Joint Field Inspections & Corrections

Best Practices

2023 National Electrical Safety Code

A publication of the Oregon Joint Use Association
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Chapter 1: Inspections Table of Contents

Joint Use NESC Inspections: General Information

About This Manual

- This manual does not address cost assignment. Parties are required to have agreements (contracts) that should outline the variables that determine who pays for corrective maintenance activities.
- The Suggested Best Practice may not be agreeable with all pole owners and licensees but has been reviewed by industry representative members of the OJUA from telephone, cable, and electric utilities and is viewed as a practical overall recommendation that deserves consideration.
- Each scenario in this manual addresses a specific pole location and NESC condition and is not intended to represent all conditions of the same type.

Existing Installation Exceptions (NESC 013B)

- This manual should be used in conjunction with the OJUA Installation Exception Matrix.
- Each scenario will indicate whether Installation Exceptions is an option associated to the applicable NESC rule reference.
- Inspectors should be familiar with Installation Exception options and apply them when allowable as the best practice but with primary regard for safety and system reliability.

Taking Measurements with a Measuring Stick

- Clearances should be measured surface to surface per NESC **Rule 230(3)**.
- When measuring the spacing of attachments at a pole and/or structure, measure center to center per NESC **Rule 230(3)**.
- Place your measuring device on the highest point of ground near the pole on the side to be measured. Avoid any removable objects like loose rocks, excessive dirt piles, etc.
- Due to variation in stick manufacture, individual stick calibration is recommended.
- When measuring clearance between two aerial attachments, lightly set the hook of the measuring device on the bottom attachment, then extend the device until the top of the hook

touches the attachment above. Be sure not to move, pull down on, or raise attachments that are being measured as this can cause inaccurate measurements.

Recommendations for Inspection Procedures

- Make sure that each inspector has a routine that they follow at every pole to ensure consistent performance that considers all potential conditions and not just those that are visibly obvious. (For example, reviewing the condition of all wood, hardware, and equipment attached, climbing quarter, clearances at the pole, clearances at midspan, conditions at the service entrance, etc.).
- Require that all data be recorded in its final format (hardcopy or electronic device) at the time of inspection at the pole. Keeping shorthand notes and entering the official findings in the vehicle or office is not only inefficient, but will result in significant errors.
- If photos are included in the inspection process, outline a standard order in which they are taken at each location. (For example: 1st photo: pole identification number; 2nd photo: overview of entire pole; 3rd photo: close-up of conditions, etc.).

Communication Worker Safety Zone (CWSZ)

The Communication Worker Safety Zone (CWSZ) is defined in **Rules 235C4 and 238E** along with **Tables 235-5, 238-1, and 238-2**.

The NESC requires a Communication Worker Safety Zone on all poles jointly used to support supply and communication lines as well as anywhere in the span where supply and communication lines are within proximity of each other. This includes clearances at the pole (including street lights), midspan pole-to-pole, midspan pole-to-service entrance, and at the service entrance.

It should be noted that clearances at the pole (including street lights) are a vertical measurement, while all other clearances included in the Communication Worker Safety Zone are applicable “in any direction.”

CWSZ: At the Pole (40 inches)

OJUA Coding: PV: SEC/COML

40 inches shall be maintained. No exceptions.

NESC Rule 235C1a, Table 235-5 (Row 1a), 235C4, 238B, Table 238-1, and 239G1. Supply lines and communication lines on the same supporting structure shall have vertical clearances no less than **40 inches**.

NOTE: Measurement is taken from lowest point of power to highest point of communication, including hardware.

ASSUMPTIONS:

Driveway crossing midspan not shown in photos.

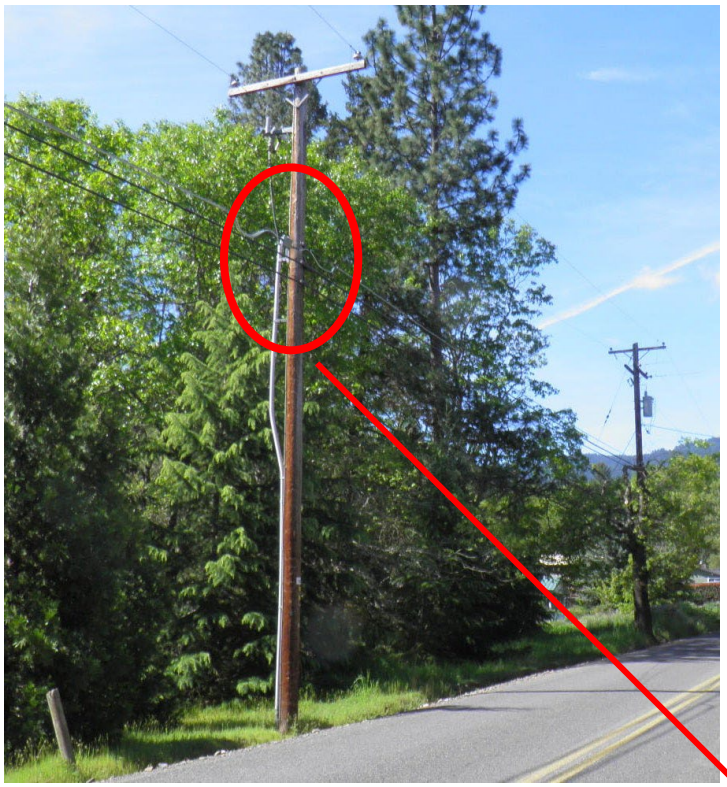
FACTS:

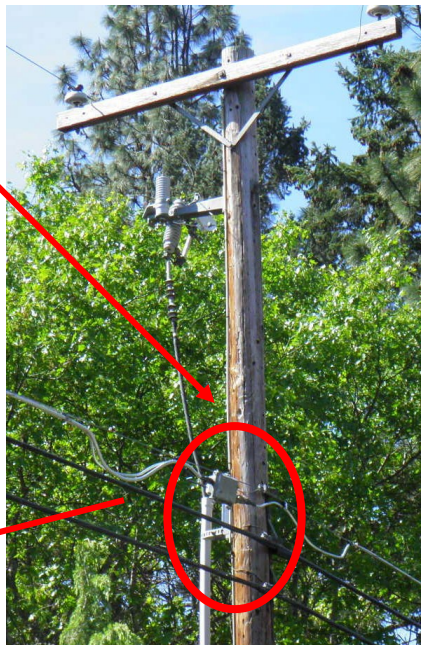
1. Lowest power measurement = 25 feet 7 inches
2. Highest comm measurement = 25 feet 6 inches (cable TV)
3. Other comm measurements in violation:

   Telco = 24 feet 8 inches & 23 feet 10 inches

SUGGESTED BEST PRACTICES:

1. Seek coordination of lowering comms, sharing a cross arm and possibly extending power riser.
2. If ground clearances cannot be maintained, comms consider underground route.





CWSZ: Midspan Pole to Pole

OJUA Coding: MV, SEC, COML

30 inches shall be maintained. No exceptions.

NESC Rule 235C2b(1)(a). Line wires, conductors, and cables supported at different levels on the same structures shall have vertical clearances at the supporting structures so adjusted that the clearance at any point in the span shall be not less than 75 percent of that required at the supports (40 inches) by Table 235-5 for voltages less than 50kV between conductors.

ASSUMPTIONS:

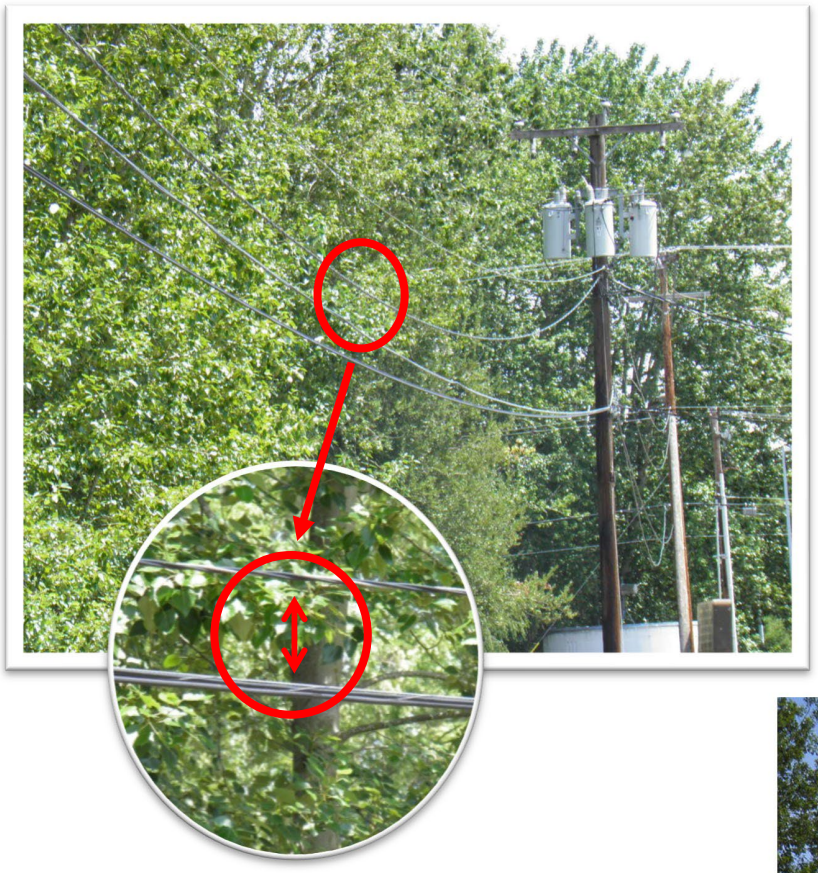
- Driveway is commercial and regular truck traffic is reasonably expected.
- Communication provider attached directly to pole is most recent attachment and the only non-compliant attachment.
- Communication provider on the extension arm is compliant both at the pole and at midspan.

FACTS:

1. Lowest power measurement at midspan = 16 feet 7 inches
2. Highest comm measurement at midspan = 15 feet 3 inches (cable TV)
3. Communication provider attached directly to pole has two associated conditions:
   a. Less than 30 inches to supply at midspan (NESC 235C2b(1)(a))
   b. Less than 40 inches to supply at pole (NESC 235C1a, Table 235-5)

SUGGESTED BEST PRACTICES:

1. Communication provider attached directly to pole should seek a joint arm agreement with other comm provider.
2. If joint arm is not an option, consider underground route.



CWSZ: Midspan Pole-to-Service Entrance

OJUA Coding: MV, COMD, PDRP

12 inches required between supply service drops and communication drops anywhere in the span between the supporting structure and the service entrance.

NESC Rule 235C1, Exception 3. Supply service drops of 0 to 750V running above and parallel to communication service drops may have a clearance of **not less than 12 inches at any point in the span,** including the point of their attachment to the building or structure being served, provided that the nongrounded conductors are insulated and that the clearance as otherwise required by this rule is maintained between the two service drops at the pole.

ASSUMPTIONS:

- Midspan to Mast Scenario: Services are passing over driveway
- Midspan to Structure Scenario: Services are passing over pedestrian-only surfaces

FACTS:

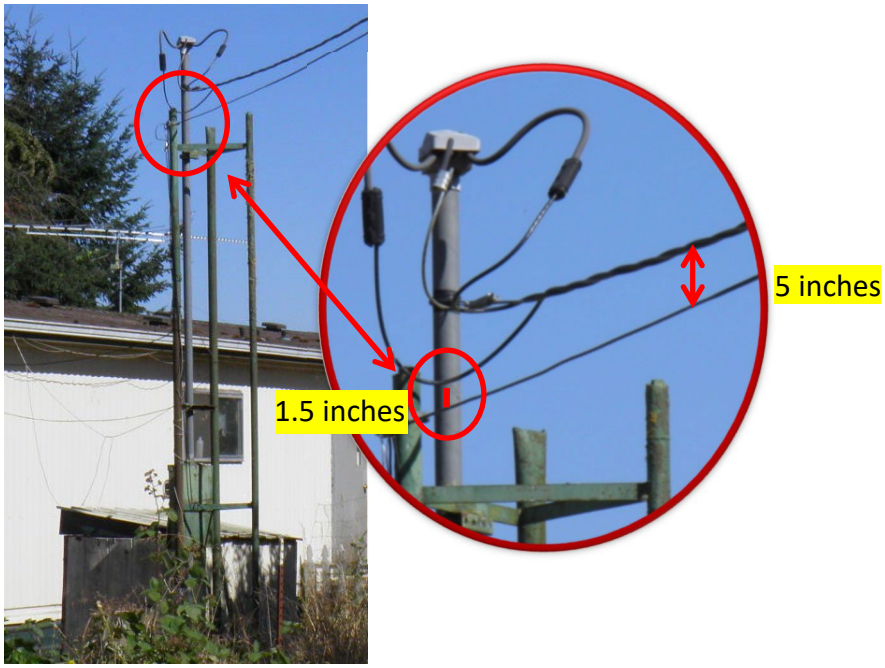
1. Midspan to Mast Scenario: Separation between supply and comm drops = 9 inches
2. Midspan to Structure Scenario: Lowest separation point between supply and comm drops = 1.5 inches

SUGGESTED BEST PRACTICES:

1. Midspan to Mast Scenario: Remove comm drop from mast and relocate.
2. Midspan to Structure Scenario: Move comm drop down on structure to create 12 inches separation.

Midspan to Mast

Midspan to Structure



CWSZ: Street Light Clearances at the Pole

Street lights are one of the few exceptions allowed to be placed inside the 40-inch Communication Worker Safety Zone. However, the NESC does have two separate rules related to clearances between street lights and communication attachments on the same structure. **Both rules apply** and cannot be separated.

Rule 238C applies to the clearance requirement between the street light *mast* or hardware. A mast that is bonded to a ground wire allows for reduced clearances.

Rule 238D applies to the clearance requirement between the street light *service* or drip loop. A covered drip loop allows for reduced clearances. It should be noted that there are many acceptable materials that qualify for a “suitable, non-metallic” covering. If a pole owner uses a rigid cover in normal practice, they may be willing to substitute a flexible cover when it assists in meeting requirements.

CWSZ Streetlight Mast/Hardware

OJUA Coding: PV, COML, SLT

40 inches shall be maintained. See exceptions and reduction allowances below.

NESC Rule 238C. Span wires or brackets carrying luminaires, traffic signals, or trolley conductors shall have at least the vertical clearances from communications equipment set forth in **Table 238-2.**

Span wires and brackets not effectively grounded supporting luminaires *above* messengers carrying communication cables requires **40 inches clearance.** If effectively grounded, **4 inches clearance is allowed.**

Span wires and brackets not effectively grounded supporting luminaires *below* messengers carrying communication cables requires **40 inches clearance.** If effectively grounded, **4 inches clearance is allowed.**

NOTE: Communications attachments supported on cross arms require greater clearances. See Table 238-2.

Exceptions:

Span wires and brackets not effectively grounded supporting luminaires *above* messengers carrying communication cables requires **20 inches clearance**. If effectively grounded, **4 inches clearance is allowed**.

ASSUMPTIONS:

- Communication attachments cannot be lowered due to roadway clearances.
- Street lights cannot be raised without compromising electric utility working space.

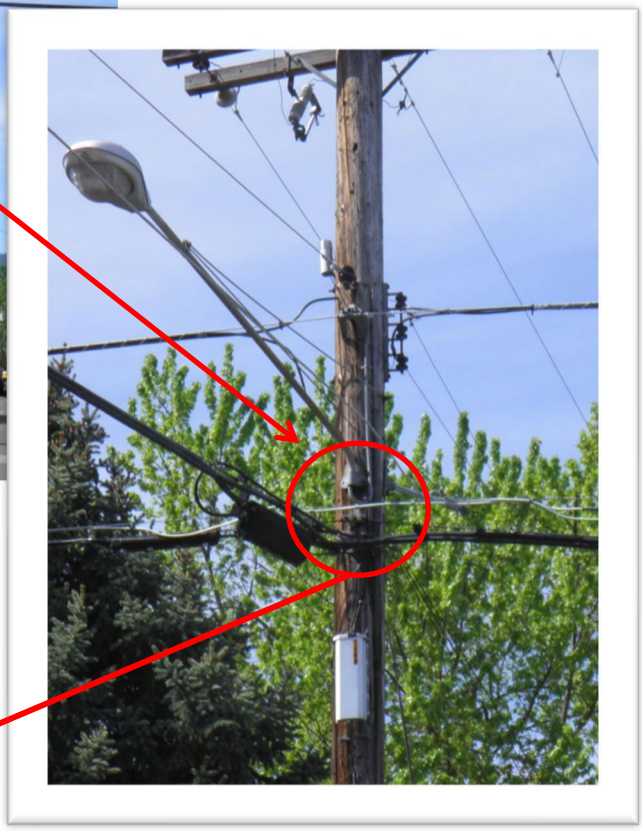
FACTS:

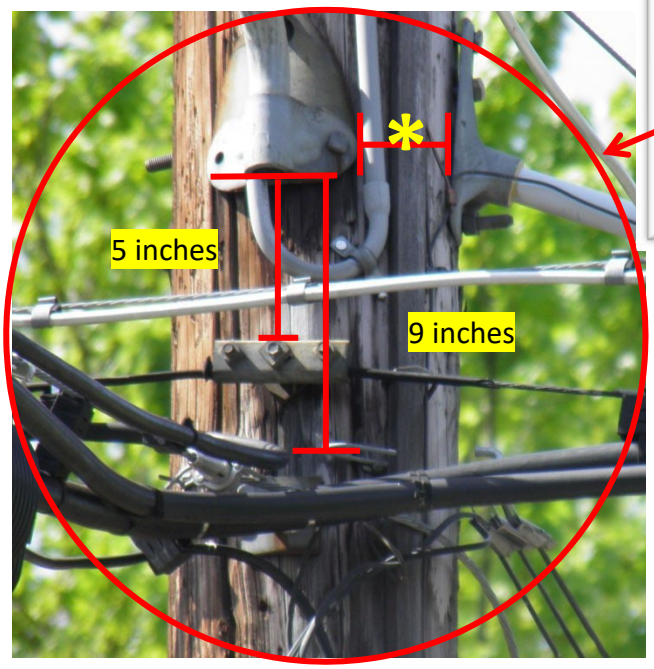
1. There is a vertical pole ground
2. Separation between mast and highest comm = 5 inches
3. Separation between mast and lowest comm = 9 inches

NOTE: In this scenario, the pole does have a vertical pole ground which makes bonding the mast the most practical solution. In cases where installation of a vertical pole ground is necessary in order to bond the mast, it may be cost beneficial to move communication attachments instead, whenever possible.

SUGGESTED BEST PRACTICES:

1. Comm provider that owns the fiberglass arm at the level of the street light will need to move the arm down or use an alternate attachment type and stay below the street light.
2. Request that the light owner bond the mast. (This request can typically be made through the electric utility even when they do not own the lights.)





Mast not bonded to pole ground

See Suggested Best Practice 1 on preceding page.

CWSZ Streetlight Drip Loop

OJUA Coding: PV, COML, SLT

12 inches shall be maintained. See exception below.

NESC Rule 238D. If a drip loop of conductors entering a luminaire, a luminaire bracket, or a traffic signal bracket is above a communication cable, the lowest point of the loop shall be **at least 12 inches above** the highest communication cable, through bolt, or other exposed conductive objects.

Exception: The above clearance **may be reduced to 3 inches if the loop is covered** by a suitable nonmetallic covering that extends at least 2 inches beyond the loop.

NOTE: There is no stated clearance requirement for drip loops of luminaires *below* communication messengers.

ASSUMPTIONS:

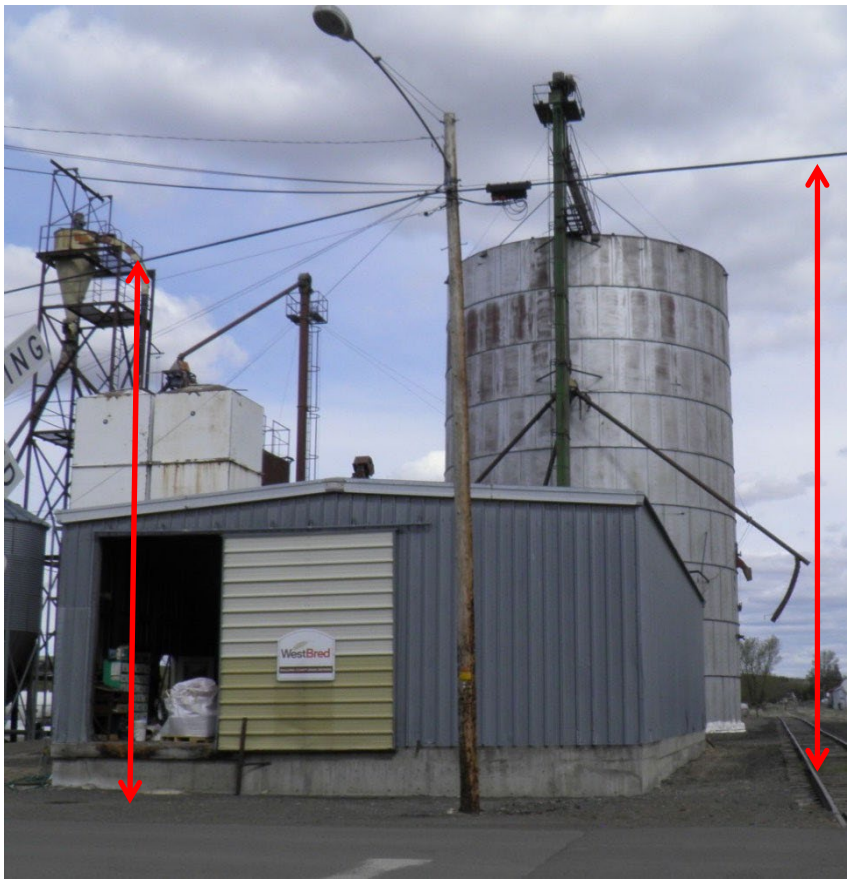
- Comm cannot move down due to railroad and commercial driveway clearances.
- Pole is owned by telephone.
- Street light is permitted on pole.

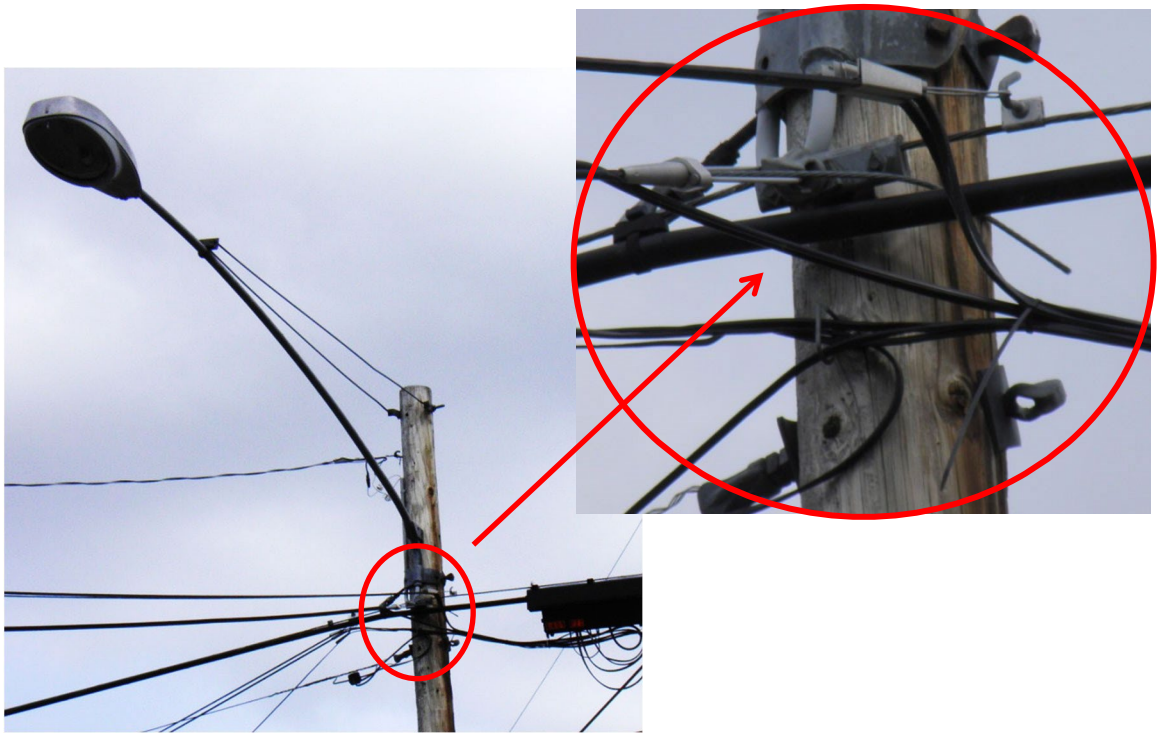
FACTS:

1. Separation between comm attachment point and covered drip loop = 1.5 inches.
2. Mast is not bonded, which creates an additional and separate condition of **Rule 238C**.

SUGGESTED BEST PRACTICES:

1. Ask light owner if there is an alternate type of “suitable, nonmetallic” cover for the drip loop that will create the 3-inch separation needed.
2. Request that the mast be bonded.





CWSZ: Service Entrance Meter Pole or Building

OJUA Coding: BV, COMD, PDRP

12 inches separation between communication and supply must be maintained at service entrances. No exceptions.

NESC Rule 235C1, Exception 3. Supply service drops of 0 to 750V running above and parallel to communication service drops may have a clearance of **not less than 12 inches at any point in the span, including the point of their attachment to the building or structure** being served, provided that the nongrounded conductors are insulated and that the clearance as otherwise required by this rule is maintained between the two service drops at the pole.

ASSUMPTIONS:

- Meter Pole Scenario: Comm cannot lower due to driveway clearance.
- Building Scenario: Comm drop was attached after electric service.

FACTS:

1. Meter Pole Scenario: Separation between comm drop and supply = 5 inches
2. Building Scenario: Separation between comm drop and supply = less than 1 inch

SUGGESTED BEST PRACTICES:

1. Meter Pole Scenario: Comm remove drop from meter pole and request permission to attach to the cover structure over the manufactured home. Alternate: install short extension arm on the meter pole.
2. Building Scenario: Comm to reroute drop.

At meter pole

At building

CWSZ: Service Entrance Clearance: Mast

OJUA Coding: BV, COMD, PDRP

No new communication attachments at mast. See exceptions below.

1993-Current:

The National Electrical Code (NEC) Rule 230-28 specifies that **only power service-drop conductors are to be attached to a service mast.** (NOTE: The OPUC recognizes this NEC requirement to supersede the current NESC allowance for a 12-inch separation on masts. Therefore, the NESC rule may only be applied for the purposes of exceptions attachments on masts prior to 1993.)

Exceptions:

NESC Rule 235C1, Exception 3. Supply service drops of 0 to 750V running above and parallel to communication service drops may have a clearance of **not less than 12 inches at any point in the span, including the point of their attachment to the building or structure** being served, provided that the nongrounded conductors are insulated and that the clearance as otherwise required by this rule is maintained between the two service drops at the pole.

ASSUMPTIONS:

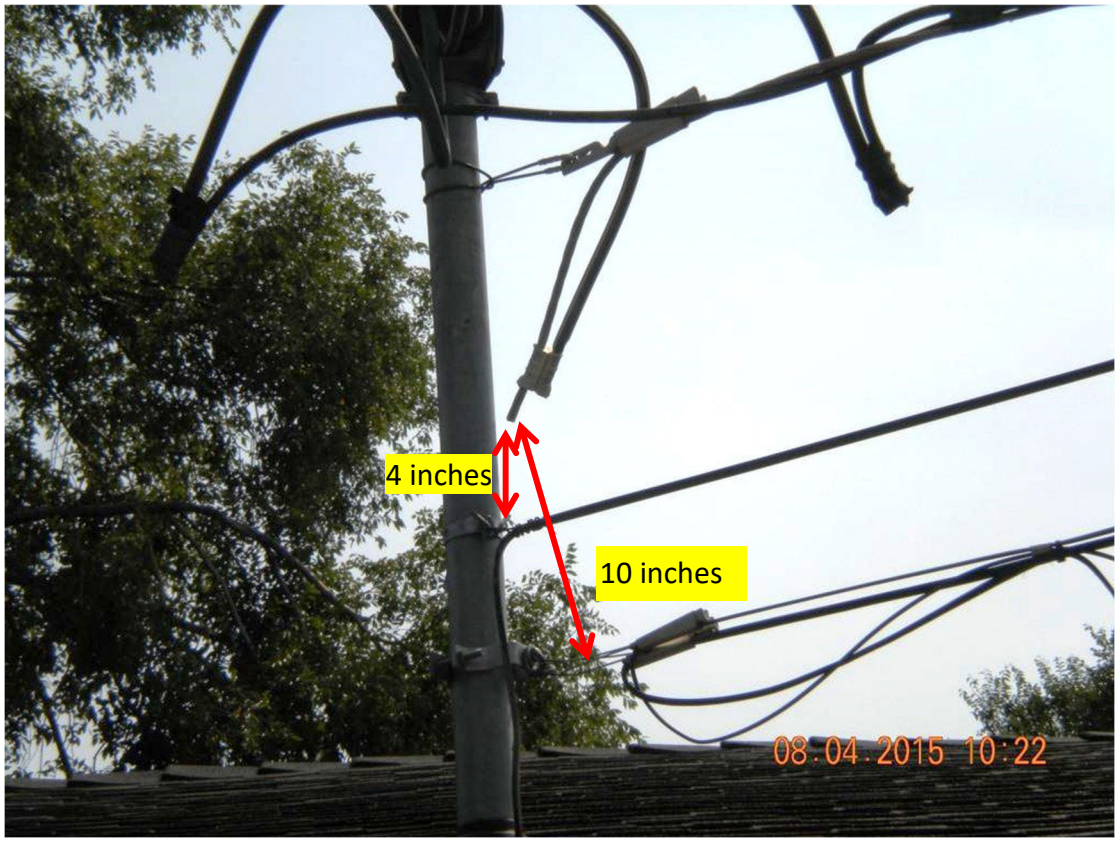
Neither company has records to support original mast attachment dates prior to 1993 and therefore cannot exercise allowance of NESC **Rule 013B3 (Exceptions)**.

FACTS:

1. Supply is greater than 18 inches over roof
2. Clearance between lowest supply and highest comm = 4 inches
3. Clearance between lowest supply and lowest comm = 10 inches

SUGGESTED BEST PRACTICES:

Remove communication drops from the mast and relocate.


4 inches
10 inches
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CWSZ: Other Midspan Clearances

In addition to the Communication Worker Safety Zone, there are clearance requirements between supply and communication facilities when:

1. Supported by different structures and crossing each other at midspan **(Rule 233C1)**, and
2. Supply service drops pass by lateral communication attachments supported on the same structure **(Rule 235E1)**.
3. For clearances of supply drops attached vertically on the pole and running through communication attachment space, see **Rule 239G**.

CWSZ Midspan Clearance: Different Supporting Structures

OJUA Coding: MV, PDRP, COML

24 inches required at crossings between any type of wires or conductors carried on different supporting structures. See footnote reference below for reduction between communication conductors.

NESC Rule 233C1, Table 233-1. The vertical clearance between any crossing or adjacent wires, conductors, or cables carried on different supporting structures shall be not less than that shown in Table 233-1.

Footnote 2: The clearance of communication conductors and their guy span and messenger wires from each other in locations where no other classes of conductors are involved may be reduced by mutual consent of parties concerned, except for fire alarm or railroad conductors.

ASSUMPTIONS:

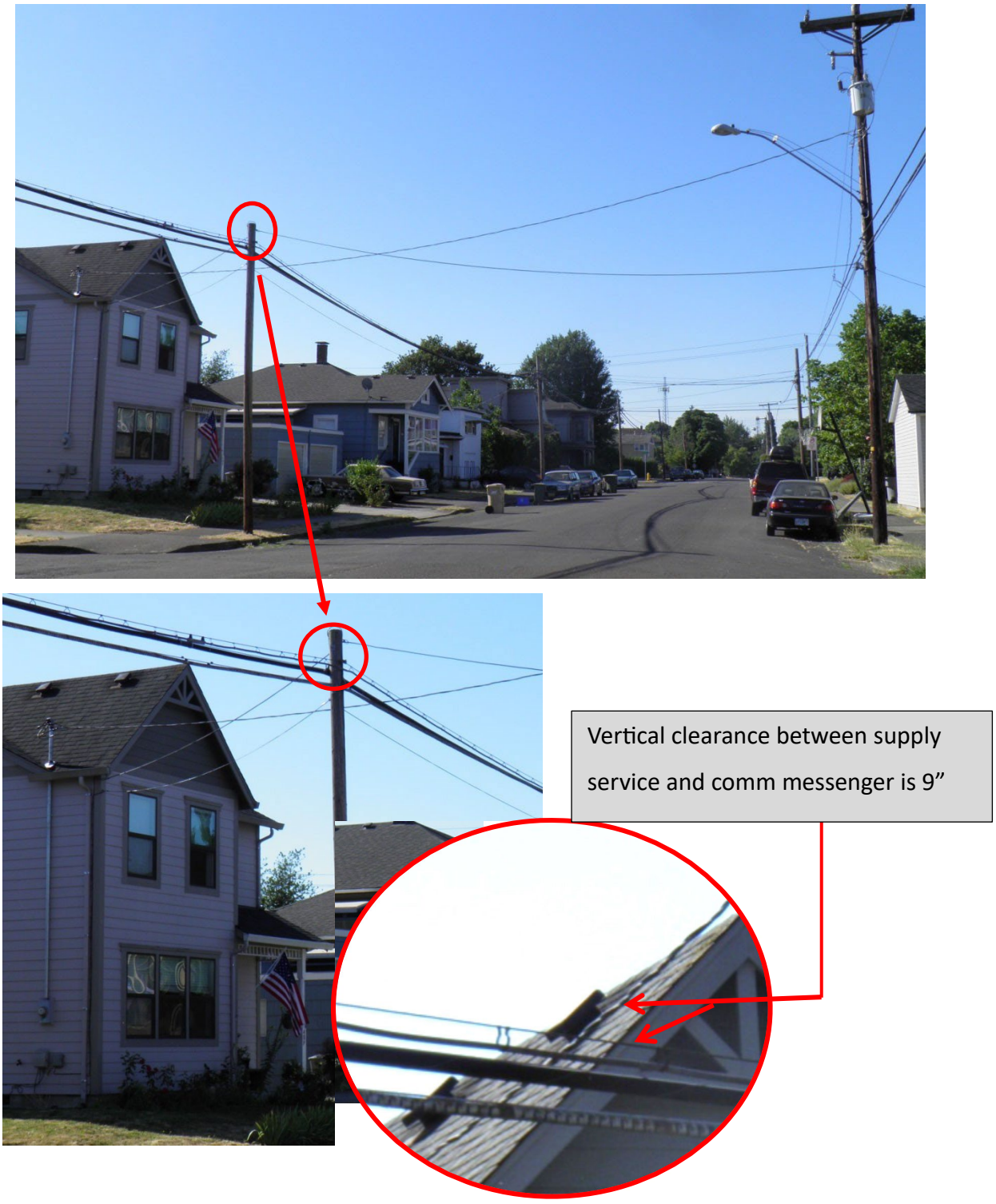
- Communication cannot move down due to road clearance requirements.
- For aesthetic reasons, customer does not want a taller mast even if cost is covered.

FACTS:

Vertical separation between supply svc and comm messenger = 9 inches

SUGGESTED BEST PRACTICES:

Electric utility should request permit for a pole top extension that would allow 40 inches separation on telephone pole until such time that the pole requires replacement.


Vertical clearance between supply service and comm messenger is 9”

CWSZ Midspan Clearance: Supply Service Drop Passing Lateral Communication

OJUA Coding: MV, PDRP, COML

30 inches required when there is a communication messenger attached pole-to-pole and a supply service drop passing by the communication space as it runs from pole-to-point of service. See Exceptions below.

2012-Current:

NESC Rule 235E1, Table 235-6, Row 5b. Clearances in any direction at or near a support from line conductors to supports, and to vertical or lateral conductors, service drops, and span or guy wires, attached to the same support shall be not less than those given in Table 235-6.

Table 235-6, Row 5b (supply service drops in the span) and column titled "Communication lines on jointly used structures" requires **30 inches**.

Exceptions:

Pre-2012: No specific NESC rule requirements. Use **Rule 012C** and maintain best available clearance or, when practical, follow **Rule 239G1&2** which specifies the requirements for covering supply cables that pass vertically through the communication space and are attached directly to the pole.

ASSUMPTIONS:

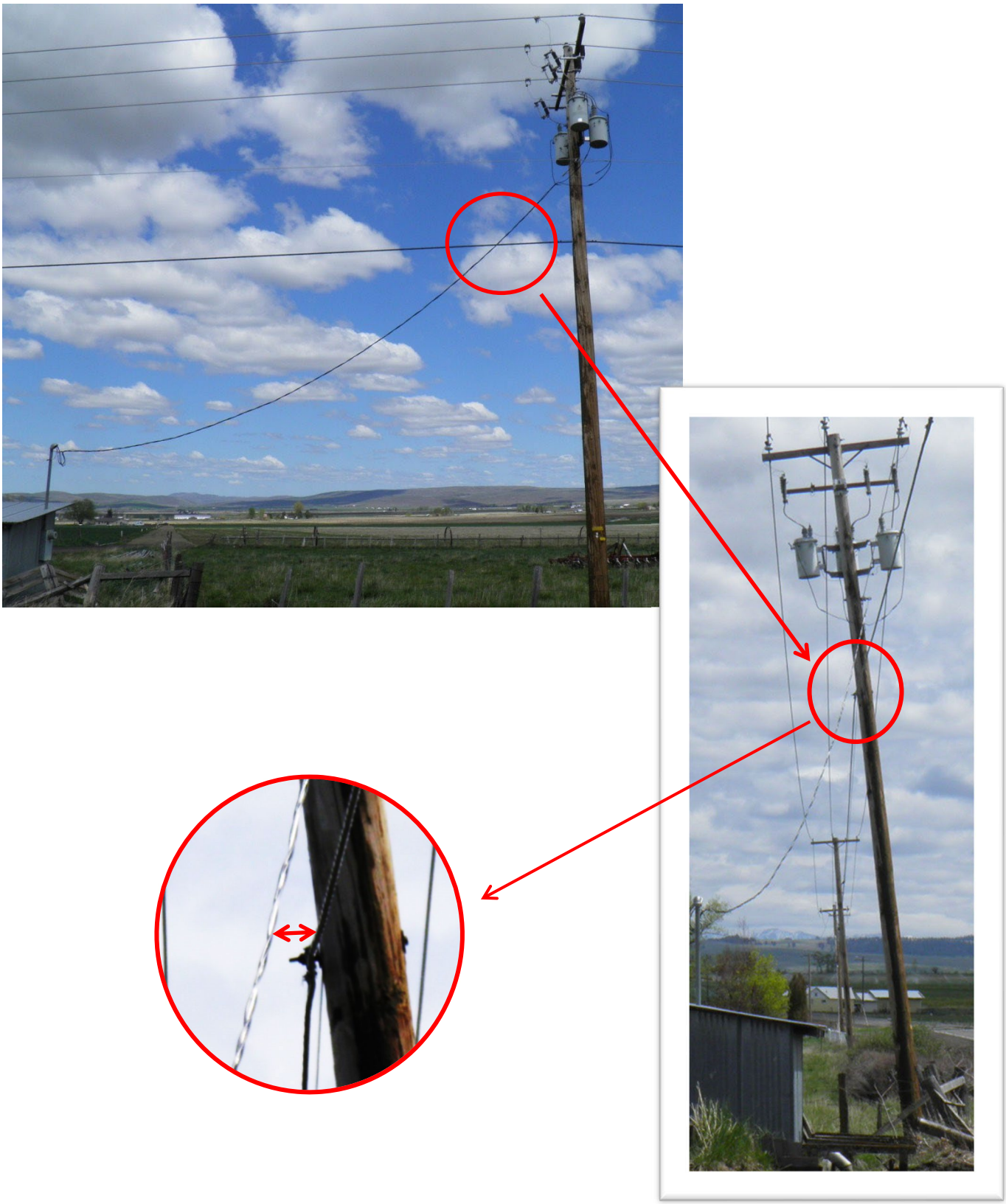
- Condition does not qualify for exceptions because communication attachment was made after 2011.
- Communication attachment cannot be moved far enough down the pole to gain necessary clearance without causing ground clearance condition.
- Midspan crossing over agricultural equipment entrance.

FACT:

Separation between supply service and communication = 4 inches

SUGGESTED BEST PRACTICES:

Move supply service attachment to field side of the pole and replace eye bolt with an extension arm to maintain 30 inches clearances passing by lateral communication attachment.



Communication-to-Communication Clearances

Clearances between communication providers, both at the pole and at midspan, became an NESC requirement in 2007. These requirements are covered by **Rule 235H**, and agreement between all affected parties is required, including the pole owner (as of 2012).

When performing inspections, consideration of exceptions as they apply to this rule is especially important. Much of the construction performed prior to 2007 will not meet current requirements.

Pole Vertical 12 Inches: Comm to Comm

OJUA Coding: PV, COML, COML

12 inches shall be maintained. See exceptions and reduction allowances below.

NESC Rule 235H1. The spacing between messengers supporting communication cables should not be less than 12 inches except by agreement between the parties involved, including the pole owner(s).

Exceptions:

No specific NESC rule requirements. Use **Rule 012C** and maintain best available clearance.

ASSUMPTIONS:

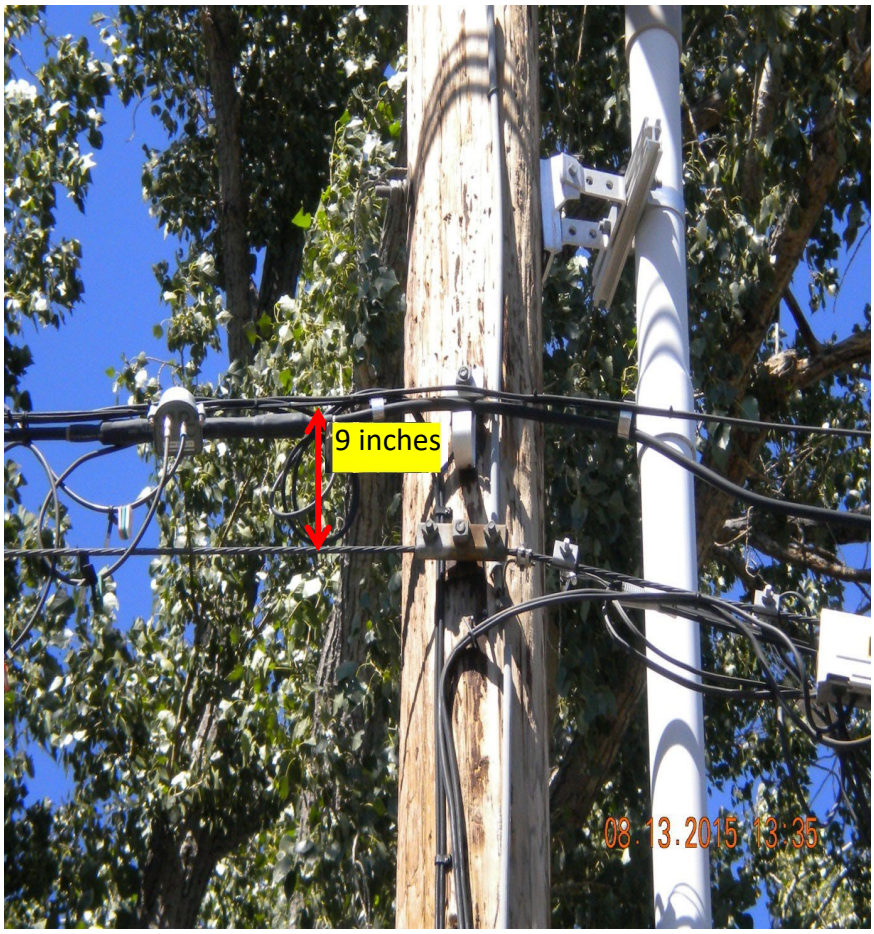
- Lowest comm midspan crossing street at 19 feet not shown in photos.
- No midspan clearance issues with power or comms.

FACTS:

1. Lowest power measurement = 25 feet 4 inches
2. Highest comm measurement = 20 feet 10 inches (cable TV)
3. Lowest comm measurement = 20 feet 1 inch

SUGGESTED BEST PRACTICES:

Highest or lowest comm raise or lower, respectively.


9 inches
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Midspan Vertical 4 Inches: Comm to Comm

OJUA Coding: MV, COML, COML

4 inches shall be maintained. See exceptions and reduction allowances below.

2007-Current:

NESC Rule 235H2. The clearances between the conductors, cables, and equipment of one communication utility to those of another, anywhere in the span, shall be not less than 4 inches, except by agreement between the parties involved, including the pole owner(s).

Exceptions:

No specific NESC Rule requirements. Use **Rule 012C** and maintain best available clearance.

ASSUMPTIONS:

- Lowest comm midspan crossing street south of the pole not shown in photos.
- Driveway crossing near the base of the pole.

FACTS:

1. Lowest power measurement = 28 feet 6 inches
2. Highest comm measurement = 24 feet 2 inches (cable TV)
3. Lowest comm measurement = 23 feet 11 inches
4. Another lower comm may be attaching or removing = 20 feet 5 inches
5. Midspans over street:

   Power = 25 feet 10 inches

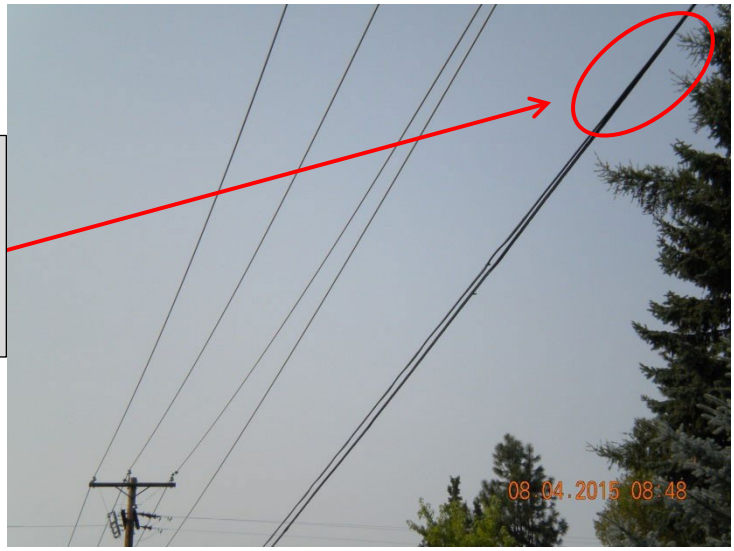
   Highest comm = 17 feet 11 inches

   Lowest comm = 18 feet 4 inches

SUGGESTED BEST PRACTICES:

Lowest comm re-sag span to lower and obtain 4 inches separation.

Wires switch high/ low positions midspan



Interset Structure Clearances

Scenarios on the following pages apply to poles, standalone street lights and other interset structures where wires pass by but are not attached. Both **Rules 234B1** and **234B2** apply; however, it is only necessary to meet one of the two requirements.

Rule 234B1 addresses *horizontal* clearance requirements for wires that are *not* attached to the midspan structure.

Rule 234B2 addresses *vertical* clearance requirements for wires that are *not* attached to the midspan structure.

If a wire meets the horizontal clearance requirement, it does not have to meet the vertical requirement and vice versa.

Interset Poles & Lights: Horizontal Clearance

OJUA Coding: PV, NEUT, COML

5 feet shall be maintained. See exception below.

NESC Rule 234B1a. Wires, conductors, or cables of one line passing near a lighting support, traffic signal support, a supporting structure of a second line, or intermediate poles in skip-span construction, without being attached thereto, shall have a clearance from any part of such structure not less than: **horizontal clearance**, without wind, of **5 feet** for voltages up to 50kV.

Exception: For effectively grounded guys and messengers, insulated communication conductors and cables, neutrals meeting **Rule 230E1**, and cables of 300V or less to ground meeting **Rule 230C1, 230C2, or 230C3**, horizontal clearance **may be reduced to 3 feet**.

ASSUMPTIONS:

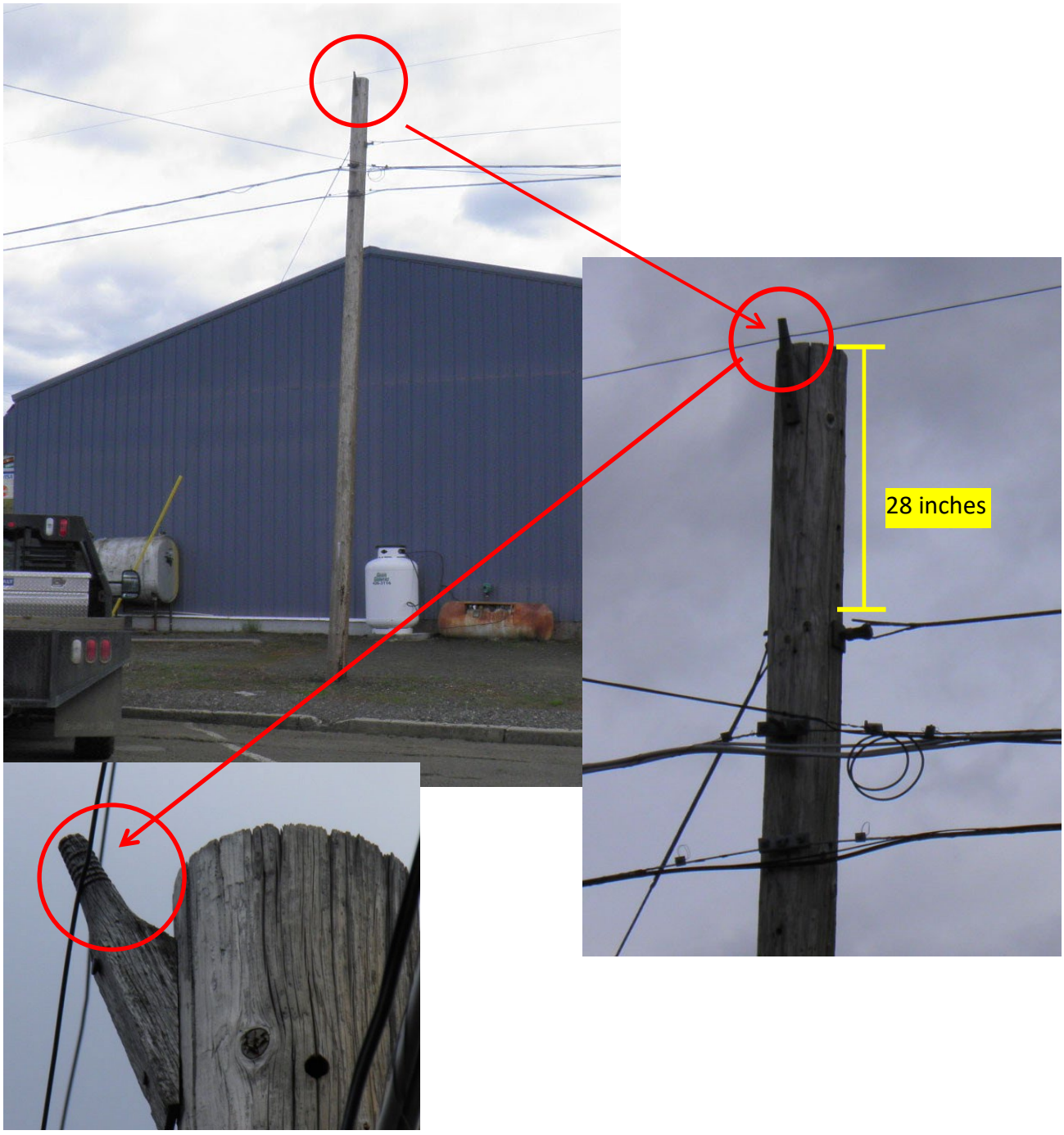
- Electric utility unable to raise or stand-off neutral at poles on either side of interset.
- Owner of interset pole is unwilling to cut 2 feet off of top to meet Exception 1 of **Rule 234B2**.
- Supply neutral either does not meet **Rule 230E1**, or interset pole owner will not permit reduced 30-inch pole attachment clearance **(Footnote 5, Table 235-5)**, so 40-inch vertical clearance at the interset pole will be required if attaching.
- Purpose of the interset pole is to maintain roadway clearance and commercial driveway entrances on either side of the pole, so communications is unable to lower.

FACTS:

1. Supply neutral is contacting communication interset pole without being attached.
2. There is 28 inches of pole space available above the highest communication conductor.

SUGGESTED BEST PRACTICES:

Electric utility should apply to attach to communication interset pole. Attachment will require a non-current-carrying, nonmetallic hardware that supports the neutral at a minimum of 40 inches above the highest point of communication conductor (see **Rules 238A & 238B**).



Interset Poles & Lights: Vertical Clearance

OJUA Coding: MV, NEUT, MPOL

4.5 feet shall be maintained. See exception below.

NESC Rule 234B2. Wires, conductors, or cables of one line passing near a lighting support, traffic signal support, a supporting structure of a second line, or intermediate poles in skip-span construction, without being attached thereto, shall have a clearance from any part of such structure not less than: **vertical clearance of 4.5 feet** for voltages below 22kV and a vertical clearance of **5.5 feet** for voltages between 22kV and 50kV.

Exception 1: For effectively grounded guys and messengers, insulated communication conductors and cables, and neutrals meeting **Rule 230E1** and for cables of 300V or less to ground meeting the requirements of **Rule 230C1, 230C2, or 230C3,** the vertical clearance **may be reduced to 2 feet**.

ASSUMPTIONS:

- Right-of-way will give priority to traffic signal circuit pole.
- Attachment to the traffic signal circuit pole will not be permitted.

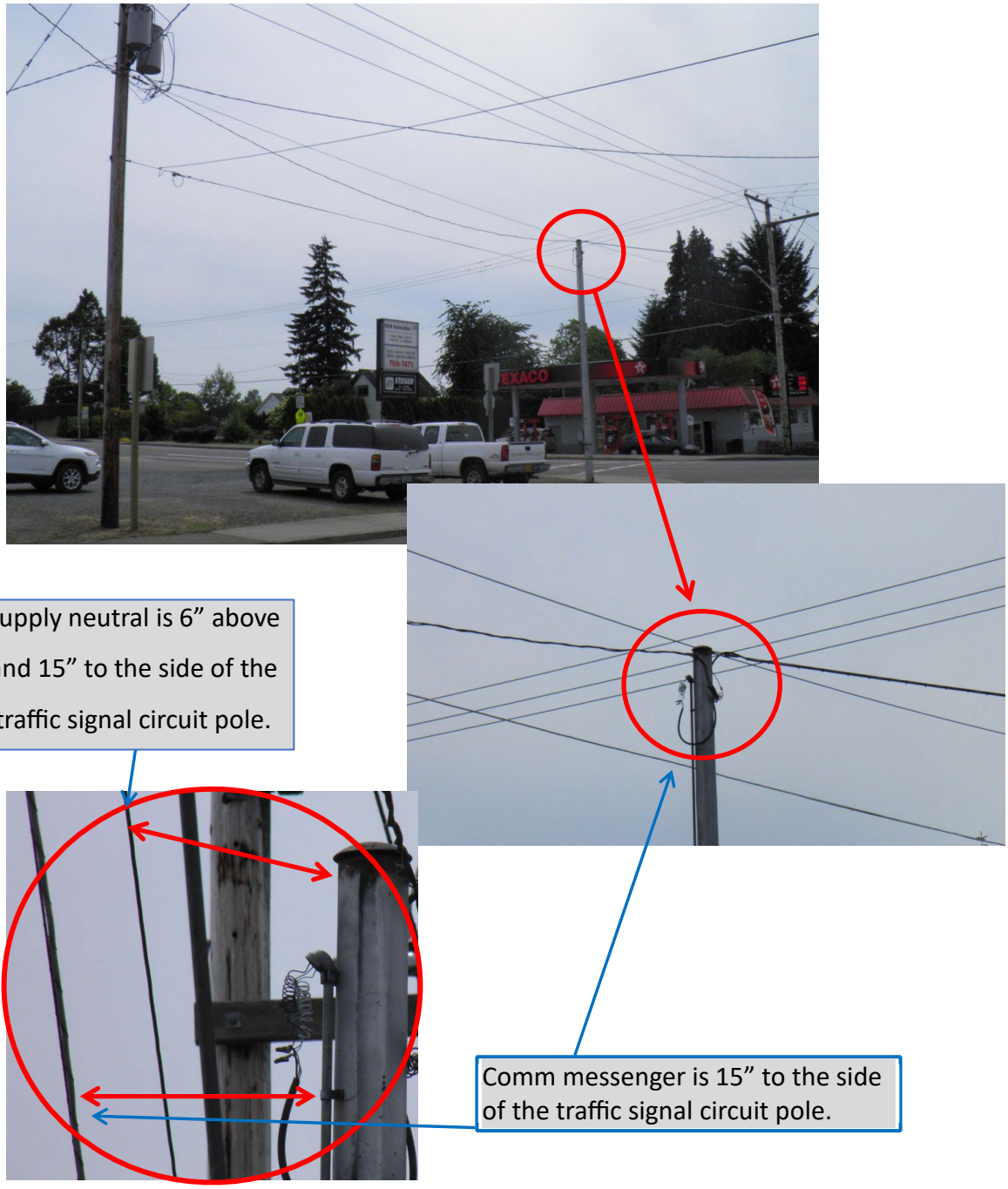
FACTS:

1. Supply neutral is 6 inches above and 15 inches to the side of the traffic signal circuit pole.
2. Comm messenger is 15 inches to the side of the traffic signal circuit pole **(Rule 234B1a)**.

SUGGESTED BEST PRACTICES:

1. Supply may have the option of raising the neutral on the primary pole that is on the opposite side of the intersection to gain 2 feet vertically over the traffic signal circuit pole. If not, placing the neutral on an extension arm on both primary poles to gain 3 feet horizontal clearance is recommended.

2. Communication may have the option to serve the customer from another route and remove the span in conflict. If not, placing the communication on a cross arm or extension arm to gain 3 feet horizontal clearance on either side of the traffic signal circuit pole is recommended.



Other Condition Types

Climbing space, climbable structures, and communication or supply conductors contacting guys are all NESC conditions.

Additional information regarding climbing space: The requirement for unobstructed climbing space is covered in **NESC Rule 236**.

While it is true that the majority of utility work on poles is now accomplished using ladders and bucket trucks, climbing space is still of critical importance in cases such as access restrictions, weather-related events, and emergency rescue of co-workers.

Climbing Space: Communications

OJUA Coding: PC, COML, POLE

Open quarter from base to top of pole which may include adjacent transition areas. No exceptions. See below for allowances.

NESC Rule 217A4b. Attachments shall neither obstruct the climbing space nor present a climbing hazard to utility personnel.

NESC Rule 236. Climbing space needs be provided on one side or corner of the support only. Climbing space shall extend vertically past any conductor or other part between levels above and below the conductor, but may be shifted from any side or corner of the support to any other side or corner ("transition zone"). A "transition zone," consisting of an imaginary box 30 inches square, extending 40 inches above the highest communication cable or other facility and 40 inches below the lowest communication cable or other facility, must be maintained in the event that there is not a clear quarter.

All supply and communication equipment (such as transformers, cable terminals, amplifiers, etc.) shall be mounted outside of the climbing space.

ALLOWANCES: Any portion of the supporting structure (such as guys) included in one side or corner of the climbing space, support arms, and vertical runs physically protected by suitable conduit or protective covering and securely attached *without spacers* to the surface of the structure are not considered to obstruct the climbing space.

OREGON NOTE: The OPUC safety staff does not recognize **Rule 236G** as allowable. This part of the rule pertains to the ability to climb past longitudinal runs.

ASSUMPTIONS:

TV's intention was to stay on the primary neutral attachment side of the pole, but this actually resulted in obstructing the only available climbing quarter due to the existing telephone attachment route.

FACTS:

No open quarter through the communication attachment area.

SUGGESTED BEST PRACTICES:

TV to cut and splice strand and reroute coax feeder to opposite side.

Facing north

Facing south

Climbable Structures

OJUA Coding: RIS, SOB, SOB

8 feet separation required from lowest accessible surface to next handhold.

NESC Rule 217A2c. Standoff brackets on supporting structures shall be arranged so that there is not less than 8 feet between either:

1. The lowest bracket and ground or other accessible surface, or
2. The lowest two brackets.

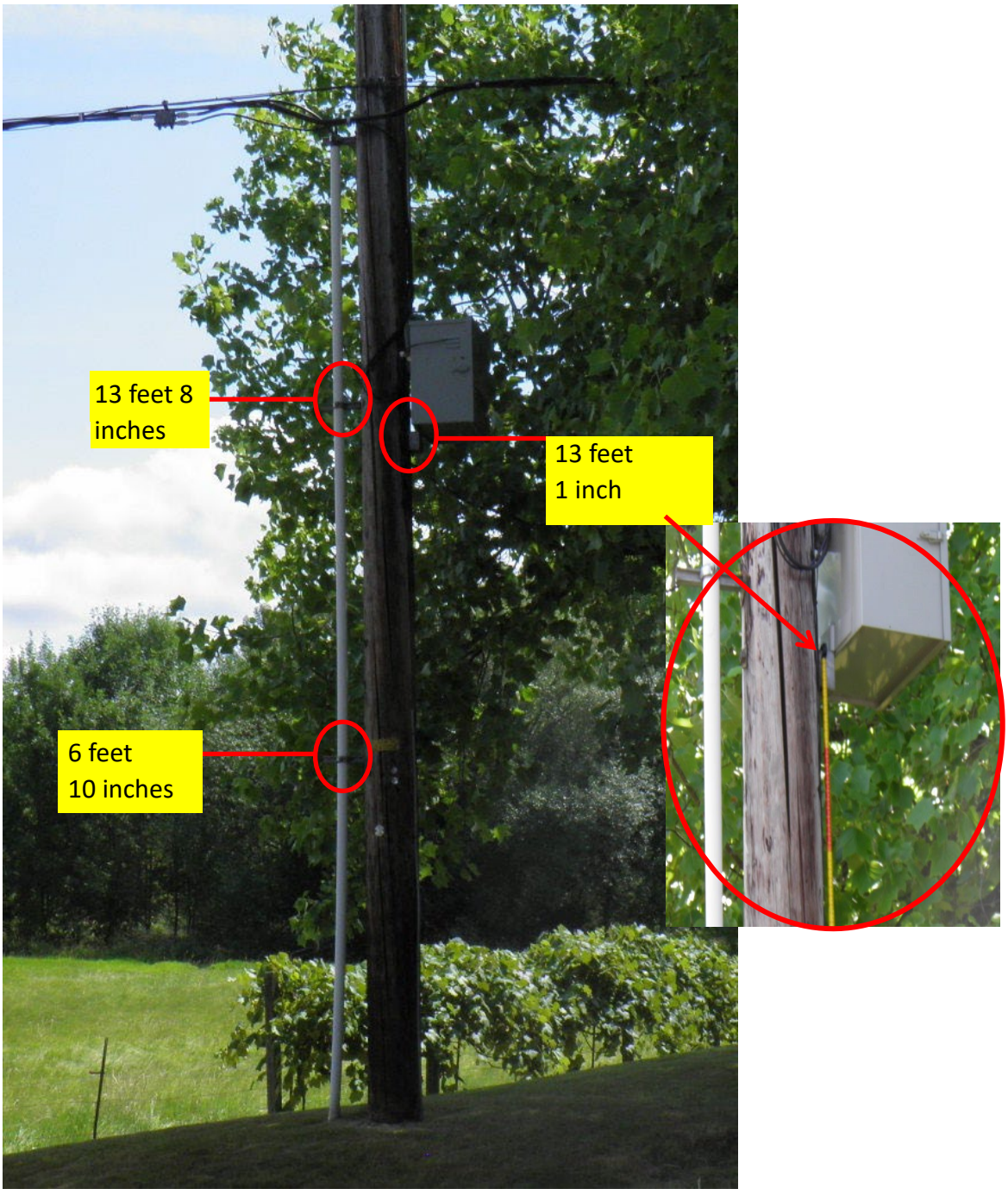
Exception: This rule does not apply where supporting structures are isolated.

FACTS:

1. Lowest bracket measurement = 6 feet 10 inches
2. Next handhold measurement = 13 feet 1 inch (6 feet 3 inches separation from lowest bracket)
3. Second bracket measurement = 13 feet 8 inches (6feet 10 inches separation from lowest bracket)

SUGGESTED BEST PRACTICE:

Depending on the location of the conduit joints, either lower the bottom bracket to create at least 8 feet separation to the next reachable support or raise the bottom bracket to create at least 8 feet clearance above ground.


13 feet 8 inches
13 feet 1 inch
6 feet 10 inches

Midspan Clearance: Conductor to Anchor Guy

OJUA Coding: MH, COML, GUY

6 inches required between conductors and anchor guys on jointly used structures. No exceptions. See allowances below.

NESC Rule 235E1, Table 235-6, Row 2b. Clearances in any direction at or near a support from line conductors to supports, and to vertical or lateral conductors, service drops, and span or guy wires, attached to the same support **shall be not less than 6 inches**.

Footnote 1. For guy wires, **if practical.** For clearances between span wires and communication conductors, see **Rule 238C**.

On jointly used structures, guys that pass within 12 inches of supply conductors, and also pass within 12 inches of communication cables, shall be protected with a suitable insulating covering where the guy passes the supply conductors, unless the guy is effectively grounded or insulated with a strain insulator at a point below the lowest supply conductor and above the highest communication cable.

The clearance from an insulated or effectively grounded guy to a communication cable may be reduced to 3 inches when abrasion protection is provided on the guy or communication cable.

ASSUMPTION:

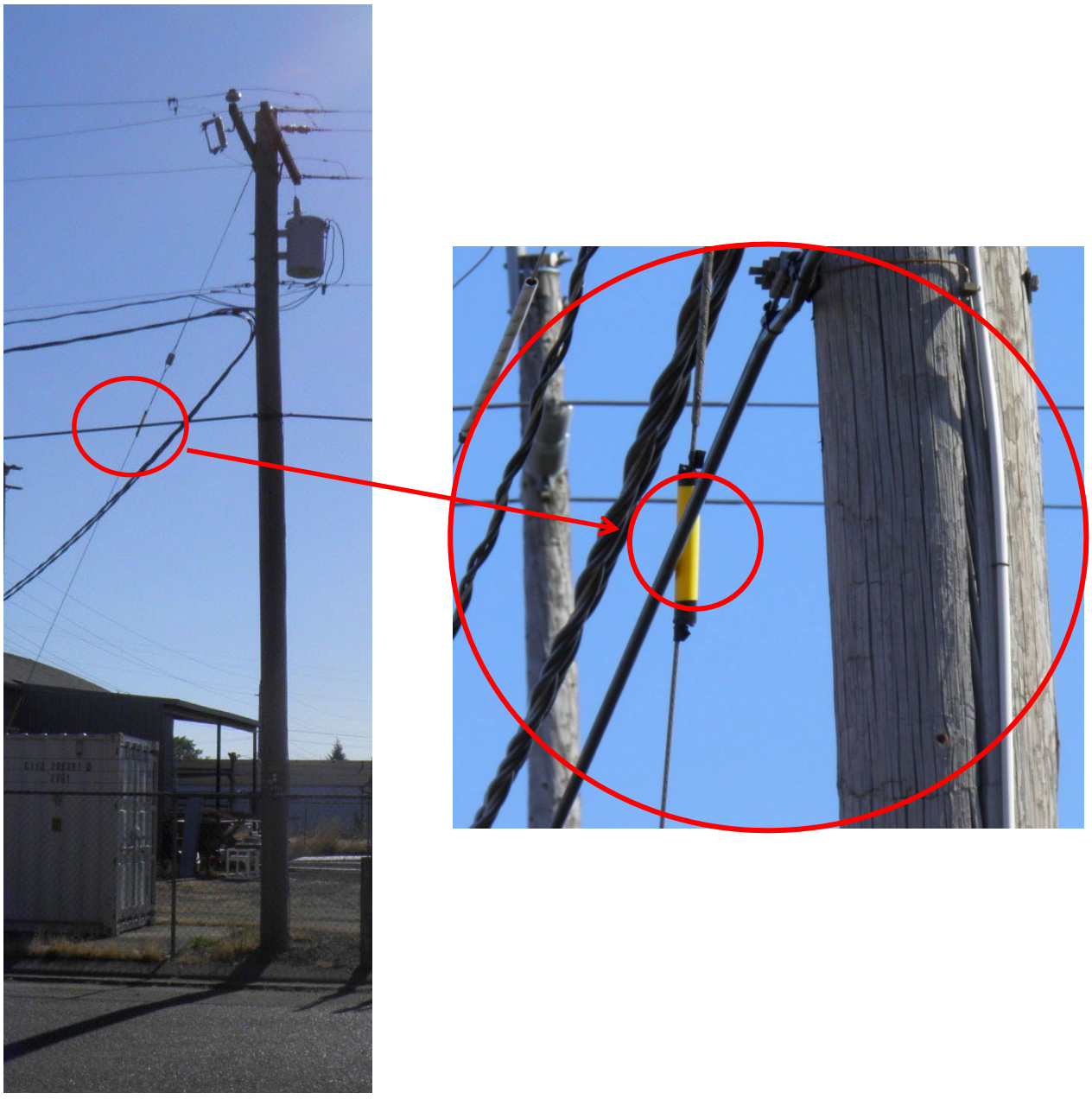
Changing the location of the guy is not a practical solution.

FACT:

Communication messenger is contacting the anchor guy.

SUGGESTED BEST PRACTICES:

Put communication messenger on an extension arm.



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Chapter 2: Joint Corrections Best Practices

A publication of the Oregon Joint Use Association

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Chapter 2: Corrections Table of Contents

Joint Use NESC Corrections: General Information

Committee Information

Problem Statement: Multiple utilities attached to the same utility pole structure having a misalignment of inspection schedules and differing inspection criteria results in an increased administrative burden and reduces operational efficiency without commensurately increasing safety.

Goals for committee:

- Maintain compliance with the intent of the Oregon Administrative Rules (OARs).
- Inspection over 10 years, most corrections in 2 years.
- List of ways to reduce costs to administer Inspection-Correction Programs:
- Areas for exploration (including coordination amongst all attached to the pole):
- Program: Overall program administration models—review the OJUA Inspection Correction—full committee involvement
- Criteria: Set within the scope of the inspection program
- Scheduling of program activities: Administration, inspection, correction, post-inspection
- At fault criteria

NOTE: First, this document is by design a reference guide of suggestions that can be employed individually, or in its entirety when considering joint utility corrections. Second, it is recommended (for simplicity of use), that it is used in conjunction with a joint inspections program as the natural progression from inspections to corrections work flows.

Joint Corrections Definition

Joint Corrections is a method applied to correcting National Electrical Safety Code (NESC) violations and/or conditions for multiple utilities on the same pole and the associated service drops concurrently.

Statement of Purpose

With the complexities in logistics to coordinate joint use corrections on a pole, Joint Corrections is where the utilities on the pole collaborate with as few visits to the pole as necessary to complete the corrections and ensure safety and reliability of the utilities on the pole.

This document is designed to answer questions and provide recommendations for utilities that are exploring opportunities to create efficiencies, reduce costs, become more compliant to the NESC, and create a more reliable, resilient, and safe plant.

Advantages

- **Saves time**
    - Creates efficiencies with fewer trips to the pole by utilizing a single entity that completes all corrections identified in one visit to the pole.
    - Reduces/eliminates the need for make ready requests.
    - Reduces administrative burden, minimizing logistical management.
    - Reduces disputes between Joint Correction participants.
    - Improves experience for the public as there are fewer visits to the pole.
- **Saves money**
    - Reduces overall costs, by some form of split of the correction cost.
    - A single shared deployment fee, locate cost, traffic control, and necessary permitting.
    - The least-cost solution as a correction methodology employed.

- **Improves reliability and quality** as all corrections on the pole are completed at the same time, creating a longer period between inspections with no safety issues on the pole.
- **Higher attainable quality** by using a single corrections crew provider, with a standardization of correction methodologies can be more easily tuned to achieve the highest quality and consistency across all crews.
- **Reduces risk and creates greater safety** by having all the identified violations and conditions corrected promptly, improving reliability.
- **Achieves compliance** for all participants on the jointly corrected pole; sustains compliance for a longer period of time.

Administration

It is the recommendation that the predominant utility in the region manage the overall joint corrections work, to include the following:

- Establish an agreed-upon list of violations that will be included to be jointly corrected.
- Identify the poles to be jointly corrected.
- Identify the crews (internal or contract) to complete the corrections.
- Identify the correction billing methodology.
- Calculate the cost for each participant's corrections—overall cost provided by contractor or internal resources.
- Establish contractual agreements with the joint inspection participants.

Correction Crew Methodologies

Internal Resources: In this method, the company managing the Joint Corrections program would utilize their own internal crews to complete the corrections. The internal crews could be employees of their company, a contractor they engaged, or a combination of employees and contractors. Billing is made by the company managing the program at a set rate agreed upon in the contract and/or scope of work with the joint correction participants.

Common Contractor: In this method, the company managing the joint corrections program would engage a corrections vendor (contractor) that is acceptable to all the joint corrections participants. That corrections vendor would be responsible for tracking the work completed at the pole for each participant, billing each participant separately based upon the work completed for that participant, and reporting all the completed work back to the managing organization.

Modified Common Contractor: In this method, the company managing the joint correction program would have the power utility complete their corrections first, and then engage a communications common contractor to complete all the remaining communication violations. If scheduled effectively, the communications vendor could be scheduled to work in concert with the power utility to ensure clearance issues weren't conflicted or corrections from one corrections entity didn't conflict with the other. This method ensures the appropriate qualified worker is being employed.

Even Split Method: This method applies the use of an internal correction crew or external contractor that corrects all the violations on the pole for all participants, and when billed, each participant is billed an equal percentage of the total bill per pole.

- The company managing the program would perform the billing.
- This methodology requires all participants to be attached to the pole, and all participants to have a required correction on that pole.
- This methodology excludes poles that have attachees that are not participants, which limits the number of the poles that can be corrected jointly.
- It can address service drop corrections for the attachments on the pole, or they can be excluded. If excluded, another visit to address the service drop corrections would be required.

Per Pole Unit Price: In this method, each participant that has an attachment on the pole would be charged the same specific price per pole regardless of the number of corrections required at the pole, and/or on the service drops stemming from that pole. Participant would not be charged if they are not attached to a pole.

NOTE: While trialing these methodologies, it is recommended that the Internal Resources method or the Common Contractor method be employed, as both methods are simpler and more efficient to manage, utilizing the least-cost corrections solution.

List of Recommended Correction Violations

***NOTE:** Apply the least cost, best solution method.

****NOTES:** As applicable to the responsible company repairing the violation, review violations in advance of considering for joint correction.

1. Clearance Issues:
    a. Pole Vertical violations to power (qualified supply space worker)
    b. Pole Vertical violation to the ground
    c. Pole Vertical violation communications to communications
    d. Mid-Span Vertical violation to power (same structure or another structure). Dependent on the violation (must be a qualified supply space worker if power movement is required)
    e. Mid-Span Vertical violation to the ground (drivable surface (not including highways) or pedestrian surface). Dependent on the violation (must be a qualified supply space worker if power movement is required)
    f. Mid-Span Vertical violation communications to communications
    g. Building Vertical violations
    h. Building Horizontal violations
    i. Pole Horizontal
2. Pole transfers (simple transfers only (77% of all transfers)), to include pole removal and disposal. (No transfers that have a riser, or bare cable larger than a drop; or requires splicing.)
3. Abandoned hardware:
    a. J-Hooks, D-rings, mounting brackets, etc.
    b. Service drops (if obviously disconnected on either end)
    c. Pole steps (exceptions would be ductile iron, or steel poles)
4. Stand-off brackets:
    a. Spacing
    b. Missing
    c. Abandoned
5. Broken or missing ground wires (must be a qualified supply space worker if ground wire is tied to neutral; or a qualified Comm worker if bonded comms above)

6. Grounding/bonding:
    a. Streetlights (qualified supply worker)
    b. Down Guys (A qualified supply space worker if the down guy is in in the power space)
    c. Messengers
7. Damaged conduit risers, placing split conduit/duct
8. Damaged, loose, or missing down guys
9. Damaged or missing mounting hardware
10. Damaged/broken lashing wire (qualified supply space worker for secondary)
11. Idle pole removal
12. Cable tagging
13. Pole tagging

Appendix: OJUA Codes, Abbreviations, and Sample Corrections Form

Originally published in 2005, the OJUA Codes & Abbreviations provide a convenient short-hand method of identifying deviations, attachments, and equipment associated with joint use programs. Use of these codes and abbreviations and the following inspection form are not required; they are available for use by any organization that may not already have a similar process in place.

Abbreviation of Codes

Violations

Deviation Code (DEV.)	Code
Abandoned	AB
Building	BD
Building/Horizontal Clearance	BH
Building/Vertical Clearance	BV
Damaged/Broken	DB
MidSpan/Horizontal Clearance	MH
MidSpan/Vertical Clearance	MV
Missing	MS
Out of Lead	OL
Pole Leaning	PL
Pole/Climbing/Working space	PC
Pole/Grounding	PG
Pole/Horizontal Clearance	PH
Pole/Marking	PM
Pole/Riser	PR
Pole/Structure	PS
Pole Transfer Needed	PT
Pole/Vertical Clearance	PV
Underground	U

Attachments

Attachment Type (Type)	Code
Communication drop	COMD
Antennas	ANT
Communication equipment other	CEO
Communication fiber-optic	COFO
Communication main line	COML
Conduit	CON
Conduit-metal	MCON
Cross-arm	XARM
Cross-arm (fiberglass)	XARF
C-Wire	CWR
Down guy	GUY
Load coil	LOAD
Messenger	MESS
Overhead Guy	OGUY
Pedestal	PED
Platform	PF
Pole to pole guy	PPG
Power meter	PMR
Power neutral	NEUT
Power primary	PRI
Power secondary	SEC
Power service drop	PDRP
Power service support wire	PSSW
Power street light	SLT
Power supply	PS
Power switch	SWCH
Power transformer	XFMR
Private party attachment	PVT
Repeater	REP
Riser	RIS
Signs	SIGN
Stand off brackets	SOB
Supply fiber-optic	SPFO
Terminal	TRM
Traffic Signals	TRS
X-Box	XB

Equipment (EQUIP. 1 & 2)	Code
Anchor	ANC
Anchor (auxiliary)	AANC
Antennas	ANT
Bridge	BR
Bridle Wire	BWR
Building	BLDG
Communication drop	COMD
Communication equipment other	CEO
Communication fiber-optic	COFO
Communication main line	COML
Conduit	CON
Conduit-metal	MCON
Cross-arm	XARM
Cross-arm (fiberglass)	XARF
Cross-arm Braces	XARB
Curb	CURB
C-Wire	CWR
Downguy	GUY
Downguy Tail	GUYT
Driveable surface	DRSR
Fence	FENC
Fire hydrant	HYD
Ground rod	GRND
Ground Wire	GRWR
Guy marker	GM
Hardware	HDWR
Insulator	INS
Lashing wire	LWR
Messenger	MESS
Load coil	LOAD
MGN	MGN
Overhead Guy	OGUY
Padmount equipment	PAD
Pedestal	PED
Pedestrian surface	PEDS
Platform	PF
Pole	POLE
Pole step	STEP
Pole to pole guy	PPG
Pole-Metal	MPOL
Power Bracket	PBRK

Base Pole Information

Timber Species (Material)	Code
Douglas fir	DF
Jack Pine	JP
Lodgepole Pine	LP
Red Pine	NP
Southern Pine	SP
Southern Yellow Pine	SYP
Western Red Cedar	WC
Western Larch	WL
Ponderosa Pine	WP
Concrete	CC
Fiberglass	FG
Laminated	LM
Metal/Steel	ST

Equipment (EQUIP. 1 & 2)	Code
Power capacitor	PCAP
Power Cutout	PCUT
Power Drip-loop	PDLP
Power jumpers	JUMP
Power mast	PMST
Power meter	PMR
Power neutral	NEUT
Power primary	PRI
Power secondary	SEC
Power service drop	PDRP
Power service support wire	PSSW
Power street light	SLT
Power supply	PS
Power switch	SWCH
Power transformer	XFMR
Private party attachment	PVT
Railroad	RR
Repeater	REP
Riser	RIS
Roof	ROOF
Sidewalk fixture	SWF
Signs	SIGN
Stand off brackets	SOB
Stencils	STN
Subscriber Network Interface	SNI
Supply fiber-optic	SPFO
Terminal	TRM
Traffic Signal Bracket	TRSB
Traffic Signals	TRS
Trees/Vegetation	TREE
U-Guard	UGRD
Unaccessible surface	UNSR
Unusual support	UNSP
Water surface	WSR
Weather head	WH
Window	WIN
X-Box	XB

Attachments

Inches rounded to the nearest tenth
1" = .1
2" = .2
3" = .3
4" = .3
5" = .4
6" = .5
7" = .6
8" = .7
9" = .8
10" = .8
11" = .9

Action Needed
Attach
Attach mid-span
Bury
Contact Jump Pole
Ground/Bond
Guard
Lengthen
Lower
Lower CATV
Lower Fiber
Lower Neutral
Lower Other
Lower Power
Lower Secondary
Lower Telco
Make Ready
Move 1st attachment
Move mid-span
Move to Span
Place
Place BSW
Place California top
Place clearance pole
Place Cross-arm
Place Distribution Strand
Place mid-set pole
Place Sidewalk Fixture
Place split duct
Place taller pole
Raise
Raise CATV
Raise fiber
Raise neutral
Raise other
Raise Power
Raise secondary
Raise Telco
Refer to Engineering
Relocate Insulator
Relocate/Move
Remove
Repair
Replace
Shorten
Shorten Drip Loops
Tighten
Transfer
Trim

Glossary of Terms

Abandoned Hardware/equipment (AB): Equipment or hardware attached to a pole, within the mid-span or at the point of the service attachment that is no longer in use and should be flagged for removal. Examples of the type of hardware and/or equipment might be J-hooks, secondary (TX), conduit, wedge grips, riser straps, meters, standoff brackets, coiled cable/conductor, and mule tape.

Anchor Dugout (AD): A condition where the soil around an anchor has been washed away and/or has exposed more than 36 inches of the anchor shaft.

Aluminum Ground Wire (AG): A condition where an aluminum ground wire has been used and a bi-metallic connector is not installed to the ground rod. It is necessary to call this condition because an aluminum connection condition to exposed soil can create electrolysis, which leads to galvanic corrosion at the connection point of the ground rod.

Abandon Anchor (AH): A condition where the down guy is no longer attached, and the anchor is no longer in use and remains in the ground.

Avian (AV): May be a standalone pole dedicated to an avian platform, or a distribution pole with or without a platform and/or avian guards on the conductors to prevent birds of prey from mounting or nesting on the power facilities.

Buried Anchor (BA): An anchor head, bale and/or vise that is buried below grade.

Broken Ground (BG): A condition where the ground wire is broken, cut, or missing from the neutral, ground rod, or metal riser.

Building Horizontal (BH): Reduced horizontal clearance of conductors adjacent but not attached to the buildings (pole to pole) and reduced horizontal clearance of conductors attached to building as the service drop approaches the building.

Bootleg (BL): Unpermitted or unlicensed attachments to PGE poles. Also known as an Unauthorized Attachment.

Bad Order Pole (BO): A condition in which a pole has been found to be defective and requires replacement. Reasons for replacement may be mechanical damage, insect infestation, internal/external decay, woodpecker holes, hollow heart, split top, treatment type, etc. Also known as a Reject Pole.

Broken Pole (BP): A pole that is cracked and/or literally broken at any point in its length and should be replaced with urgency. Typically, this level of damage rises to the level of an imminent hazard.

Bad Tag (BT): A pole tag that is no longer legible due to wear and/or physical damage, or the tag has the incorrect map/section/pole number on it and should be replaced.

Building Vertical (BV): A condition where a conductor and/or cable has inadequate vertical clearance for a building and/or structure.

Conduit Damage (CD): A condition where a conduit is either broken and/or separated and can exist with or without conductor or cable in it.

Customer Equipment (CE): Customer-owned equipment at or on the pole, or at the residence and/or business that creates a safety concern, or hazard. Conditions such as customer owned lights, cameras, basketball hoops, etc.; or the customer's meter base that may be damaged (to include the weather head) or may have impaired clearance.

Clip Tails (CP): A condition where the down guy wire from a pole extends past the bail at the top of the anchor and poses a safety risk to the public.

Damage Broken (DB): Any condition where hardware, equipment, conductor, or a pole has some degree of damage and requires some form of repair, replacement, or monitoring.

Drive Ground Rod (DG): A condition where the ground rod is sticking above the grade of the soil or surface.

Missing Insulator (GA): Down guys and/or anchors that are subject to galvanic corrosion, and where an insulator on the down guy is missing.

Guy Broken (GB): A condition where the guy from a pole is either broken or is slack (inadequate tension).

Insulated Guy (GI): A condition where a guy is not bonded to the neutral/pole ground or is missing an insulator.

Guy Marker (GM): The plastic sleeve wrapped around the down guy just above the anchor installed to bring visible attention to the down guy to reduce its likelihood of damage or injury to the public.

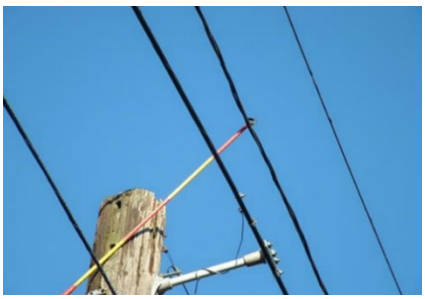
Insect Infestation (IN): A condition where a wood pole structure is found to be infested with insects, which have or will deteriorate the wood pole structure.

Leaching Pole (LP): A condition where the preservative seeps from a wood pole onto the ground. All wood poles treated with preservative will leach in some form or fashion. The concern is excessive leaching that may impact the environmental conditions.

Leaking Transformer (LT): A condition where the oil from inside a transformer is leaking outside of the transformer as identified on the case of the transformer or on the ground.

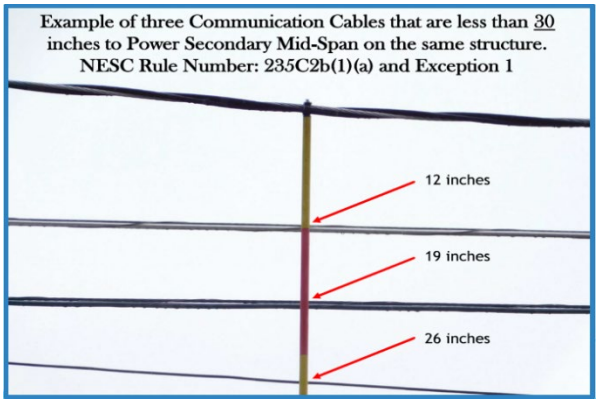
Loose Wire (LW or LWR): Any wire or cable (including pole ground) that is not securely attached to the surface of the structure in a manner that reasonably prevents visible slack between attachment points.

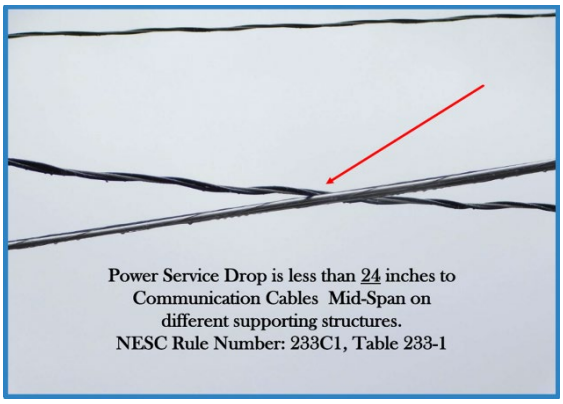
Mid-Span Horizontal (MH): A clearance condition where a conductor or cable is near a non-building structure (i.e., lighting support, traffic signal support, or a sign). This is also used for unusual conductor supports, such as tree attachments.



Mis-Mapped (MM): A pole that is not located in the same position on the GIS map as it is in the field.

Mid-Span Vertical (MV): A clearance condition where the conductor or cable has inadequate vertical clearance at the mid-span between conductors/cables or above a drivable, pedestrian, rail, or water surface.


Example of three Communication Cables that are less than 30 inches to Power Secondary Mid-Span on the same structure.
NESC Rule Number: 235C2b(1)(a) and Exception 1
12 inches
19 inches
26 inches


Power Service Drop is less than 24 inches to Communication Cables Mid-Span on different supporting structures.
NESC Rule Number: 233C1, Table 233-1

Missing (MS): Hardware that may not have been installed but is required to ensure proper functionality and safety.

Not Accessible (NA): A condition where PGE's facilities (pole, vault etc.) or meter being served is not readily accessible to the inspection or line crew and requires customer support to gain the proper access. Conditions may include a locked gate, aggressive dogs, escort requirements, or a hostile customer.

No Contact (NC): A condition where the conductors (including neutral wire) are leaning hard against pole, metal brace, transformer case, guy wire, or streetlight.

No Longer Attached to Pole (NP): A condition where the pole is in the application/database but there is no longer equipment attached.

Not Tagged (NT): Typically used for communications attachments, where there is no tag identifying ownership of their facilities.

Open Wire (OW): This condition is reserved to identify secondary conductor or service drops which do not have insulation.

Pole Butt (PB): Also known as a Double Pole. A condition where a pole replacement has occurred and all the facilities have been transferred to the new pole, but the old pole itself has not been removed.



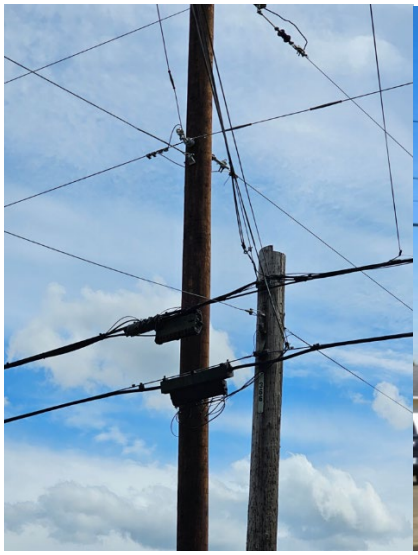
Pole Climbing (PC): A condition where the equipment attached to the pole, such as stand-off brackets, conduits, etc., or adjacent objects, such as, but not limited to, fire hydrants, fences, block walls, telephone pedestals, etc., allow the pole to be readily climbed by unauthorized persons.


Pole Dug Out (PD): A condition where a pole has been washed out, dug out, or shifted at its base, creating an unsafe condition to pedestrians (tripping/falling hazard), and the potential where the pole's vertical stability is compromised.

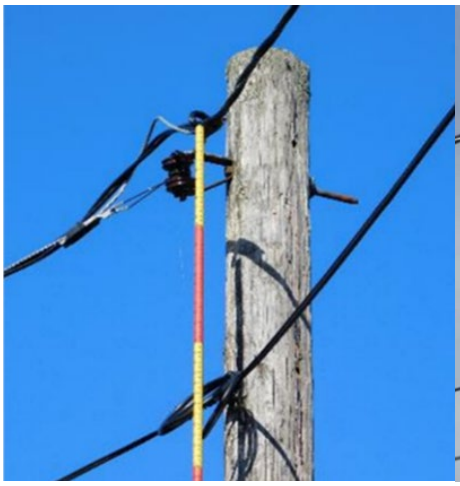
Pole Horizontal (PH): A condition where the pole is too close to another object or surface, (e.g., hydrants, streets, railroad track, etc.) and potentially needs to be relocated or protected.

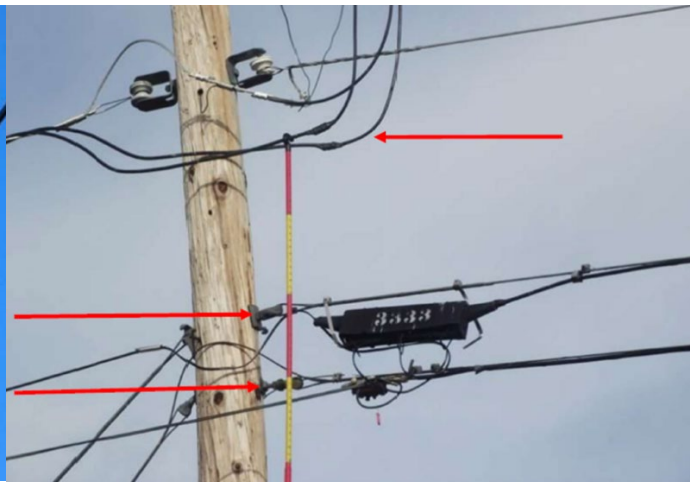
Pole Leaning (PL): A condition where the pole leans more than 4 ft as measured from the top of the pole.


Pole Transfer (PT): A condition where a new pole has been placed and all the facilities have yet to be transferred to the new pole from the old pole.




Pole Vertical (PV): A condition where the attached facilities at the pole (on the same structure) are too close to each other, or too close to the ground.





Step Removal (SR): A condition used to identify pole steps that need to be removed from a pole.

Unusual Condition (UC): Use this code when no other codes apply, and the condition requires commentary to explain.

Vegetation (VG): A condition where vegetation growing around the facilities or on the pole is creating a condition of deflection, strain, or abrasion to the conductor. This condition is also used when minimum clearance requirements are not met and/or when conductors are encroached by vegetation and present a fire risk.

Cross Arm (XA): A condition of damage, split, or decay on a cross arm.

Joint Use Pole (JU): A utility pole that is used by multiple utilities other than the pole owner. An example would be a power utility that owns a pole and multiple communication utilities (e.g., cable, fiber, telephone, etc.) are attached.

Definitions

Alley Arm: A side arm brace; used when cross-arm is not balanced on both sides of pole but extending out on one side only.

Anchor: A rod installed into the ground to provide support and/or stability to a utility pole, connected to the pole with a down guy.

Avian Pole: A utility pole with no utility conductor or wire attachments, specifically installed to divert bird nesting away from utility poles within the area.

Clearance Pole: A utility pole that is installed to correct a low conductor/cable clearance condition.

Communication Pole: A utility pole where there is no power conductor attached. Typically accommodating communication cables only. May also accommodate a span-guy from a distribution pole.

Communication Workers Safety Zone (CWSZ): NESC 235c4 designates "the area between the supply space and the communications space," for the purpose of keeping unqualified communications workers out of the supply space. *This is the space on a distribution pole between the highest communications facility and the lowest power facility.*

Cross Arm: A brace that provides support and stability for insulators, conductors, and other electrical equipment in overhead line construction.

Cut Out: A device that contains a fuse for overload protection, and to disengage and isolate (open) a circuit.

Distribution Pole: A utility pole designed to carry lower voltage primary (below 57kV) and secondary power from the substations to the customer.

Down Guy: A wire secured to a pole and an anchor designed to provide support to a pole.

Guy Pole: A utility pole installed specifically for the purpose of supporting the guy when there is inadequate space to install a down guy and anchor.

High Low Guy: A wire secured between poles, where one side is secured low on the pole so as to act in place of an anchor, to support the pole on the high side.

Insulator: Non-conductive material used to support and separate electrical conductors by not allowing current through themselves.

Least Cost Corrections Solution: A correction solution that costs the least amount that achieves full correction of the violation/condition, regardless of who created it, or to whom responsibility was assigned.

Mid-Set Pole: (AKA inset pole, skip pole) A utility pole installed in the pole lead to accommodate the required clearance between poles.

Mid-Span: The area the conductors and cables travel between the poles or to a structure, typically, 3 ft away or from the pole or structure attachment location.

Oregon Administrative Rules (OARs): The regulations that state agencies adopt to carry out statutes from the Legislature.

Oregon Public Utility Commission (OPUC): The chief electric, gas, and telephone utility regulatory agency of the government of the U.S. state of Oregon.

Pole, Primary: A utility pole used to support distribution primary conductors and supporting facilities.

Pole to Pole Guy: A wire secured between poles designed to provide support to one or both poles.

Pole Top Extension: (AKA California Top) An attachment designed to extend the height of the pole through the use of a cross arm or additional attachment.

PUPI Arm: An alternative fiberglass brace that provides support and stability for insulators, conductors, and other electrical equipment in overhead line construction, often used when space on a pole is limited.

Riser: A vertical cable or conduit that is transitioning from an underground plant to a pole's aerial plant.

Service Drop: The overhead conductors between the electric supply or communications lines and the building or structure being served.

Service Pole: A utility pole installed between the pole lead and the customer termination location (e.g., weather head, facia board, etc.) to ensure the proper clearance of the cable/conductor.

Stand Off Bracket: A bracket used to support and secure a riser cable or conduit as it vertically travels up or down a pole.

Transmission Pole: A utility pole designed to carry larger conductor and transmission power from the generation facility to a substation and from a substation to another substation. In PGE's service territory, a transmission pole is designated for power 57kV and above.

(SAMPLE) STATEMENT OF WORK AND AGREEMENT

(ADMINISTRATING COMPANY NAME) JOINT CORRECTIONS

This Statement of Work and Agreement ("SOW") is effective on the date of the last signature below (the "Effective Date") and is entered into by and between **(Administrating Company Name)**, an Oregon corporation, and _____ ("Licensee"). (ADMINISTRATING COMPANY NAME) and the Licensee are referred to individually as a "Party" and collectively as "Parties."

WHEREAS, (ADMINISTRATING COMPANY NAME) and Licensee are parties to an agreement that by its terms grants Licensee the non-exclusive right to attach and maintain overhead facilities (as defined in 2.A. below) on (ADMINISTRATING COMPANY NAME) infrastructure; and

WHEREAS, pursuant to Oregon Administrative Rules (the "OARs"), and specifically OAR 860-024-0011 and -0012, each Party has an obligation to conduct detailed inspections of its overhead facilities to identify and correct violations of the National Electrical Safety Code ("NESC") as modified or supplemented by OAR chapter 860, division 024; and

WHEREAS, the Parties desire to take an integrated and cooperative approach to fulfilling their respective correction obligations under the OARs through a joint correction program; and

WHEREAS, the Parties hereto desire to identify, in writing, each Party's responsibilities related to this cooperative effort for joint corrections of overhead facilities, subject to the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the premises set forth above and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. TERM. This SOW is effective on the Effective Date noted above and expires on _____, 20___ (hereafter, the "Term"). On or before the expiration of this SOW, the Parties may enter into a new agreement that covers the responsibilities of the Parties related to joint corrections for the 20___ calendar year.

2. (ADMINISTRATING COMPANY NAME)'S ROLES AND RESPONSIBILITIES.

A. (ADMINISTRATING COMPANY NAME) shall be responsible for overseeing and conducting joint corrections (hereafter "Corrections") on behalf of itself and Licensee to identify and, to the extent appropriate, make corrections, consistent with those identified in paragraph 2.B., related to probable violations of the NESC (as modified or supplemented by OAR Chapter 860, Division 024) on overhead facilities involving clearances, climbing space, grounding, and safety hazards that have been identified by a previous joint visual inspection. For purposes of this SOW, "overhead facilities" includes power lines or electrical supply lines, telegraph, telephone, signal or communications lines and the associated plant, systems, supporting and containing structures, equipment, apparatus, or appurtenances located above-ground, most typically on utility poles. This corrections project does not include the correction of underground facilities.

B. Corrections will apply to the following listed conditions, observed to exist on overhead facilities on which (ADMINISTRATING COMPANY NAME) and/or the Licensee are attached which have been captured, per pole, in a previous joint inspections report:

I. Clearance issues:
   a. Pole Vertical violation to power
   b. Pole Vertical violation to the ground
   c. Pole Vertical violation to communications
   d. Mid-Span Vertical violation to power (same structure or another structure)
   e. Mid-Span Vertical violation to the ground (drivable surface [not including highways], or pedestrian surface)
   f. Mid-Span Vertical violation to communications
   g. Building Vertical violation
   h. Building Horizontal violation
   i. Pole Horizontal

II. Pole transfers (simple transfers only [77% of all transfers]), to include pole removal and disposal

III. Abandoned hardware:
   a. J-Hooks, D-rings, mounting brackets, etc.
   b. Service drops
   c. Pole steps

IV. Stand-off brackets:
   a. Spacing
   b. Missing
   c. Abandoned

V. Broken or missing ground wires

VI. Grounding/bonding:
   a. Streetlights
   b. Down guys
   c. Messengers

VII. Damaged conduit risers

VIII. Damaged, loose, or missing down guys

IX. Damaged or missing mounting hardware
X. Damaged/broken lashing wire ((ADMINISTRATING COMPANY NAME) will secure the lashing wire, but will not replace)
XI. Idle pole removal

C. (ADMINISTRATING COMPANY NAME) shall conduct corrections in accordance with the "Joint Corrections Specifications" attached as Exhibit A to this SOW. To the extent (ADMINISTRATING COMPANY NAME) elects, in its sole discretion, to utilize a third-party contractor to perform corrections, (ADMINISTRATING COMPANY NAME) retains the right to select the contractor(s) of its choice and agrees to manage any such contract entered with said contractor to perform the corrections. Notwithstanding the preceding sentences in this paragraph, each Party will remain solely responsible for the design and implementation of its own quality control ("QC") and quality assurances ("QA") associated with the corrections performed by (ADMINISTRATING COMPANY NAME) or its contractor. To the extent Licensee's QC or QA program identifies any issue(s) or concern(s) with one or more corrections performed under this SOW, Licensee shall promptly communicate such issue(s) and/or concern(s) to (ADMINISTRATING COMPANY NAME) in writing, so that such can be addressed by (ADMINISTRATING COMPANY NAME) with the contractor and/or those individuals who performed the Correction(s). At a minimum, any issue(s) and/or concern(s) reported by Licensee must include as much detail as is known or available to Licensee, including but not limited to a map, pole number(s), address(es) or intersection near the pole(s), city/county in which such pole(s) is/are located, and a description of the issue(s) and/or concern(s) identified through the Licensee's QC and/or QA process. ALL SERVICES ARE PROVIDED "AS IS." NEITHER (ADMINISTRATING COMPANY NAME) (NOR ITS AFFILIATES, CONTRACTORS, DIRECTORS, OFFICERS, EMPLOYEES, AND AGENTS) MAKES, HAS MADE OR SHALL BE DEEMED TO MAKE OR HAVE MADE ANY WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, WITH RESPECT TO ANY SERVICES TO BE PROVIDED HEREUNDER, WITHOUT LIMITATION, ANY WARRANTY AS TO COMPLIANCE WITH SPECIFICATIONS, WORKMANSHIP, MERCHANTABILITY, FITNESS FOR ANY PURPOSE, USE, OR OPERATION.

3. LOCATION OF CORRECTIONS. During the Term of this SOW, (ADMINISTRATING COMPANY NAME) shall conduct Corrections in (List Locations) within (ADMINISTRATING COMPANY NAME)'s service territory, in accordance with the (ADMINISTRATING COMPANY NAME) FITNES 10-Year Overhead Inspection Program

4. CORRECTION REPORT. On a monthly basis, (ADMINISTRATING COMPANY NAME) shall provide Licensee with a correction report in an electronic, Microsoft Excel format that details the Corrections conducted by (ADMINISTRATING COMPANY NAME) on behalf of itself and Licensee for the previous month. The correction report will specifically identify (by map grid, pole number and/or other identifier) any overhead facilities found to contain one or more of the conditions and/or violations listed in Section 2.B. While correcting the list of conditions and/or violations, (ADMINISTRATING

COMPANY NAME) will strive to be consistent with standards and the coding system set out by the Oregon Joint Use Association.

5. LICENSEE'S ROLES AND RESPONSIBILITIES. Licensee shall do the following with regard to joint corrections:

Licensee	Determine Licensee's overhead facilities to be corrected within the location of Correction areas as noted in Section 3.
Licensee	Within five (5) business days after the start of the Term, provide (ADMINISTRATING COMPANY NAME), by email or other electronic means, with a current and useable export of applicable shapefiles for purposes of mapping Licensee's facilities intended for correction.
Licensee	Within five (5) business days after the start of the Term, provide (ADMINISTRATING COMPANY NAME), by email or other electronic means, with a current and useable export of pole attribute data, including a record of permitted licensee attachments (as applicable).
Licensee	Ensure that (ADMINISTRATING COMPANY NAME) has the right to access all overhead facilities, including providing keys and reasonable assistance as necessary for access to Licensee's facilities.
Licensee	Within five (5) business days after the start of the Term, provide specific details to (ADMINISTRATING COMPANY NAME) of any correction criteria that are inconsistent with the latest version of the NESC or OARs.
Licensee	Pay invoices in accordance with this SOW.

6. INVOICING AND PRICING. (ADMINISTRATING COMPANY NAME) shall invoice Licensee no later than the 15th of the following month for Corrections conducted during the previous month, and Licensee shall pay such invoices within thirty (30) calendar days of receipt of such invoice. Total estimated Licensee's cost for the 20__ Corrections is estimated at $_____, based on an estimated cost of known violations utilizing the rates listed in the Rate Schedule.

7. INVOICE TRUE-UP. Once (ADMINISTRATING COMPANY NAME) has completed the Corrections identified in Section 2 during the Term, (ADMINISTRATING COMPANY NAME) shall review actual incurred correction costs as compared to costs invoiced to Licensee (hereafter, the "True-Up"). Should a discrepancy exist between actual and invoiced costs, as determined by (ADMINISTRATING COMPANY NAME) in its sole discretion, (ADMINISTRATING COMPANY NAME) shall either reimburse Licensee for any overpayment or invoice Licensee for any underpayment. The True-Up review may include all costs associated with Corrections completed that may have occurred after the initial inspection and were not

identified by the licensee prior to the corrections project start date. Unidentified corrections completed during the joint corrections project will be billed at the Rate Schedule listed in Section 6 above.

8. NOTICES. All notices permitted or required to be given under this SOW shall be in writing and shall be deemed given: (a) if delivered by courier, on receipt by the intended recipient or on the date of delivery (as confirmed by the records of such courier), (b) if mailed, on the date of delivery as shown by the return receipt, (c) if by email, on the date officially recorded as delivered, according to return receipt or other record of delivery. Notices must be sent to the addresses set forth below, or to such other address(es) as a party may from time to time specify by notice pursuant hereto:

LICENSEE'S AUTHORIZED REPRESENTATIVE

Name:
Address:
Office:
Cell:
e-mail:

(ADMINISTRATING COMPANY NAME)'S PROGRAM MANAGER

Name:
Address:
Office:
Cell:
e-mail:

9. MISCELLANEOUS PROVISIONS:

A. **Indemnification.** Licensee shall indemnify, defend, and hold harmless (ADMINISTRATING COMPANY NAME) and its affiliated companies and their directors, officers, employees, and agents (hereinafter collectively "Indemnitees") from any and all claims, demands, suits, losses, costs, expenses, liens, encumbrances, liabilities, governmental fines and penalties, and damages

of every kind and description; including attorneys' fees, whether incurred at the trial or appellate level, in an arbitration, in bankruptcy (including, without limitation, any adversary proceeding, contested matter, or application), or otherwise, brought or made against or incurred by any of the Indemnitees resulting from, arising out of, or in any way connected with any act, omission, fault, or negligence of Licensee and any third parties retained by Licensee in connection with the Agreement and their respective employees, directors, officers, subcontractors, or agents in the performance or nonperformance of Licensee's obligations under the SOW. Licensee's indemnity obligation under this section shall not extend to any liability to the extent caused by the contributory negligence of any of the Indemnitees.

B. **Force Majeure.** As used in this SOW, an event of "Force Majeure" shall mean an event that prevents the affected party from performing its obligations under this SOW and is unforeseeable and beyond the reasonable control of the affected party. In no instance will the following be considered events beyond a party's reasonable control: (I) strikes or labor disturbances involving the employees of the affected party or its subcontractors; (II) price fluctuations; (III) economic hardship; (IV) normal climatic conditions; or (V) any failure of any equipment or materials provided by the affected party or any subcontractor. Neither party shall be liable for delays due to an event of Force Majeure. The party incurring the delay shall within seven (7) calendar days from the beginning of the delay, notify the other party in writing of the causes of the delay and its probable extent. In the event of any such delay, the required completion date may be extended by a reasonable period not exceeding the time actually lost by reason of the delay.

C. **Amendments.** Changes consisting of additions, deletions or other revisions will be accomplished by a written agreement between (ADMINISTRATING COMPANY NAME) and Licensee to amend this SOW.

D. **Consequential Damages.** IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR ANY LOST OR PROSPECTIVE PROFITS OR ANY OTHER SPECIAL, PUNITIVE, EXEMPLARY, CONSEQUENTIAL, INCIDENTAL, OR INDIRECT LOSSES OR DAMAGES (IN TORT, CONTRACT, OR OTHERWISE) UNDER OR IN RESPECT OF THIS SOW, OR FOR ANY FAILURE OF PERFORMANCE RELATED HERETO HOWSOEVER CAUSED, WHETHER OR NOT ARISING FROM A PARTY'S SOLE, JOINT, OR CONCURRENT NEGLIGENCE.

E. **Limitation of Liability and Cap on Damages.** IN NO EVENT SHALL EITHER PARTY'S LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), OR OTHERWISE, EXCEED ONE HUNDRED THOUSAND DOLLARS ($100,000.00). THE FOREGOING LIMITATIONS SHALL APPLY EVEN IF THE NON-BREACHING PARTY'S REMEDIES UNDER THIS AGREEMENT FAIL OF THEIR ESSENTIAL PURPOSE.

F. **Nonwaiver.** No waiver of the nonperformance or violation of any term or condition of this SOW should be construed to be or operate as a waiver of any subsequent nonperformance or violation.

G. **No Third Party Beneficiaries.** The SOW is intended solely for the benefit of the Parties hereto. Nothing in the SOW shall be construed to create any liability to or any benefit for any person not a party to this SOW.

H. **Severability.** If any provision of this SOW is, for any reason, held by a court of competent jurisdiction to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision hereof, and this SOW should be construed to give effect as nearly as possible to the intent of the parties. The Parties agree to work together to replace such invalid, illegal, or unenforceable provision as promptly as possible with a provision that is valid, legal, and enforceable.

I. **Compliance with Laws.** (ADMINISTRATING COMPANY NAME) and Licensee shall always comply with all applicable federal, state, and local laws, statutes, rules, regulations, and ordinances.

J. **Controlling Law and Venue.** THIS SOW SHALL BE INTERPRETED IN ACCORDANCE WITH AND GOVERNED BY THE SUBSTANTIVE AND PROCEDURAL LAWS OF THE STATE OF OREGON WITHOUT REGARD TO CHOICE-OF-LAW PRINCIPLES. LICENSEE IRREVOCABLY CONSENTS TO THE JURISDICTION OF THE COURTS OF THE STATE OF OREGON OR OF THE U.S. DISTRICT COURT FOR THE DISTRICT OF OREGON FOR ANY ACTION, SUIT, OR PROCEEDING IN CONNECTION WITH THIS SOW AND WAIVES ANY OBJECTION THAT LICENSEE MAY NOW OR HEREAFTER HAVE REGARDING CHOICE OF FORUM.

K. **Entire Agreement.** This SOW, exhibits, amendments, change orders, or other documents referenced in or expressly related to this SOW constitute the complete agreement between (ADMINISTRATING COMPANY NAME) and Licensee and supersede all prior negotiations, representations, or agreements, whether oral or written, related to joint corrections of overhead facilities. No Licensee terms and conditions, whether pre-printed or otherwise, shall apply to or be a part of the SOW, unless expressly incorporated by reference.

L. **Counterpart.** This SOW may be executed in counterparts, each of which is deemed an original, but all of which constitutes one and the same agreement. Delivery of an executed counterpart of this SOW electronically or by facsimile shall be effective as delivery of an original executed counterpart of this Supplement.

M. **Headings.** The section headings contained in this agreement are for reference purposes only and shall not affect the meaning or interpretation of this SOW.

IN WITNESS WHEREOF, the Parties hereto have caused this SOW to be executed by their duly authorized representatives on the date specified below.

(FULL NAME OF ADMINISTRATING COMPANY)	**LICENSEE NAME**
"(ADMINISTRATING COMPANY NAME)"	"Licensee"
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____