.

2.11.7 Communication slack span line requirements apply to original bundle and over-lashed lines.

2.12 A Communication service drop is defined as a Communication line permanently attached to a pole going directly to a building or other overhead point of service.

2.12.1 A Communication service drop shall not be lashed to a steel messenger.

2.12.2 Only four (4) Communication service drops from a pole to the point of service, with span lengths not exceeding 125 feet, shall be allowed.

2.12.3 Pole to pole attachments are not considered service drops and shall follow Communication slack span requirements.

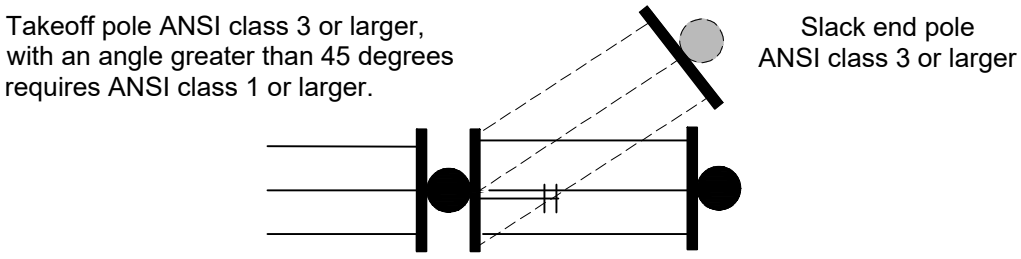
2.13 Pole requirements for in-line deadend poles with single or three phase Supply lines are as follows.

2.13.1 For three phase Supply lines, the takeoff and slack end pole shall be classified as follows.

2.13.1.1.1 Takeoff poles where the angle is less than 45 degrees shall be classified as ANSI class 3 or larger.

2.13.1.1.2 Takeoff poles where the angle is equal to or greater than 45 degrees shall be classified as ANSI class 1.

2.13.1.1.3 The slack end pole shall be classified as ANSI class 3 or larger.

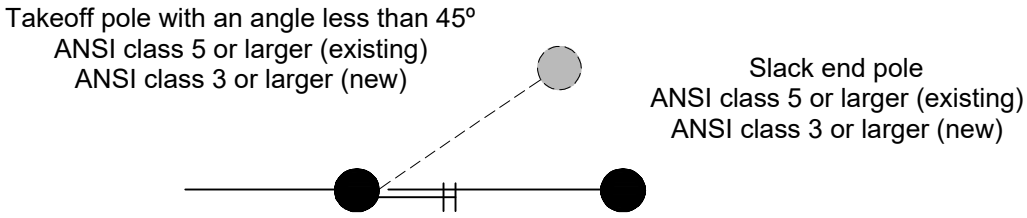


2.13.2 For single phase Supply lines, the takeoff and slack end pole shall be classified as follows.

2.13.2.1.1 Existing takeoff poles where the angle is less than 45 degrees shall be classified as ANSI class 5 or larger.

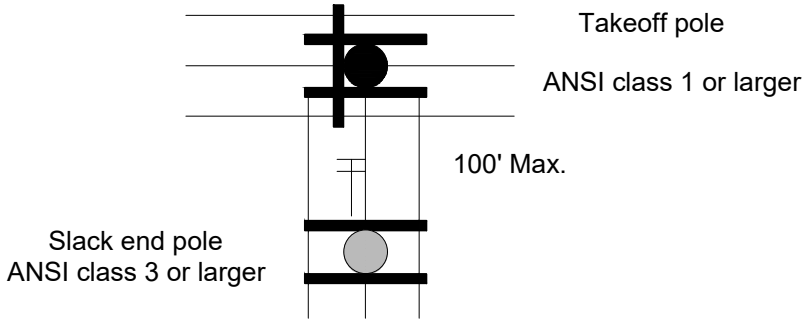
2.13.2.1.2 New takeoff poles and existing takeoff poles where the angle is equal to or greater than 45 degrees shall be classified as ANSI class 3 or larger.

2.13.2.1.3 Existing slack end poles shall be classified as ANSI class 5 or larger. New slack end poles shall be classified as ANSI class 3 or larger.

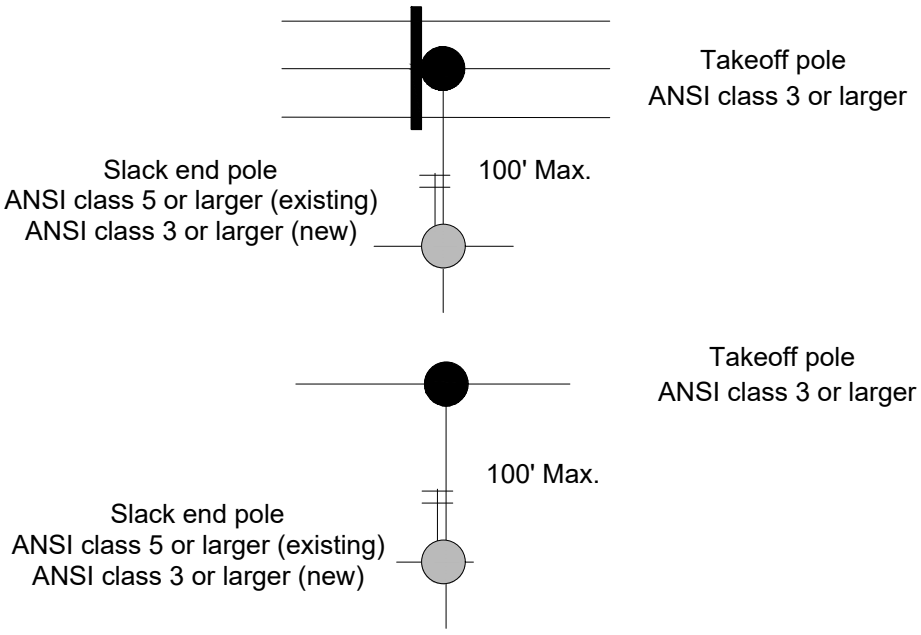


2.14 Pole requirements for main line tap poles with single or three phase Supply lines are as follows. Slack span lines must be perpendicular or near perpendicular from takeoff pole to slack end pole.

2.14.1 For three phase slack span taps of three phase Supply lines, the takeoff pole shall be classified as ANSI class 1 or larger. The slack end pole shall be classified as ANSI class 3 or larger.



2.14.2 For single phase slack span taps of three phase or single phase Supply lines, the takeoff pole shall be classified as ANSI class 3 or larger. Existing slack end poles shall be classified as ANSI class 5 or larger. New slack end poles shall be classified as ANSI class 3 or larger.



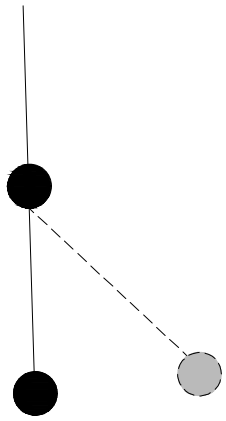
2.15 Pole requirements for mid-span slack poles with single or three phase slack Supply lines are as follows.

2.15.1 All Supply and Communication lines shall be slack spans.

2.15.2 For single phase Supply lines, the slack mid-span pole shall be classified as follows:

2.15.2.1 Existing poles where the angle is less than 45 degrees shall be classified as ANSI class 5 or larger.

2.15.2.2 New and existing poles where the angle is equal to or greater than 45 degrees shall be classified as ANSI class 3 or larger.



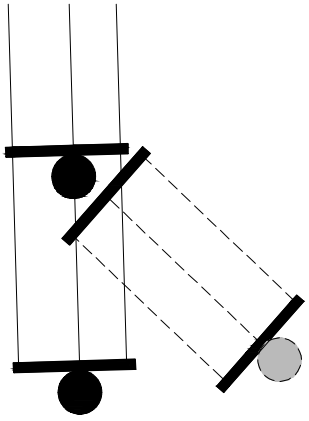
Slack mid-span pole with an angle less than 45º ANSI class 5 or larger (existing) ANSI class 3 or larger (new)

Slack mid-span pole with an angle greater than or equal to 45º ANSI class 3 or larger (existing) ANSI class 3 or larger (new)

2.15.3 For three phase Supply lines, the slack mid-span pole shall be classified as follows:

2.15.3.1 Poles with an angle that is less than 45 degrees shall be classified as ANSI class 3 or larger.

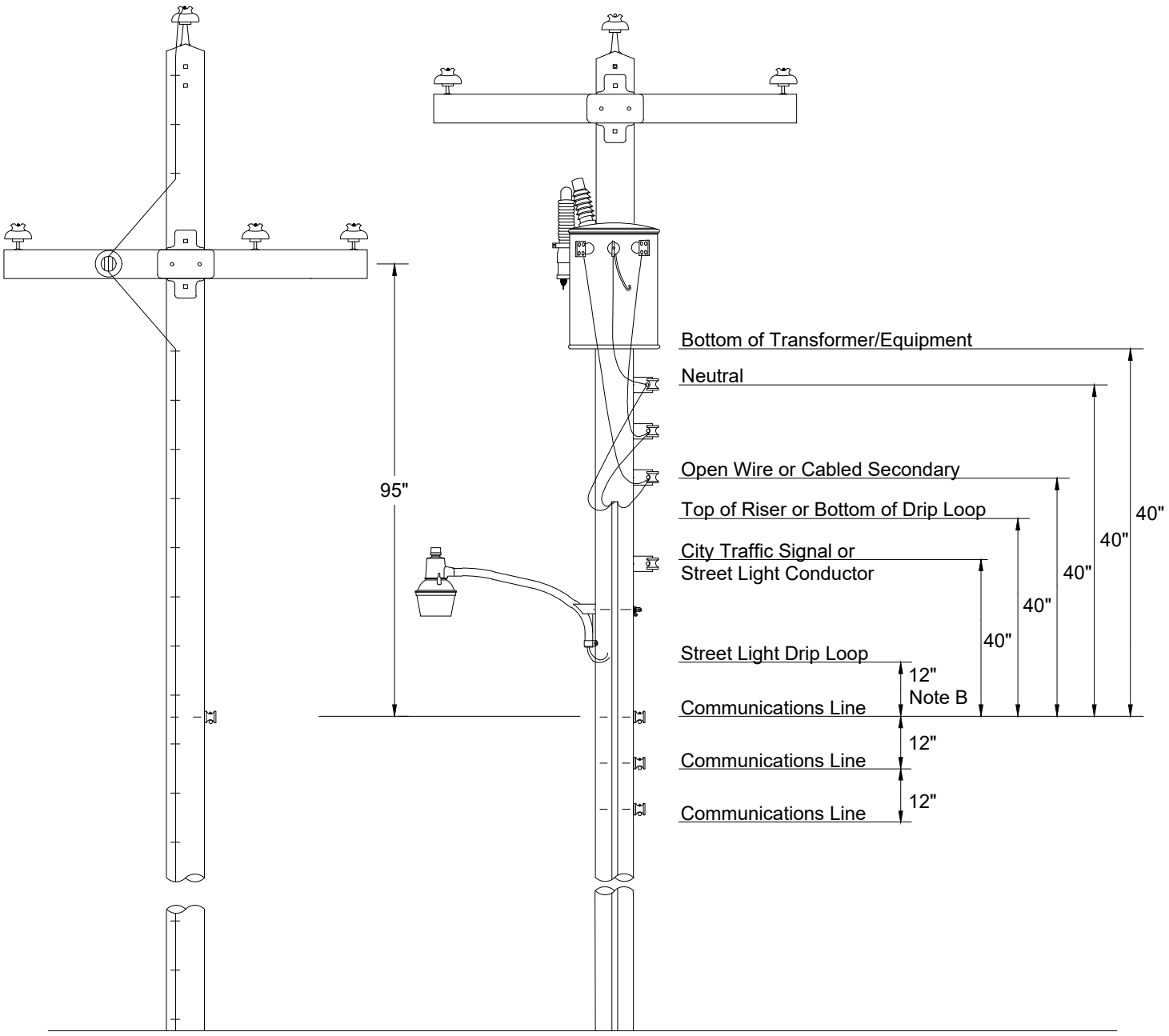
2.15.3.2 Poles with an angle that is equal to or greater than 45 degrees shall be classified as ANSI class 1.



Slack mid-span pole with an angle less than 45º ANSI class 3 or larger (new)

Slack mid-span pole with an angle greater than or equal to 45º ANSI class 1 ANSI class 3 or larger (new)

Supply and Communication Clearances at Pole

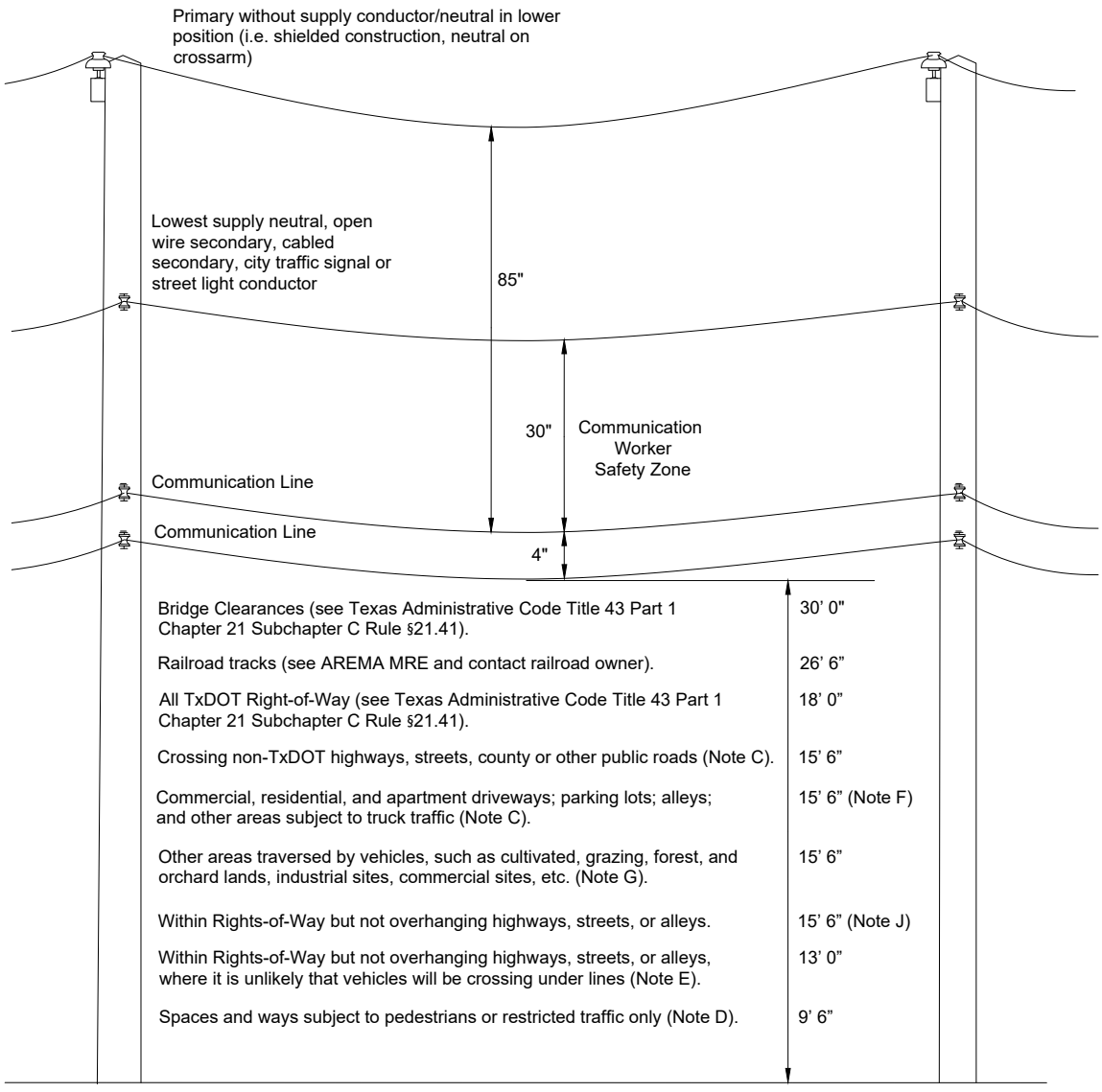


Notes:

A. Clearances shown are minimum values in accordance with Oncor requirements or the NESC. Additional clearance at the pole may be required to comply with the minimum mid-span clearances defined on 103-210.

B. May be reduced to 3 inches if street light drip loop is entirely covered with a non-metallic covering.

Supply and Communication Minimum Clearances within Span



Bridge Clearances (see Texas Administrative Code Title 43 Part 1 Chapter 21 Subchapter C Rule §21.41).	30’ 0"
Railroad tracks (see AREMA MRE and contact railroad owner).	26’ 6”
All TxDOT Right-of-Way (see Texas Administrative Code Title 43 Part 1 Chapter 21 Subchapter C Rule §21.41).	18’ 0”
Crossing non-TxDOT highways, streets, county or other public roads (Note C).	15’ 6”
Commercial, residential, and apartment driveways; parking lots; alleys; and other areas subject to truck traffic (Note C).	15’ 6” (Note F)
Other areas traversed by vehicles, such as cultivated, grazing, forest, and orchard lands, industrial sites, commercial sites, etc. (Note G).	15’ 6”
Within Rights-of-Way but not overhanging highways, streets, or alleys.	15’ 6” (Note J)
Within Rights-of-Way but not overhanging highways, streets, or alleys, where it is unlikely that vehicles will be crossing under lines (Note E).	13’ 0”
Spaces and ways subject to pedestrians or restricted traffic only (Note D).	9’ 6”

Supply and Communication
Minimum Clearances within Span

Notes:

A. Clearances shown are minimum values as defined by the NESC anywhere along the span. Clearances shall comply with additional requirements defined by local or corporate jurisdictions.

B. Vertical clearances shall be maintained under the following conductor temperature and loading conditions, whichever produces the largest final sag:

   1. 120º F, no wind.

   2. The maximum conductor temperature for which the line is designed to operate, if greater than 120º F, no wind.

   3. 32º F, no wind with 1/2” radial thickness of ice.

   4. Greater clearances than shown on 103-205 shall be provided where required by local codes and ordinances or crossing permits issued by other companies or governmental agencies.

C. Trucks are defined as any vehicle exceeding 8 feet in height. Areas not subject to truck traffic are areas where truck traffic is not normally encountered or reasonably anticipated.

D. Spaces and ways subject to pedestrians or restricted traffic only are those areas where riders on horseback or other large animals, vehicles or other mobile units exceeding 8 feet in height, are prohibited by regulation or permanent terrain configurations or are otherwise not normally encountered or reasonably anticipated.

E. Where a Supply or Communication line along a road is located relative to fences, ditches, embankments, etc, so that the ground under the line would not be expected to be traveled except by pedestrians, this clearance may be reduced to 9.5 feet for insulated Communication lines.

F. Where this construction crosses over or runs along driveways, parking lots or alleys not subject to truck traffic, this clearance may be reduced to 15 feet.

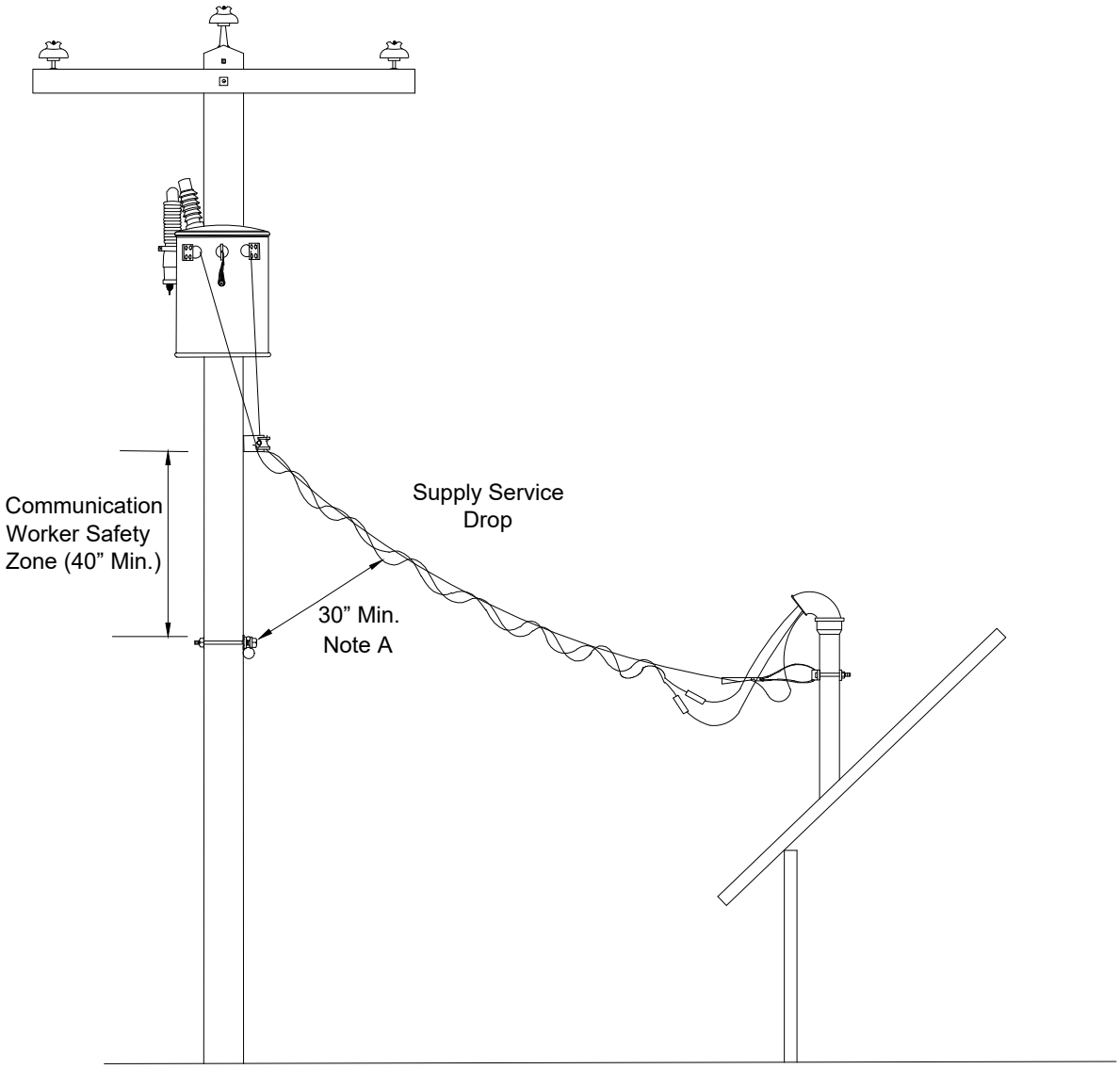
G. When designing a line to accommodate oversized vehicles, these clearance values shall be increased by the difference between the known height of the oversized vehicle and 14 feet.

H. See 103-230 for clearance between Supply and Communication service drops.

I. Where the height of a residential building does not permit its service drops to meet these values, the clearance over residential driveways only may be reduced to 11.5 feet for insulated Communication service drops.

J. Communication lines may have a clearance of 15 feet where poles are back of curbs or other deterrents to vehicular traffic.

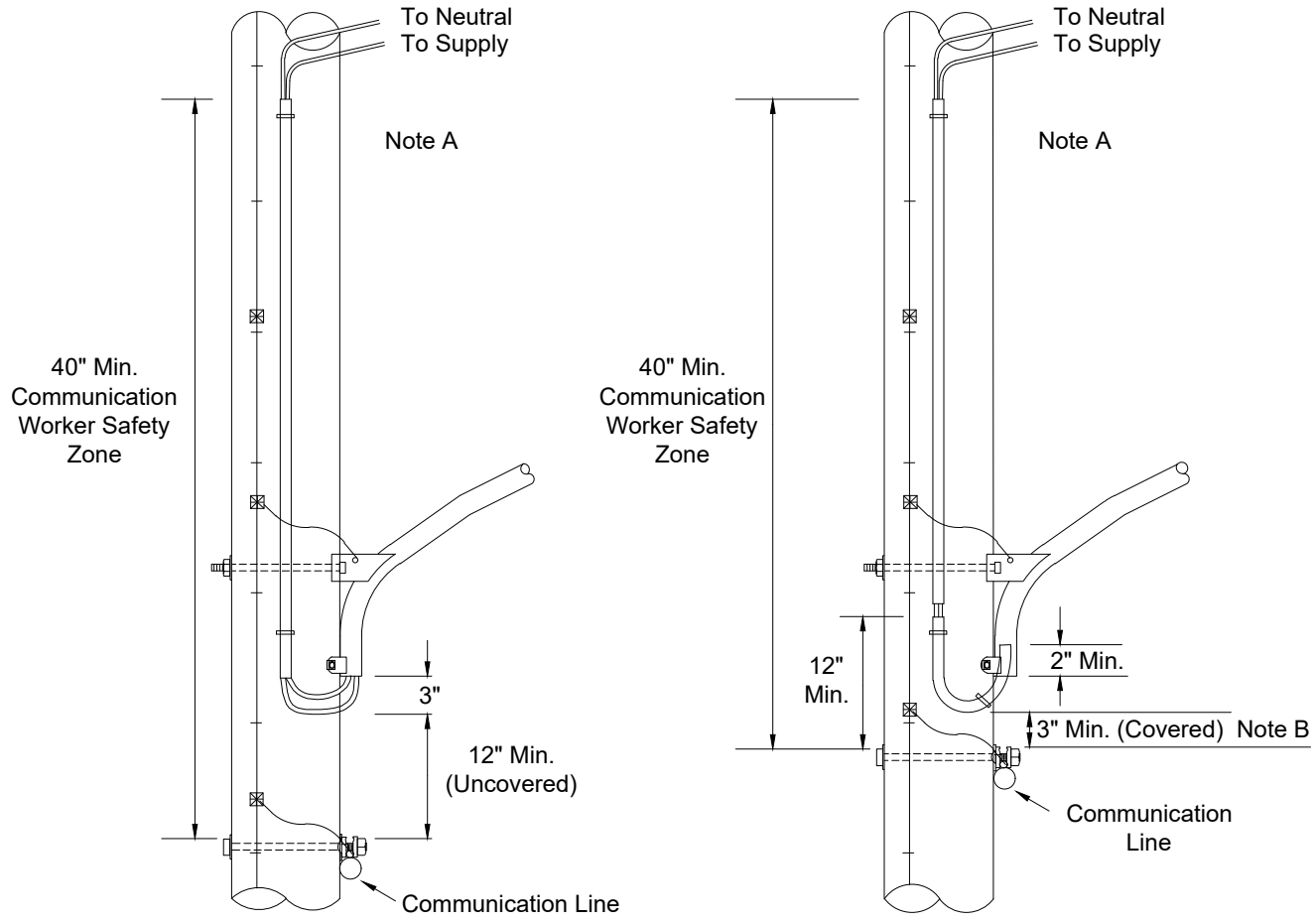
Supply Service Drop Clearance to Communication Line



Notes:

A. A minimum clearance of 30 inches in any direction shall be maintained from Supply service drops to Communication lines within the span.

Clearance from Street Light Bracket Mounted in the Worker Safety Zone



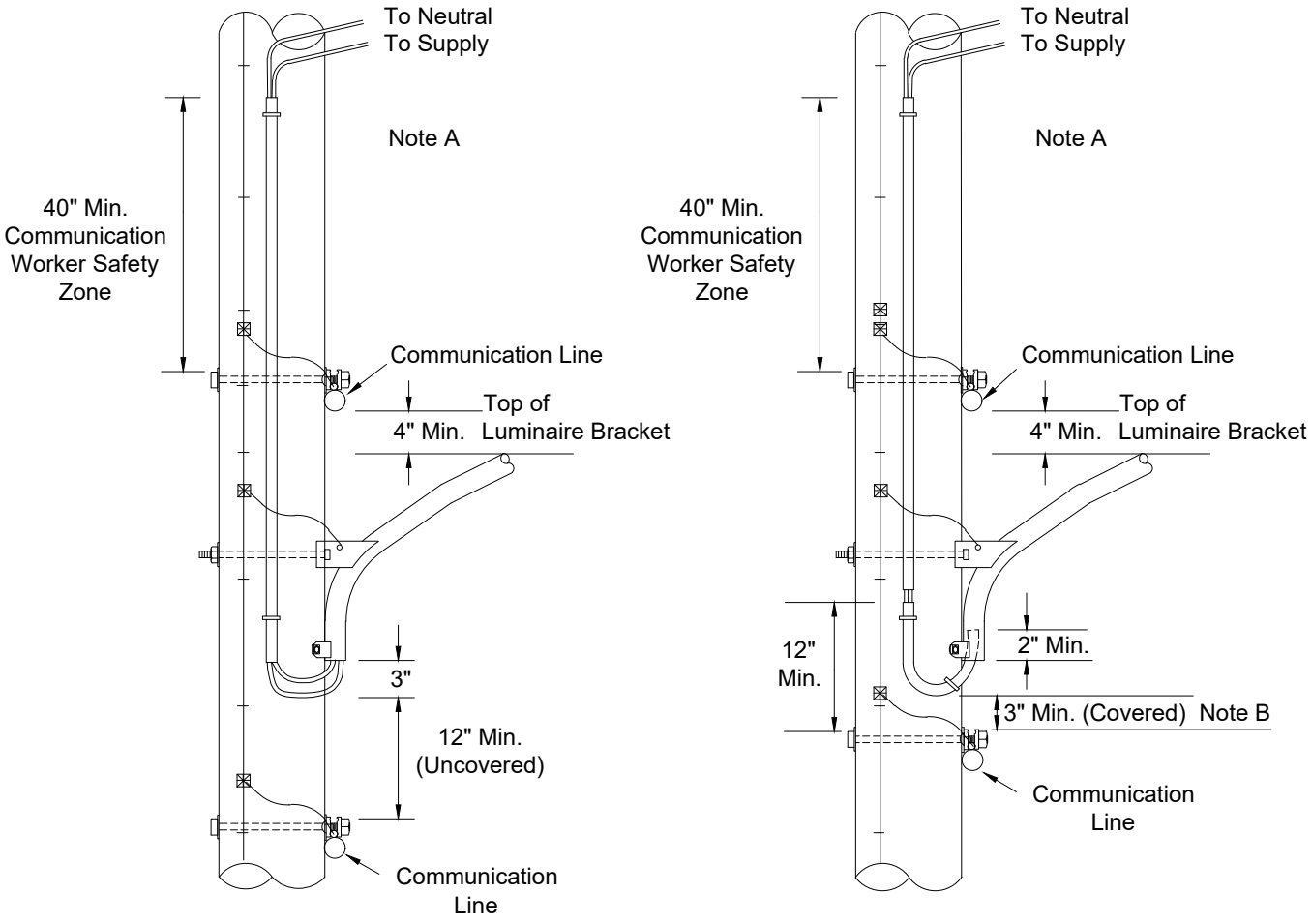
Notes:

A. When a street light bracket is mounted in the Communication worker safety zone, street light Supply conductors shall be completely covered with a non-metallic covering, beginning a minimum of 40" above the upper Communication line. The covering shall be schedule 80 PVC conduit.

B. Clearance can be reduced to 3" if street light drip loop is entirely covered with a non-metallic covering (TSN 275232).

C. Reference Standard 213-010 for further information.

Clearance from Street Light Bracket Mounted in the Communication Space



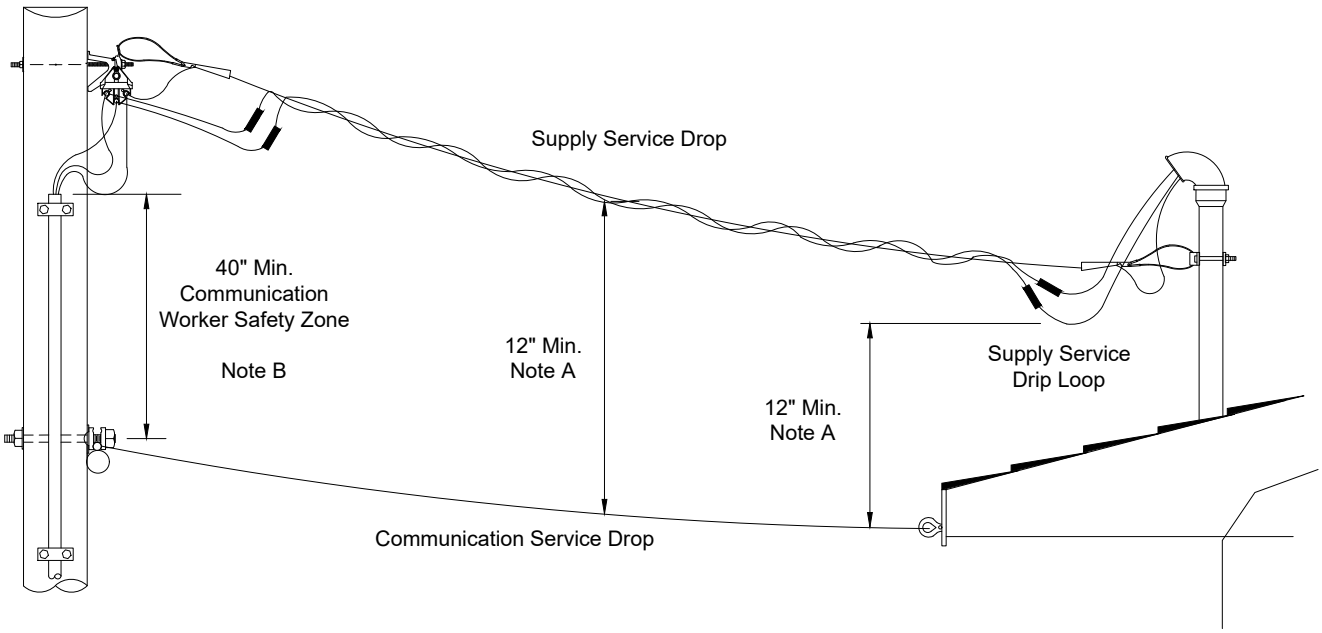
Notes:

A. When a street light bracket is mounted in the Communication space, street light Supply conductors shall be completely covered with a non-metallic covering, beginning a minimum of 40" above the upper Communication line. The covering shall be schedule 80 PVC conduit.

B. Clearance can be reduced to 3" if street light drip loop is entirely covered with a non-metallic covering (TSN 275232).

C. Reference Standard 213-010 for further information.

Supply and Communication Service Drop Clearances

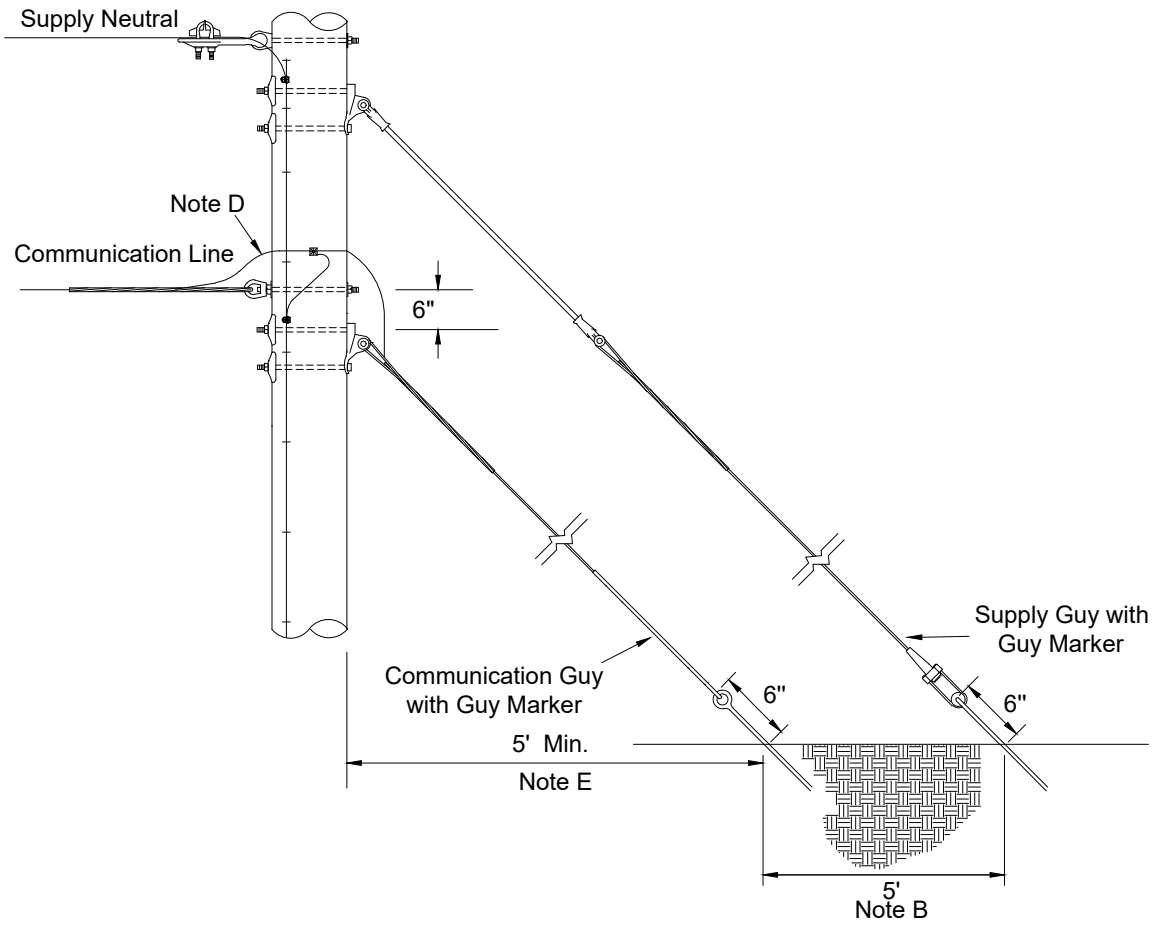


Notes:

A. Minimum clearance of 12 inches between Supply and Communication service drops at service entrance and along entire length of the service.

B. Clearance shall be maintained between lowest of drip loop or top of riser and Communication service drop.

Supply and Communication Down Guys and Anchors



Notes:

A. Each company (Supply and Communication) shall install independent guys and anchors for their respective facilities. Auxiliary anchor eyes on Supply anchor rods shall not be utilized. Sidewalk guys are not allowed.

B. The Communication anchor shall be installed 5 feet from the Supply anchor.

C. If agreed to by multiple Communication companies and designed as a system to support the total loads applied, a common Communication guy and/or anchor can be installed. A shared guy and/or anchor can only be used if the points of attachment are no more than 12 inches apart on the pole. The company installing the Communication anchor shall coordinate the design and installation with all parties. The design shall be submitted with the permit application for Oncor approval prior to construction.

D. Communication messengers and guy wires shall be bonded to the pole ground on every pole. Communication companies shall furnish the necessary #6 soft drawn bare copper or copper clad steel wire and connectors and shall complete the bonding to the pole ground.

E. No Communication anchor shall be installed closer than 5 feet from the surface of the pole.

F. Guy markers shall be installed on all down guys.

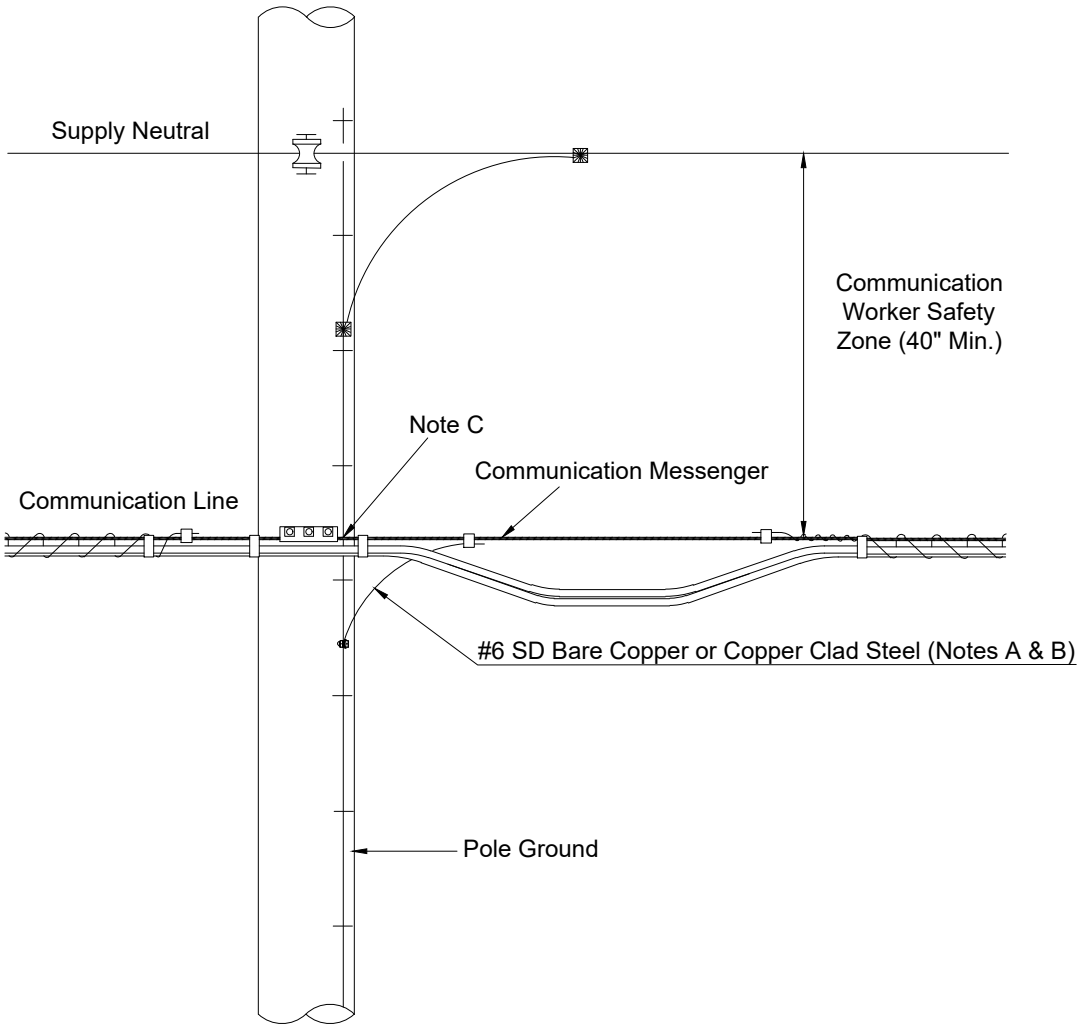
G. Anchor rods shall extend a minimum of 6 inches above grade.

H. The top hole of the guy plate shall be 6 inches from the bottom hole of the mounting hardware supporting the tension load.

I. The Communication guy shall be installed 6 inches below the Communication line or can be installed using the back side of the Communication line through bolt.

Communication Line Grounding

103 - 255
05 - 22



Notes:

A. Communication messengers shall be bonded to the pole ground on every pole.
B. Communication companies shall furnish the necessary #6 soft drawn bare copper or copper clad steel wire and connectors and shall complete the bonding to the pole ground.
C. Minimum clearance of 2” of air or wood between all hardware and ground wire.

3.0 Communication Equipment Installed on Oncor Poles

3.1 General

3.1.1 Communication equipment is defined as anything other than a horizontal or vertical Communication line. Equipment includes, but is not limited to, radios, cameras, antennas, equipment boxes, power Supply boxes, meters, and lockable disconnect switches.

3.1.2 Equipment component specifications, assembly configuration, and mounting bracket shall be approved by Oncor prior to submittal of permit application for attachment.

3.1.3 Equipment should be mounted in-line with Oncor conductors, with the exception of cameras. Equipment shall not be attached to the field, alley, or road side of a pole.

3.1.4 Equipment shall be installed on poles classified as ANSI class 3 or larger, unless approved by Oncor.

3.1.5 Strand-mounted wireless small cell equipment is permitted on ANSI class 3 poles. Strand-mounted Wi-Fi equipment is permitted on ANSI class 5 poles.

3.1.6 Strand-mounted wireless or Wi-Fi equipment shall not be installed on both sides of a pole. If strand-mounted equipment is already present on the opposite side of the pole, additional attachments will not be allowed.

3.1.7 A maximum of one (1) pole-mounted wireless antenna assembly is allowed per pole. A maximum of one (1) strand-mounted wireless assembly is permitted per span.

3.1.8 When equipment is installed on a non-Oncor owned pole, the pole should be installed directly perpendicular to the Oncor pole at a minimum of 15 feet from the nearest Supply conductor.

3.1.9 Equipment pads and pedestals shall be a minimum of 5 feet from the nearest edge of an Oncor pole.

3.1.10 Equipment shall not be attached to Oncor equipment or brackets.

3.1.11 Communication risers shall be installed using standoff brackets on the same side of the pole as the Communication equipment. Standoff brackets shall extend 6 inches away from the pole and shall be installed on one side of the pole which is 90 degrees from in-line service. For more information reference standard 103-301.

3.1.12 Up to three (3) Communication risers maximum, per pole, shall be installed on a standoff bracket.

3.1.13 The first bracket shall be installed a minimum of 9 feet above ground level and the last bracket shall be installed 2 feet below the top of the conduit. Additional brackets shall be installed as needed and the maximum spacing between standoff brackets should not exceed 15 feet.

3.1.14 Communication power cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.

3.1.15 Antenna cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.

3.1.16 U-guard shall not be installed on the pole.

3.1.17 A minimum clearance of 4 inches shall be maintained above or below the Oncor standoff bracket and shall be offset 90 degrees from the Oncor bracket to preserve the integrity of the pole.

3.1.18 The overall structure height, including any equipment, shall not exceed 60 feet above the ground. In cases where an existing pole is replaced to raise Oncor facilities, the poles surrounding the equipment pole may also need to be replaced at the expense of the equipment owner in an effort to minimize the impact of uplift.

3.1.19 Antennas shall not be installed within 200 feet of an Oncor AMS router, collector, or Distribution Automation transceiver.

3.1.20 Pole top extensions are not allowed.

3.1.21 Poles with handholds or footholds shall be arranged so that there is not less than 8 feet between either:

1. the lowest handhold or foothold and the ground or other accessible surface, or
2. the two lowest handholds or footholds.

3.1.22 The bottom of any grounded equipment mounted on a pole shall meet the requirements of NESC Rule 232B. The following clearances from the bottom of the equipment shall be maintained:

3.1.22.1 Not less than 15 feet above roads, streets, parking lots, or alleys.
3.1.22.2 Not less than 9 feet over areas subject to pedestrians or restricted traffic only.

3.1.23 Cable assemblies attached on the exterior of bracket arms installed on distribution poles shall be wrapped on the bracket arm and secured using durable cable ties.

3.1.24 Communication power conductors shall be insulated with a jacket enclosing the entire cable assembly.

3.1.25 Equipment shall not contain, or be connected to, back-up batteries.

3.1.26 Strand-mounted equipment shall be supplied by DC line power.

3.2 Electric Service

3.2.1 On distribution poles served by overhead lines, electric service must be obtained by connecting to an overhead secondary or single transformer mounted to the pole. Electric service cannot be obtained from the street light photo cell on distribution poles that have a street light installed. Electric service must be obtained from the distribution circuit which is attached to the equipment pole and cannot be obtained from an alternative source.

3.2.2 Electric service will be provided in accordance with Oncor Electric Service Guidelines (ESG).

3.2.3 All installations where the maximum power requirements exceed 80 watts shall be metered.

3.2.4 Attachment of meters and lockable disconnect switches on Oncor poles is prohibited. Meters and lockable disconnect switches must be installed off-pole on a non-Oncor owned pole, pad, or pedestal. The lockable disconnect switch must be permanently labeled to identify the equipment it controls and the equipment owner.

3.3 Equipment Radio Frequency

3.3.1 As a condition of approval by Oncor, applicants **shall provide an evaluation of proposed wireless equipment to prove compliance with FCC guidelines for human exposure to radiofrequency fields (RF)**. Evaluations shall include uncontrolled exposure in the near field and far field regions. Additional evaluations shall be provided whenever the transmitting power of existing equipment is increased.

3.3.2 Two (2) RF warning signs shall be installed on each pole. One sign shall be installed near the equipment at the level where the safe approach distance ends for FCC General Population/Uncontrolled power levels. The second sign shall be installed 4 to 6 feet from the ground line of the pole. This sign shall read, “Warning: Equipment Approach Distance Is XX Feet”. The sign shall include the equipment owner’s name and 24 hour phone number.

3.3.3 Equipment will be de-energized by Oncor before work is performed within the area defined by the RF warning signs.

3.3.4 Directional or omni-directional antennas shall be installed and oriented in a manner that limits RF energy within the climbing space.

3.4 Pole-Mounted Equipment Installation

3.4.1 Antennas that comply with Oncor requirements may be mounted in the Communication space, in the Supply space below the lowest Supply attachment, or on the pole top.

3.4.2 Antennas can be mounted on the top of a pole when the pole top is not being used by Oncor or would not be in use if the pole were replaced in accordance with Oncor current Standards. Rod type pole top antennas can be mounted to the side of the pole. Other types of pole top antennas must be mounted directly over the top of the pole.

3.4.3 When an antenna is mounted in a pole top configuration there shall be a minimum of 5 feet separation between the bottom of the power drip loop or top of conduit (whichever is lower) and the top Supply conductor or street light bolt.

3.4.4 Pole top antennas shall be secured to the pole with a minimum of two (2) straps. The straps shall be fastened with three (3) bolts on 6” centers. Rod type antennas can be side mounted and fastened with two (2) bolts on 6” centers. The top bolt shall be 6” from the pole top.

3.4.5 Equipment shall only be installed on primary tangent poles, secondary poles, service poles, wood street light poles, and appropriate span guy poles which do not have Supply equipment installed (i.e. multiple transformers, capacitors, primary risers, secondary/service risers, switches, sectionalizers, regulators, AMS routers and collectors, distribution automation transceivers, etc.). Equipment shall not be installed on poles that support multiple circuits. Equipment may be installed on poles which have a single transformer installed. Attachment of equipment to secondary or service poles with multiple service drops is allowed. Equipment shall be installed in a way that preserves the climbability of the pole.

3.4.6 All equipment on a pole shall be mounted on a single bracket that provides one (1) point of attachment to the pole. The bracket shall provide a minimum of six (6) inches of separation from the nearest edge of the Oncor pole to the nearest edge of the equipment. The bracket shall be mounted with a minimum of two (2) bolts spaced at a minimum of 12 inches center to center.

3.4.7 The equipment, including the single point of attachment mounting bracket, shall not exceed 300 pounds in weight and shall be no larger than 15 cubic feet. The resulting moment applied at the pole shall not exceed 300 ft-lbs.

3.5 Strand-Mounted Wireless Equipment Installation

3.5.1 Strand-mounted wireless equipment assemblies should be installed on the span beginning no closer than 4 feet and no further than 6 feet from the pole.

3.5.2 Strand-mounted wireless equipment shall only be installed in the Communication space.

3.5.3 Strand-mounted wireless or Wi-Fi equipment is not permitted on slack spans and shall not be installed within 200 feet of an Oncor AMS router, collector, or Distribution Automation transceiver.

3.5.4 Strand-mounted wireless small cell equipment assemblies shall not exceed an envelope of 7 feet long by 2 feet tall, 14 square feet. Equipment and bracket shall not exceed a total of 75 pounds. Strand-mounted wireless equipment may include, but is not limited to, radio, antenna, bracket, power converter, RF disconnect, and splice case.

3.5.5 Strand-mounted Wi-Fi equipment assemblies shall not exceed an envelope of 2 feet long by 1 foot tall, 2 square feet. Equipment and bracket shall not exceed 25 pounds.

3.5.6 Strand-mounted wireless equipment and mounting bracket shall be bonded to messenger. Messenger shall be bonded to the pole ground as required.

3.5.7 A disconnect switch shall be identified and clearly marked at each installed location for the purpose of powering off equipment. The disconnect switch shall be located 4 feet horizontally from the pole on the strand.

3.5.8 Strand-mounted wireless equipment shall not be installed directly below street light fixtures mounted on wood poles as this may interfere with the intended illumination pattern.

3.5.9 Additional at-pole clearances may be required to accommodate larger strand-mounted wireless equipment. Within a span, the clearances above and below the strand-mounted wireless equipment shall not be less than 4 inches to another Communication line.

3.6 Camera Installation

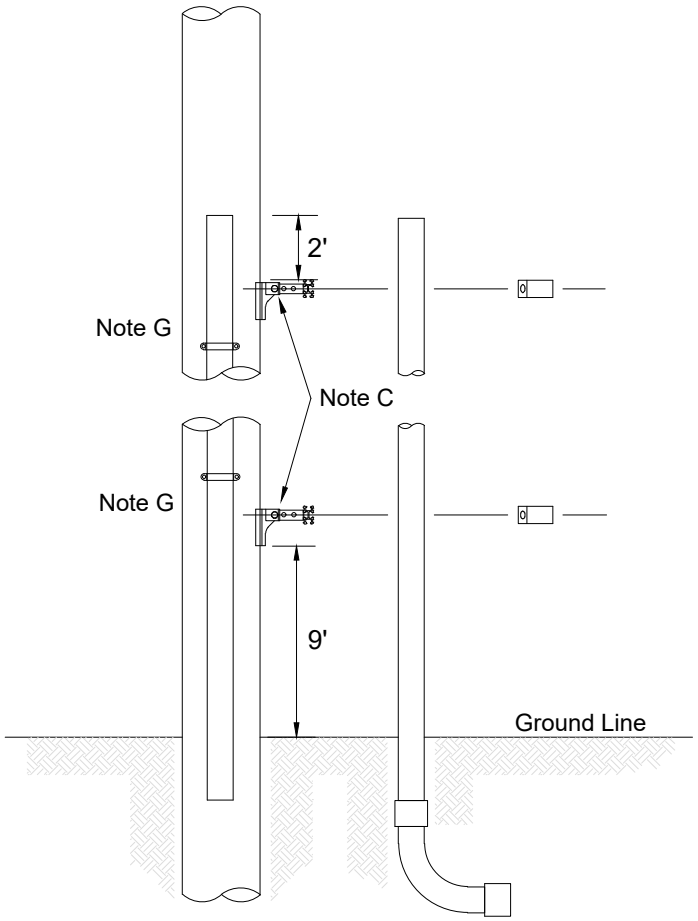
3.6.1 Only authorized governmental entities will be allowed to attach a camera to Oncor poles.

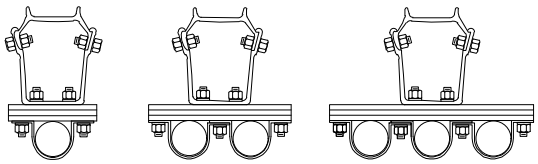
3.6.2 Cameras should be mounted in-line with Oncor conductors when possible. Oncor will evaluate requests to mount cameras on the field, alley, or road side of the pole on a case by case basis.

3.6.3 Cameras shall be mounted in the Communication space unless approved by Oncor.

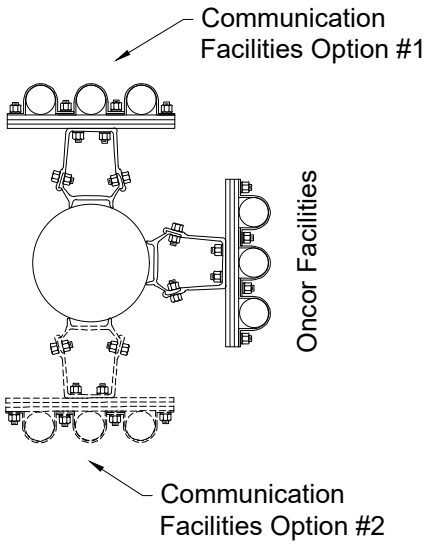
Communication Pole Riser

103 - 301
10 - 23





Typical Single Riser Installation

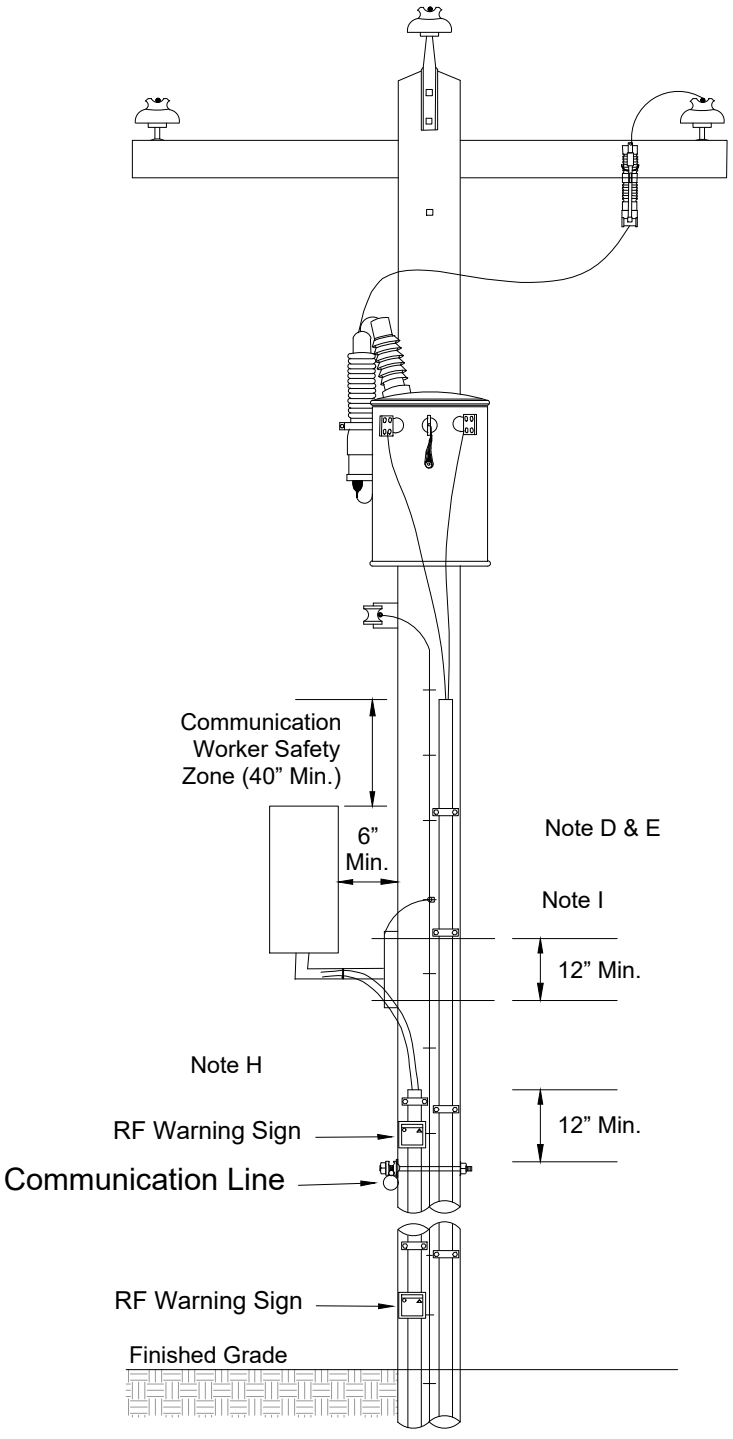


Notes:

A. Communication risers shall be installed using standoff brackets on the same side of the pole as the Communication equipment. Standoff brackets shall extend 6 inches away from the pole and shall be installed on one side of the pole which is 90 degrees from in-line service. For more information reference standard 103-301.
B. Up to three (3) Communication risers maximum, per pole, shall be installed on a standoff bracket.
C. The first bracket shall be installed a minimum of 9 feet above ground level and the last bracket shall be installed 2 feet below the top of the conduit. Additional brackets shall be installed as needed and the maximum spacing between standoff brackets should not exceed 15 feet.
D. Communication power cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
E. Antenna cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
F. U-guard shall not be installed on the pole.
G. A minimum clearance of 4 inches shall be maintained above or below the Oncor standoff bracket and shall be offset 90 degrees from the Oncor bracket to preserve the integrity of the pole.

Communication Antenna/Equipment Mounted in the Communication Space

103 - 305
10 - 23

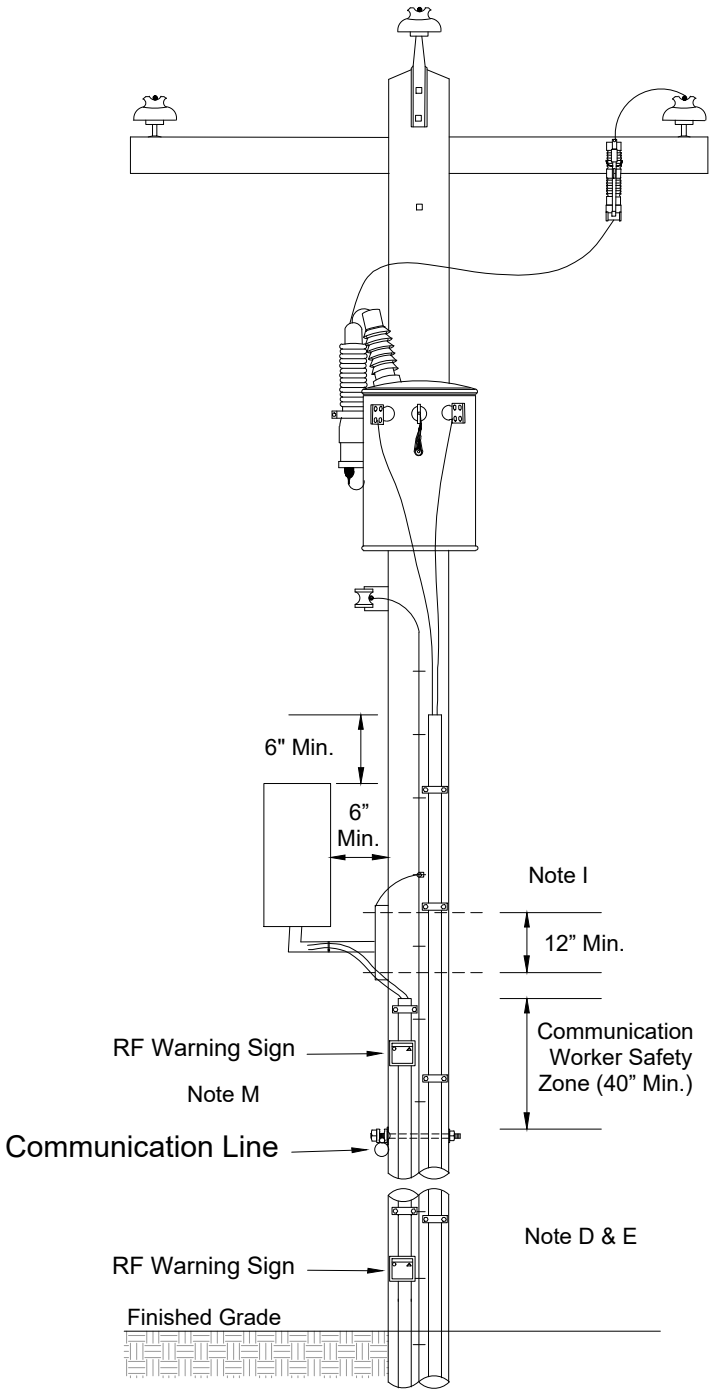


Communication Antenna/Equipment Mounted in the Communication Space

Notes:

A. Communication risers shall be installed using standoff brackets on the same side of the pole as the Communication equipment. Standoff brackets shall extend 6 inches away from the pole and shall be installed on one side of the pole which is 90 degrees from in-line service. For more information reference standard 103-301.
B. Up to three (3) Communication risers maximum, per pole, shall be installed on a standoff bracket.
C. The first bracket shall be installed a minimum of 9 feet above ground level and the last bracket shall be installed 2 feet below the top of the conduit. Additional brackets shall be installed as needed and the maximum spacing between standoff brackets should not exceed 15 feet.
D. Communication power cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
E. Antenna cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
F. U-guard shall not be installed on the pole.
G. A minimum clearance of 4 inches shall be maintained above or below the Oncor standoff bracket and shall be offset 90 degrees from the Oncor bracket to preserve the integrity of the pole.
H. Communication power cable shall be jacketed multiple conductor. Jacket must enclose entire cable assembly.
I. Antenna and mounting bracket shall be bonded to neutral or pole ground.
J. Maintain minimum of 2” clearance of air or wood between all hardware and ground wires.
K. The clearance to the Communication line shall be measured from the lowest of the antenna drip loop, the top of antenna conduit, the antenna mounting bracket, or the antenna.
L. Antenna shown in non-inline position for illustration purposes.
M. Two (2) RF warning signs shall be installed on each pole. Reference Standard 103-300 for further information.

Communication Antenna/Equipment Mounted in the Supply Space



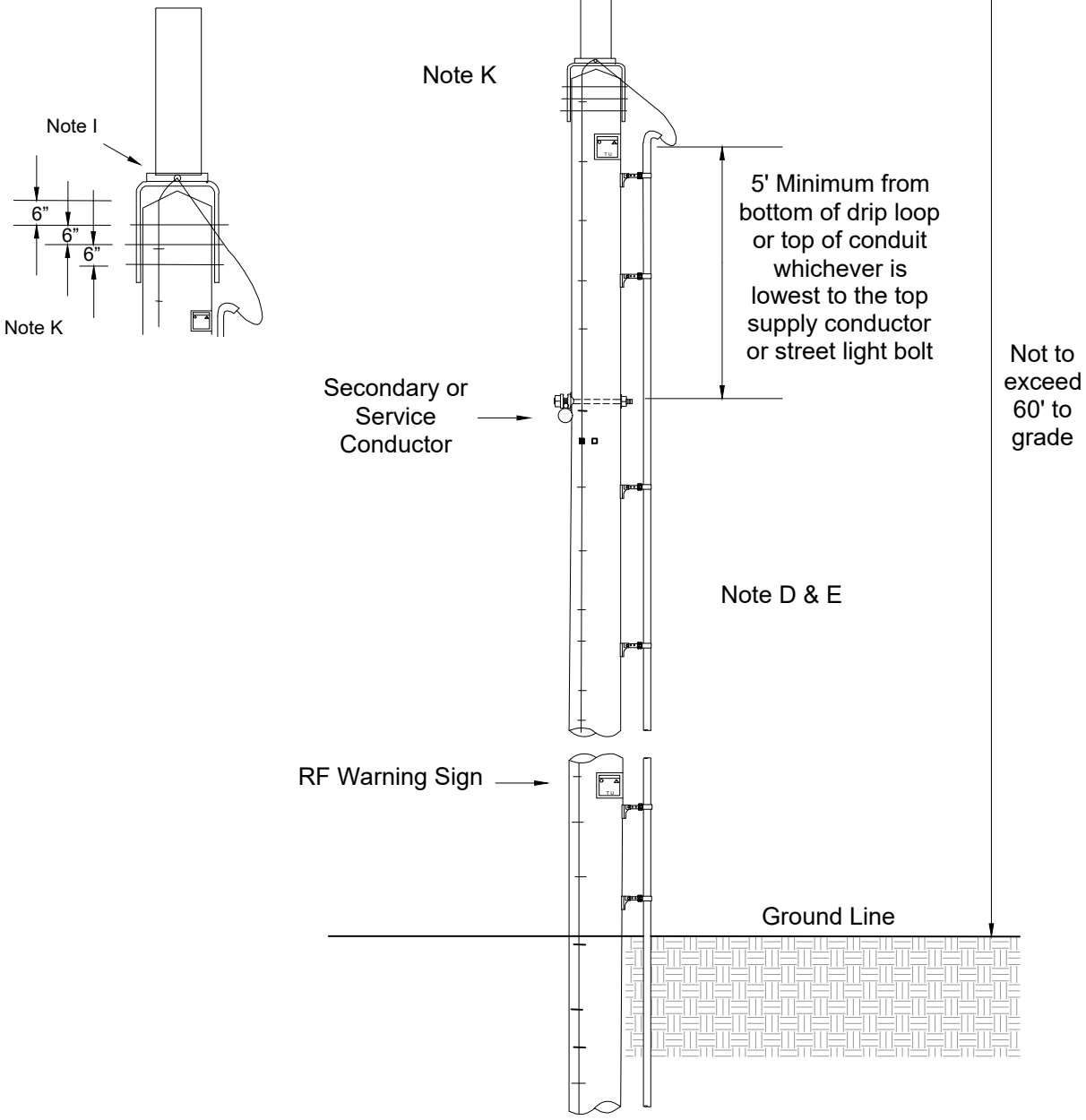
Communication Antenna/Equipment Mounted in the Supply Space

Notes:

A. Communication risers shall be installed using standoff brackets on the same side of the pole as the Communication equipment. Standoff brackets shall extend 6 inches away from the pole and shall be installed on one side of the pole which is 90 degrees from in-line service. For more information reference standard 103-301.
B. Up to three (3) Communication risers maximum, per pole, shall be installed on a standoff bracket.
C. The first bracket shall be installed a minimum of 9 feet above ground level and the last bracket shall be installed 2 feet below the top of the conduit. Additional brackets shall be installed as needed and the maximum spacing between standoff brackets should not exceed 15 feet.
D. Communication power cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
E. Antenna cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
F. U-guard shall not be installed on the pole.
G. A minimum clearance of 4 inches shall be maintained above or below the Oncor standoff bracket and shall be offset 90 degrees from the Oncor bracket to preserve the integrity of the pole.
H. Communication power cable shall be jacketed multiple conductor. Jacket must enclose entire cable assembly.
I. Antenna and mounting bracket shall be bonded to neutral or pole ground on each pole.
J. Maintain minimum of 2” clearance of air or wood between all hardware and ground wires.
K. The Communication Worker Safety Zone shall be measured from the lowest of the antenna drip loop, the top of antenna conduit, the antenna mounting bracket, or the antenna to the Communication line.
L. Antenna shown in non-inline position for illustration purposes.
M. Two (2) RF warning signs shall be installed on each pole. Reference standard 103-300 for further information.

Communication Pole Top Antenna/Equipment Mounted on Secondary or Service Pole

103 - 315
10 - 23



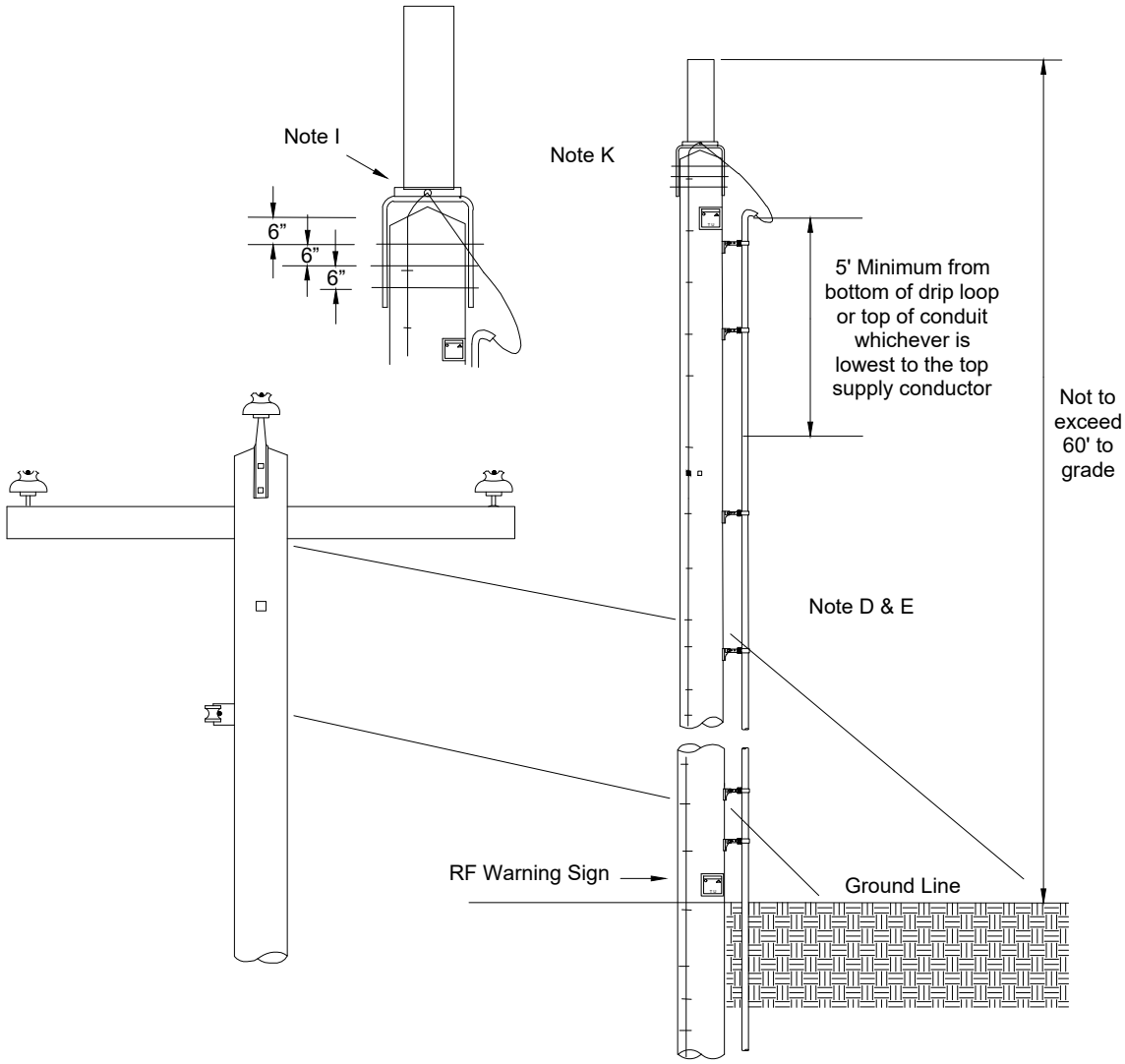
Communication Pole Top Antenna/Equipment Mounted on Secondary or Service Pole

Notes:

A. Communication risers shall be installed using standoff brackets on the same side of the pole as the Communication equipment. Standoff brackets shall extend 6 inches away from the pole and shall be installed on one side of the pole which is 90 degrees from in-line service. For more information reference standard 103-301.
B. Up to three (3) Communication risers maximum, per pole, shall be installed on a standoff bracket.
C. The first bracket shall be installed a minimum of 9 feet above ground level and the last bracket shall be installed 2 feet below the top of the conduit. Additional brackets shall be installed as needed and the maximum spacing between standoff brackets should not exceed 15 feet.
D. Communication power cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
E. Antenna cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
F. U-guard shall not be installed on the pole.
G. A minimum clearance of 4 inches shall be maintained above or below the Oncor standoff bracket and shall be offset 90 degrees from the Oncor bracket to preserve the integrity of the pole.
H. Communication power cable shall be jacketed multiple conductor. Jacket must enclose entire cable assembly.
I. Antenna mounting bracket shall be bonded to the neutral or pole ground on each pole.
J. Maintain minimum of 2" clearance of air or wood between all hardware and ground wires.
K. Pole top antennas shall be secured to the pole with a minimum of two (2) straps. The straps shall be fastened with three (3) bolts on 6" centers. The top bolt shall be 6” from the pole top.
L. Two (2) RF warning signs shall be installed on each pole. Reference standard 103-300 for further information.

Communication Pole Top Antenna/Equipment Mounted on Span Guy Pole

103 - 320
10 - 23

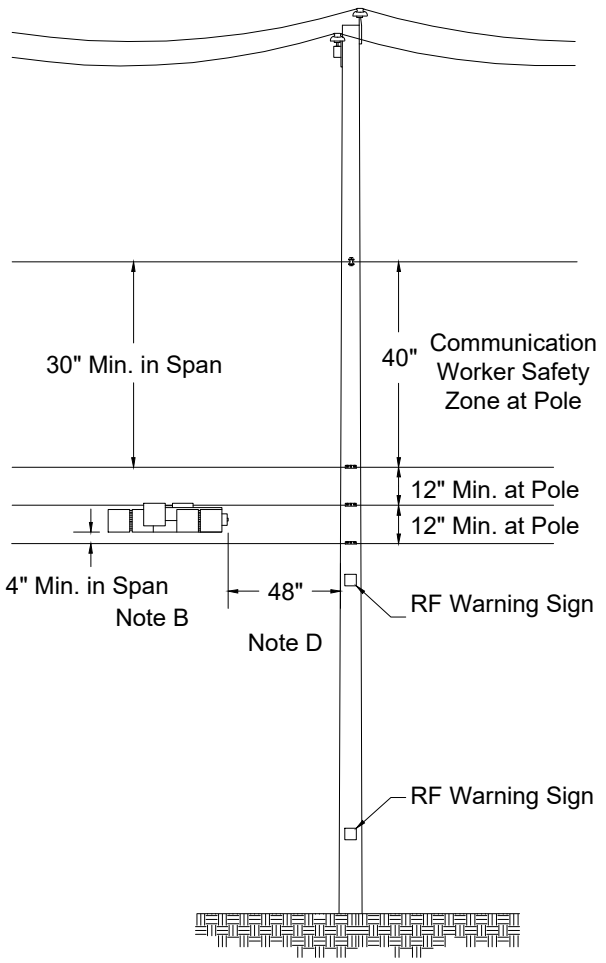


Communication Pole Top Antenna/Equipment Mounted on Span Guy Pole

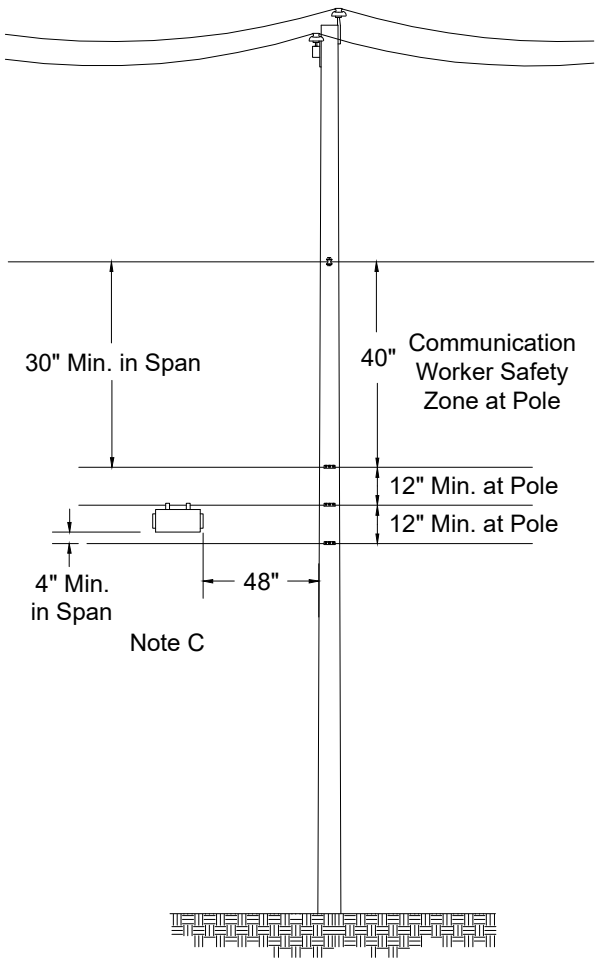
Notes:

A. Communication risers shall be installed using standoff brackets on the same side of the pole as the Communication equipment. Standoff brackets shall extend 6 inches away from the pole and shall be installed on one side of the pole which is 90 degrees from in-line service. For more information reference standard 103-301.
B. Up to three (3) Communication risers maximum, per pole, shall be installed on a standoff bracket.
C. The first bracket shall be installed a minimum of 9 feet above ground level and the last bracket shall be installed 2 feet below the top of the conduit. Additional brackets shall be installed as needed and the maximum spacing between standoff brackets should not exceed 15 feet.
D. Communication power cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
E. Antenna cable shall be installed in a minimum schedule 40 PVC conduit and shall be no larger than 2 inches in diameter. Conduit shall be installed on a Communication standoff bracket. Conduits of up to 4 inches may be permitted with approval by Oncor.
F. U-guard shall not be installed on the pole.
G. A minimum clearance of 4 inches shall be maintained above or below the Oncor standoff bracket and shall be offset 90 degrees from the Oncor bracket to preserve the integrity of the pole.
H. Communication power cable shall be jacketed multiple conductor. Jacket must enclose entire cable assembly.
I. Antenna mounting bracket shall be bonded to the neutral or pole ground on each pole.
J. Maintain minimum of 2” clearance of air or wood between all hardware and ground wires.
K. Pole top antennas shall be secured to the pole with a minimum of two (2) straps. The straps shall be fastened with three (3) bolts on 6” centers. The top bolt shall be 6” from the pole top.
L. Two (2) RF warning signs shall be installed on each pole. Reference standard 103-300 for further information.

Strand-Mounted Wireless Equipment Requirements on Oncor Poles



Strand-Mounted Wireless Small Cell Equipment



Strand-Mounted Wi-Fi Equipment

Notes:

A. Strand-mounted wireless equipment and mounting bracket shall be bonded to messenger. Messenger shall be bonded to the pole ground as required.
B. Strand-mounted wireless small cell equipment assemblies shall not exceed an envelope of 7 feet long by 2 feet tall, 14 square feet. Equipment and bracket shall not exceed a total of 75 pounds. Strand-mounted wireless equipment may include, but is not limited to, radio, antenna, bracket, power converter, RF disconnect, and splice case.
C. Strand-mounted Wi-Fi equipment assemblies shall not exceed an envelope of 2 feet long by 1 foot tall, 2 square feet. Equipment and bracket shall not exceed 25 pounds.
D. For strand-mounted wireless small cell equipment assemblies, a disconnect switch shall be located 4 feet horizontally from the pole on the strand.
E. Strand-mounted wireless equipment assemblies shall be supplied by DC line power.
F. Strand-mounted wireless or Wi-Fi equipment shall not be installed on both sides of a pole. If strand-mounted equipment is already present on the opposite side of the pole, additional attachments will not be allowed.
G. Strand-mounted wireless or Wi-Fi equipment is not permitted on slack spans and shall not be installed within 200 feet of an Oncor AMS router, collector, or Distribution Automation transceiver.

4.0 Tagging for Communication Lines and Equipment

4.1 To facilitate identification of attachments to Oncor poles, tags shall be installed on all Communication line and equipment attachments at the time of installation. These requirements will assist in identifying and contacting the attachment owner as needed.

4.2 Each tag shall include the attachment owner's name or generally recognized company logo. The tag shall also include a contact telephone number.

4.3 Missing tags should be replaced as soon as possible.

4.4 Tags must be replaced when the company name and/or contact telephone number are no longer legible from the ground.

4.5 Tags for Communication lines shall be installed on every pole or attachment point.

4.6 The attaching company may choose the method, color, material (non-metal), construction and dimensions of the tag as long as the following requirements are met:

4.6.1 Tags to remain permanently affixed to the attaching company's facilities.

4.6.2 Color and text must be designed to last a minimum of 5 years.

4.6.3 The company name and contact number must be easily readable and visible from the ground. A minimum of 0.5 inch high lettering is required.

4.6.4 Tags should be consistent in appearance for a given company throughout Oncor service territory.