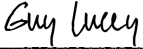


OPPD Pole Attachment Manual

Issued: May 10, 2024

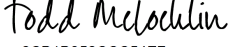
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Approval Date:

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1.0 Overview

As a political subdivision of the State of Nebraska, OPPD is not subject to Federal Communications Commission pole attachment regulations; however OPPD is committed to supporting broadband access throughout our service territory.

The requirements outlined within this document are intended to ensure efficient use of space on our poles while also providing required clearances for public and worker safety and maintaining a reliable, resilient electrical system for our customer-owners.

2.0 GENERAL REQUIREMENTS

2.02 The Licensee is responsible for the proper design, construction and maintenance of its attachments. Attachments generally will be limited to strand-supported cable, service drops, terminals and necessary appurtenances reasonably deemed by Licensor to be suitable for pole mounting.

2.03 To streamline the installation process, OPPD has adopted a “One-Touch Make Ready” policy requiring the Licensee or their approved contractor to make all necessary changes to communications and/or fiber attachments on a pole as part of their make-ready work. Any rearrangements of Licensor’s facilities or replacement of poles required to accommodate Licensee’s Attachments shall be done by Licensor or a contractor authorized by Licensor.

2.04 The fees and charges specified in LICENSE AGREEMENT shall be applicable to all licenses granted to Licensee hereunder, without regard to the methods of attachment used.

2.05 Licensee’s Attachments shall be plainly identified by appropriate marking satisfactory to Licensor.

2.06 Licensee’s workmen shall assure themselves that any pole to be climbed has sufficient strength or is adequately braced or guyed to support the weight of the workmen.

2.07 All requirements of the National Electrical Safety Code referred to herein shall mean the most current edition of such code, or any later amendment or replacement thereof, and shall include any additional requirements of any applicable Federal, State, County or Municipal code. References to simply the Safety Code, or to NESC, have the same meaning. Licensee shall ensure attachments are

installed and maintained in compliance with all applicable sections of the NESC; regardless of whether the section is specifically called out within this document.

2.08 While many of the standards and technical requirements for Licensee's cable equipment and facilities are set forth herein, Licensor reserves the right to specify the type of construction required in situations not otherwise covered in this document. In such cases, Licensor will, in its reasonable discretion, furnish to Licensee written materials which will specify and explain the required construction. Where Codes, regulations, or Licensor requirements vary, the more stringent shall apply.

3.0 VOLTAGE, POWER, ELECTRICAL INTERFERENCE

3.01 Licensee's Attachments shall not use or carry voltages or currents in excess of the limits prescribed for communications conductors by the National Electrical Safety Code (Definitions). However, all parts of Licensee's Attachments carrying voltages in excess of 50 volts AC (rms) to ground or 135 volts DC to ground, except for momentary signaling or control voltages, shall be enclosed in an effectively grounded sheath or shield. All energized parts of Licensee's Attachments shall be suitably covered to prevent accidental contact by the general public, Licensor's workmen or workmen of another licensee having facilities on the same pole.

3.02 Licensor shall reasonably determine whether Licensee's Attachments cause or may cause electrical interference with Licensor's or any other Licensee's communication facilities. Licensee shall, on notice of the Licensor, correct promptly at Licensee's expense any such interference including, if necessary, removal of the Attachments causing the interference.

3.03 No Attachment shall use the earth as the sole conductor for any part of the circuit.

3.04 Licensee shall not circumvent Licensor's or any other Licensee's corrosion mitigation measures (e.g., short circuit insulating joints).

4.0 GROUNDING AND BONDING

4.01 Proper grounding and bonding shall be provided by Licensee in accordance with the latest edition of the NESC. Additional requirements may be required for local permitting.

5.0 APPLICATION PROCESS

5.01 In the interest of both Licensee and Licensor to maintain current map records and attachment counts, the method of preparing Application for Pole Licenses, hereinafter called “Applications” and Notice of Removal of Pole Attachment hereinafter called “Removal” will be as hereinafter designated.

5.02 An Application or Removal shall be filled out for each project. Applications and removals shall be limited to 100 poles unless a different quantity is agreed to by both Licensor and Licensee. Larger applications will not be unreasonably denied, but are discouraged due to extended review and approval times. Each application shall be clearly labeled to provide clear indication of the project it is associated with.

5.03 To ensure fair access to OPPD’s facilities, a maximum of 1,000 total poles per licensee will be held for review / approval at any given time. As make-ready plans are approved, additional locations may be submitted up to the 1,000 pole limit. No poles will be held until a completed application is submitted.

When multiple applications are made on a pole, a queue will be established to prioritize applications on a first come, first served basis. All make-ready costs associated with an application are the sole responsibility of the Applicant. OPPD will not facilitate or administer any cost sharing arrangements between Licensees.

Licensees are encouraged to coordinate with OPPD prior to data collection or submittals to understand potential project overlap. OPPD will not share any company-specific data, but will share areas of known work, to assist in coordination. Due to the dynamic nature of the work, OPPD cannot guarantee the completeness of the information shared. Data collection and analysis is strongly discouraged in areas of known overlap, as existing conditions will change, resulting in re-work.

Where all parties agree in advance, OPPD will allow joint submittals. All cost sharing agreements associated with joint submittals, including but not limited to: data collection, reviews, make-ready work,

inspections and any other costs associated with the project will be the sole responsibility of the Licensees. OPPD will not facilitate or administer any cost sharing agreements between Licensees.

5.04 Drawings shall be submitted in pdf format via Licensor's Pole Attachment Portal in one of the following standard drawing formats:

A size drawing 8½" X 11"

B size drawing 11" X 17"

C size drawing 17" X 22"

D size drawing 24" X 30"

E size drawing 30" X 42"

Other submittal types such, such as kmz files, may be approved upon mutual agreement by all parties.

5.05 Licensee shall complete the Application(s) or Removal(s) and submit via Licensor's Pole Attachment Portal. Applications shall include summary data, pole loading calculations and drawings needed to complete the review. Anticipated splice case locations should be included on the drawings.

5.06 Pole locations on drawings accompanying Application(s) or Removal(s) shall be to scale and identifiable by relative position to streets and/or addresses. Span lengths, riser locations, down guy locations and slack spans shall be shown.

5.07 Licensor shall assign the Application a number and if license is granted, return a copy with letter to Licensee.

5.08 If "Make Ready Costs" are required the Licensor will inform the Licensee in writing explaining the reasons. If the Licensee chooses to proceed a request in writing will be made to the Licensor.

5.09 After receipt of the written request the Licensor will prepare a "Make Ready Cost" estimate and return to Licensee.

5.10 After Licensee reviews and approves the cost, the "Make Ready Cost" document is signed and the original is returned to the Licensor. The Licensor will then proceed with the work which shall be promptly performed.

5.11 After Licensor has completed all work in conjunction with the “Make Ready Cost” and actual and reasonable costs are available, Licensor will submit a bill to Licensee.

5.12 If any updates or changes are required during construction Licensee shall submit an updated make-ready plan, pole loading report and strand map reflecting the proposed changes prior to construction.

5.13 Upon completion of each project Licensor shall perform post-construction inspections at Licensee’s expense as required to validate compliance with approved make-ready plans. All corrections identified as a result of post-construction inspections shall be completed within 30 days of notification.

6.0 DESIGN AND SUBMITTAL REQUIREMENTS

The following minimum requirements shall be considered before a joint use attachment application is submitted to OPPD. Applications that fail to meet any of the following criteria may be rejected and returned for revision.

OPPD does not allow new attachments on transmission structures. Any modifications to existing attachments on transmission structures will be reviewed by OPPD’s Transmission Engineering team on a case-by-case basis and may be subject to additional requirements beyond those included in this manual.

Pole-to-pole attachments are not permitted on steel or decorative street light poles. Small cell sites and other single-pole attachments may be approved on a case-by-case basis, but will be subject to additional requirements.

6.01 Clearances

Both clearances at midspan and at pole attachment must satisfy all NESC minimum clearances.

Clearances include all of the following: ground clearances, clearances to structures, clearances to electrical primary and secondary conductors, clearances to all other joint-use utilities.

Submittals shall document and evaluate:

- All existing and proposed attachment heights at pole locations
- All clearances between existing power/joint-use utilities at midspan or largest vertical sag.
- All ground clearances for power/joint-use utilities at midspan or largest vertical sag.

6.01(a) Minimum clearances at Pole (**NESC Table 235-5**)

- a. Primary electric wire(s)– 72” OPPD Standard* (48” NESC)
- b. Secondary electric wire(s) – 40”
- c. Neutral – 30”
- d. Street Light drip loop – 12”*
- e. Other non-electric joint-use utilities – 12”
- f. Ungrounded street light arms: 40”** (ungrounded arms are OPPD’s standard)
- g. Top of power risers (u-guard): 40” (**NESC 239.G.1**)
- h. Guy wires – 6” (**NESC Table 235-6**)
- i. OPPD span guys - 12” OPPD Standard (6” NESC Table 235-6)

*At OPPD’s discretion, existing 60” spacing may be grandfathered, but existing clearances less than 72” will not be allowed to be further compressed (for example, an existing 65” clearance cannot be moved up to 60” to gain additional space on the pole). If a make-ready requires a pole change out, 72” will be required.

**Upon request, OPPD can complete make ready work to ground the street light arm and cover the street light drip loop to reduce clearances to 4” and 3”, respectively. This option may not be available for some applications where crews do not have drive-up access to poles or on OPPD Load Break switch (LB) poles. (NESC 238D for drip loop exception, Table 238-2 for arm clearances)

6.01(b) Minimum clearance at MID-SPAN or largest vertical sag.

- a. Primary electric wire(s)– 60” OPPD Standard
- b. Secondary electric wire(s) – 30”
- c. Neutral – 30”
- d. Other non-electric joint-use utilities – 12”

6.01(c) Minimum ground clearance at MID-SPAN or largest vertical sag. (**NESC Table 232-1**)

	Primary	Neutral/Comm.
a. Non-accessible to vehicle traffic	14.5’	9.5’
b. Roads, Alleys, general ROW (Neutral or Comm.	18.5’	15.5’
c. Farm entrances	18.5’	15.5’
d. BN/UP Railroad crossing	26.5’/29.5’	23.5’
e. Water, lake or pond crossing	20.5-40.5’	17.5’-37.5’
f. NDOT highways	20’	18’

g. City of Omaha roadways

Follows NESC

Follows NESC

6.02 Riser Locations:

Poles are considered to be Truck Accessible if a large bucket truck has drive up ability, 24/7 in all weather conditions. Poles that do not have drive up access 24/7 are considered Cash-and-Carry.

Truck Accessible poles:

- 1) Clean poles are preferred for risers, but when a clean pole is not available within one span of the preferred riser location, the following poles are acceptable (in order from most preferable to least):
 - a. Poles with single phase fused or unfused taps.
 - b. Single phase transformer poles
 - c. Poles with one existing secondary or communication riser. All risers should be located in the same quadrant of the pole to minimize conflicts if climbing is required.
 - d. Three phase transformer poles without a riser
- 2) Risers are not allowed on the following poles:
 - a. Load Break switch poles (LB, circuit ties)
 - b. Primary Cable Terminal Poles (CTP's, medium voltage riser poles)
 - c. Equipment poles including capacitor banks, recloser banks and regulators
 - d. Three phase transformer poles with a riser
 - e. Three phase junction poles
 - f. Transmission Poles
 - g. Dead-end Poles
 - h. Steel or decorative streetlight poles

Cash & Carry Pole:

- 3) Communication risers are never allowed on the following poles:
 - a. All the above poles, plus:
 - b. Fused tap poles (poles with a primary electrical tap in one or more directions)

Refer to **Appendix C** for common pole configurations and riser restrictions.

6.03 Guying

6.03(a) Guying is required for any pole with a total unbalanced load exceeding 400 lbs. Licensor may disallow guying where, in the sole judgement of Licensor or its designee, guying creates a real or perceived operational concern. All permitting and easements associated with installing guys and anchors shall be the sole responsibility of licensee.

6.03(b) A maximum of one slack span will be permitted provided all NESC-required clearances are maintained. Span guys shall be allowed to extend a maximum of three (3) spans to allow for proper anchoring.

6.03(c) Guying is required at all line angle locations.

6.03(d) Communications guys should be anchored separately from OPPD anchors. Where space limitations do not permit separate anchors shared anchors may be approved by exception at Licensor's sole discretion. Guying and anchoring shall be arranged such that guy wires do not cross.

6.03(e) Guy anchors should maintain a minimum 5'-0" separation from all other anchors. Where space does not permit a 5' separation, a reduced separation may be approved subject to the following guidelines:

- Minimum lead shall not be less than $1/3$ of the attachment height (attachment height / 3) or 5'-0", whichever is greater.

- If anchor loading is less than 75% of anchor capacity, 3' separation is acceptable.

- If either the minimum lead length or minimum separation cannot be maintained, OPPD's anchor should be upgraded to a shared anchor.

6.03(f) Where an existing 3rd party attachment is sharing an anchor with OPPD, the shared anchor will be allowed to remain as long as it is not over loaded. If a pole change out is required, all communications guys should be transferred to the communications anchor.

6.03(g) When make-ready work including pole change outs, re-framing of power, or reconfiguration of OPPD guying is required at existing guyed structures all work shall be completed in accordance with current OPPD guying standards; including installation of separate guys at the primary and neutral/secondary positions.

6.03(h) Over time the number of eyes (double or triple) associated with each particular anchor assembly has varied. Unless OPPD records indicate otherwise, OPPD anchors shall be rated based on the number of eyes as follows:

Single eye: 6,000 lbs

Double eye: 10,000 lbs

Triple eye: 16,000 lbs*

*Exception: If the anchor assembly is visually verified to be square, it can be rated at 20,800 lbs.

Refer to **Appendix A** for additional details on guy anchor identification & application.

6.03(i) Sidewalk Guys. The City of Omaha strives to avoid sidewalk guys; especially in neighborhoods. All sidewalk guys shall be approved by the City or Authority Having Jurisdiction prior to installation. It shall be the responsibility of the licensee to obtain permission for any sidewalk guy installations prior to installation.

6.03(j) In metropolitan areas all new guys shall maintain a 5' minimum distance from the edge of driveways with 10' preferred. If areas subject to farm equipment or other large vehicles, a distance of 10' shall be maintained with 20' preferred.

6.03(k) Guying shall not be allowed at load break switch locations. Refer to Appendix C for additional details on load break switches.

6.04 Pole Loading

Each pole shall be inspected for any abnormality that may compromise the structural integrity of the pole. "Red tagged" poles are poles that OPPD's pole inspection program have inspected and deemed to be structurally deficient. Refer to **Appendix B** for additional information on identification of these poles. Red tagged poles should be referred to OPPD for replacement prior to attaching.

Upon request, OPPD will provide record data including pole locations, height, class and wire sizing. While OPPD strives to maintain accurate records, this data should be used for reference and is not guaranteed. Where OPPD data does not match actual field measurements, field measurements shall prevail. All conductors shall be modeled at full tension or slack. OPPD sag, tension and ruling span data shall be used for modeling OPPD facilities. This information is available in OPPD's Pole Attachment Portal.

While other pole types exist on OPPD's system, modeling and make-ready plans should be based on current OPPD standard pole sizes. Poles range from 35'-55' in 5' increments and are available in Class 2 or 4. Class 3 poles should be modeled as Class 4. Class 5 or 6 poles should be modeled as Class 6.

Each pole shall be analyzed to ensure available pole capacity for proposed attachments. Poles with single phase primary may be excluded from a detailed pole loading analysis provided all of the following conditions are met:

- 1) The segment is in a location where Grade "C" construction is permitted (not over a railroad, limited access highway, etc...)
- 2) After the proposed attachment, there will be 3 or fewer communications attachments on the pole (two or fewer for Class 6 poles)
- 3) The pole is unguyed with balanced loading.
- 4) The pole is not an equipment pole (no transformers, capacitor banks, reclosers, etc..)

OPPD reserves the right to require a pole loading analysis be completed on any pole where, in the sole judgement of OPPD or its designee, there is a real or perceived loading concern. Regardless of whether OPPD requires a pole loading analysis or not, a thorough clearance review shall be completed as outlined in the "Clearances" section of this document.

Evaluate each pole using minimum Grade "C" construction or Grade "B" where prescribed by NESC code.

Ice and wind must be considered based upon the heavy loading district (**NESC Table 250-1**)

All applicable Overload Capacity Factors shall be used (**NESC Table 253-1**)

NESC extreme wind loading must be applied where applicable (**NESC 250C**)

All Strength Factors shall be used (**NESC Table 261-1A**)

Ensure the total Factored Ground Line Moment is less than 80% of the factored ultimate resisting moment of the pole for Grade "C" construction or 90% for Grade "B" by conducting a pole loading analysis. At a minimum, each pole load analysis shall contain:

- 1) A digital photo of each pole.
- 2) Pole brand information. (Length and Class of Pole)
- 3) Span lengths and associated line angle for all attachments.
- 4) Complete electrical and communication equipment data including type, size and orientation.
- 5) Complete pole attachment attributes (type, owner, height, clearance, and size).

- 6) Worst case strength check detailing factored Ground Line Moment to be less than 80% the ultimate resisting moment of the pole for Grade "C" construction, 90% for Grade "B".

6.04 Grandfathering

Over time, NESC requirements for clearances over residential drives have evolved. For installations prior to 1984, lower clearances were allowed. Taking into account the Code's grandfathering requirements and the potential safety risks associated with modern vehicle traffic, OPPD has adopted the following policy regarding clearances over residential drives:

For new attachments:

- All new attachments shall meet current NESC requirements, including the 15.5' requirement over residential drives.

For overlashing on communication lines that were originally installed after 1984:

- All overlashing will be required to meet current NESC requirements, including the 15.5' requirement over residential drives.

For overlashing on lines that were installed prior to 1984:

- A minimum clearance of 12.5' shall be required over residential drives.
- All clearances over roadways, commercial drives and alley crossings shall be required to maintain a 15.5' minimum clearance.
- It shall be the responsibility of the attachment owner to certify that the original installation was completed prior to 1984 and to maintain all records required to prove the existing circuit meets the requirements of the Code's grandfathering clause.

Appendix A: Guy Anchor Application and Identification Guide

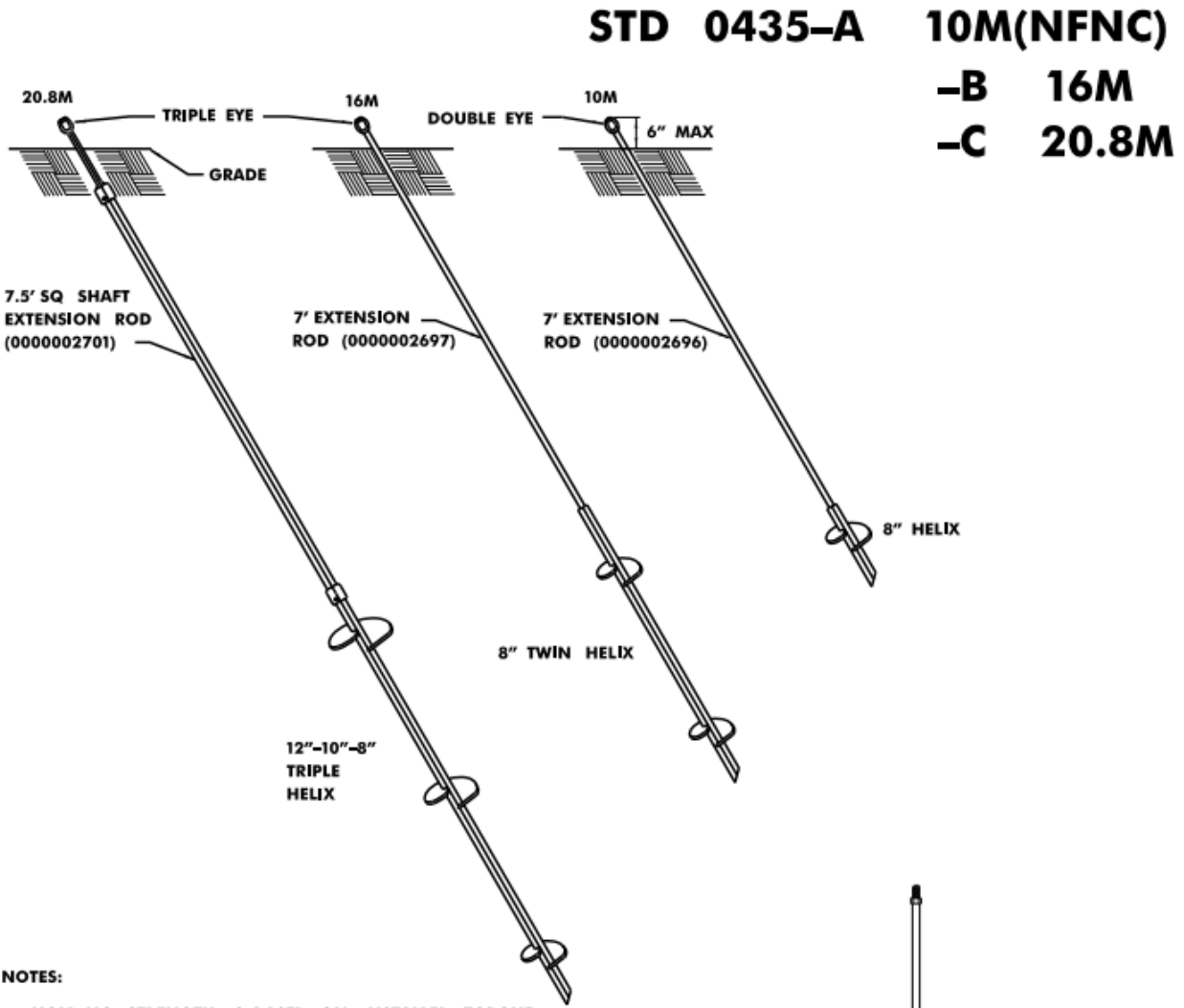
10M anchors (double eye) – 10,000 lbs rating, Maximum of two guy wires attached to the anchor. See picture below.

16M anchors (triple eye) – 16,000 lbs rating, Maximum of three guy wires attached to the anchor. See picture below.

20.8M anchors (triple eye) – 20,800 lbs rating, Maximum of three guy wires attached to the anchor. See picture below.

Side guy attachment to OPPD’s existing anchor is not permitted.

OPPD Standard Guy Anchors:



Anchor Identification:

10M anchor



16M Anchor

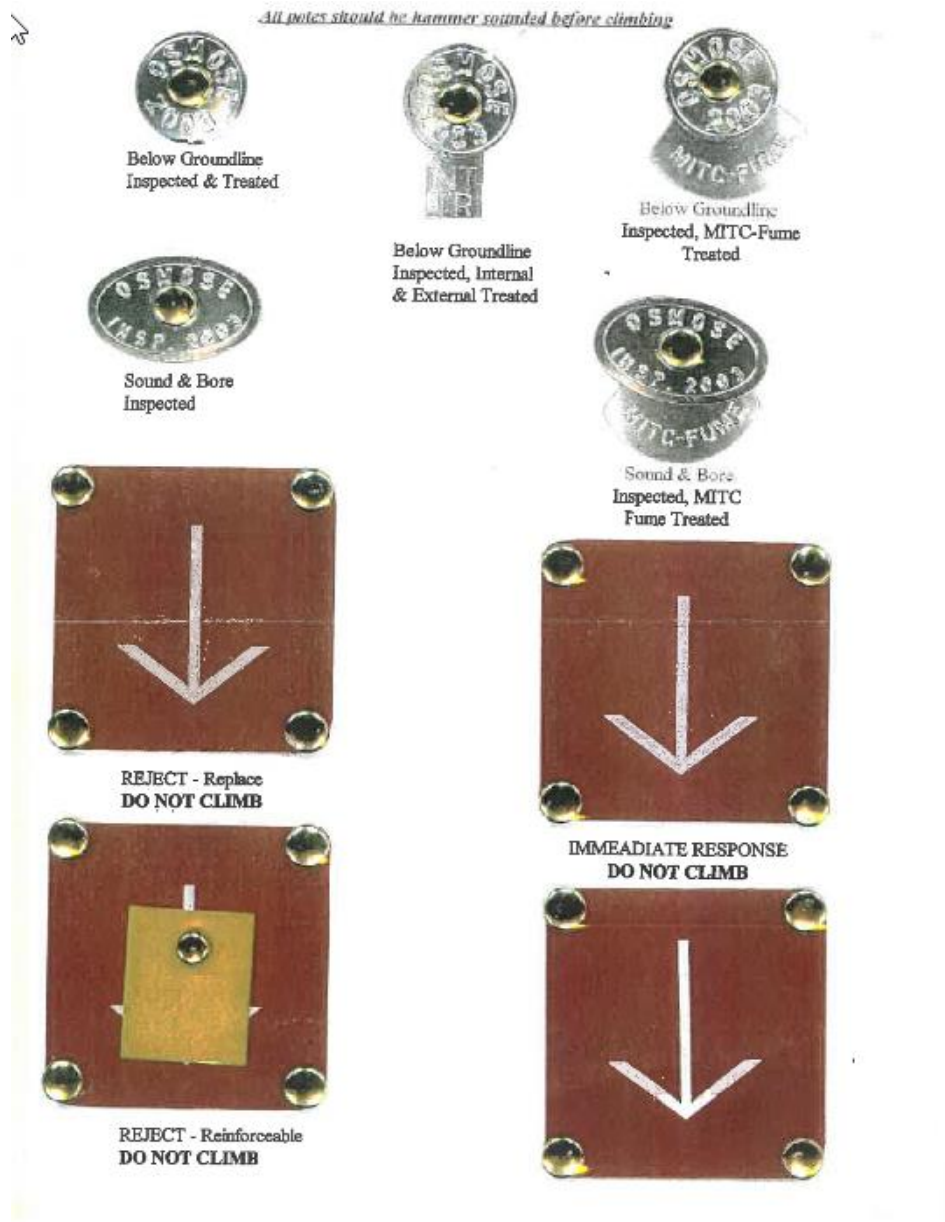


20.8M anchor



Appendix B: Red Tag Pole Identification

As part of OPPD's Ground Line Inspection and Treatment (GLIT) Program, poles are routinely inspected and treated to help identify and prevent ground line decay. When poles fail inspection, a "red tag" is applied to the pole, indicating the need for replacement. While this program is helpful in identifying and remediating structural decay issues, it is not a substitute for pre-climbing inspections or other safety procedures.



Appendix C: Riser Locations

The examples below outline several common pole configurations where communications risers are not permitted or are restricted.

Load Break Switch (LB Pole) – Communication risers NOT allowed

Load break switches are easily identified by their upward facing cross-arm braces.



Primary Cable Terminal Poles (CTP Pole) – Communications risers NOT allowed

Medium voltage lines transition from overhead to underground

3-Phase Cable Terminal Pole:



1-Phase Cable Terminal Pole:

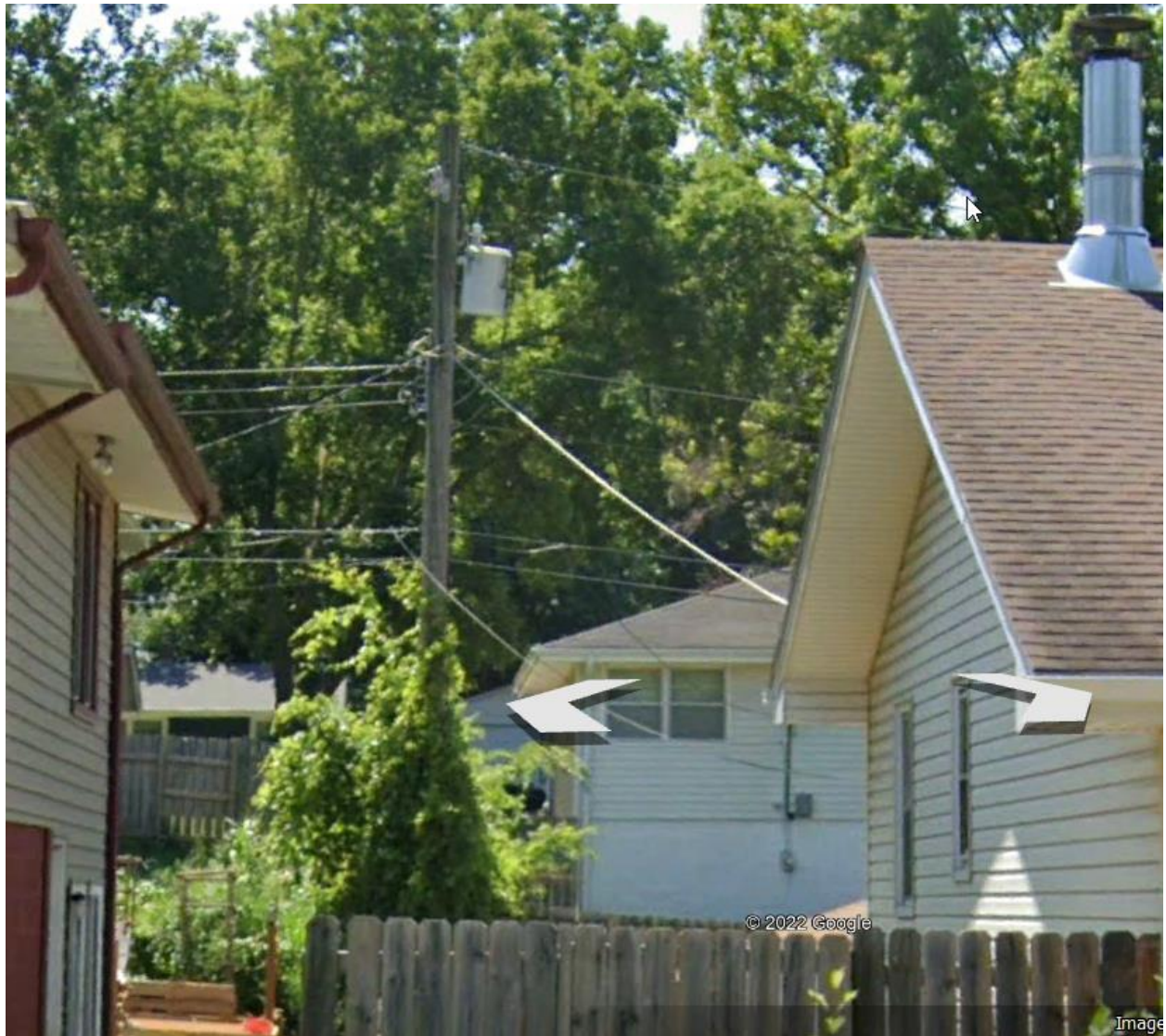


Capacitor Bank (CAP Bank) – Communications risers NOT allowed



Back yard pole with a Transformer (Cash & Carry Pole) – Communications risers NOT allowed

Poles without drive-up access



Transmission Pole (Steel or Wooden) – Communication risers NOT allowed



Drive-Up Accessible Transformer Poles, with or without secondary Dip

Communications risers should be avoided on drive-up accessible transformer poles where practical, but are permitted where space constraints limit available options.



Drive-Up Accessible Tap Poles

Communication risers are permitted on single phase tap poles that are drive-up accessible. Communications risers are not generally permitted on three-phase tap poles, but may be approved by written exception on a case-by-case basis if other viable options are not available.

Single-phase tap pole (acceptable)



Three-phase tap pole (written exception only)

