Title 16 Part 1 Chapter 3 Rule §3.21
Statewide Rule 21(l)
Fire Prevention

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July 2025

Texas Administrative Code – Part I (1 of 4)

TAC
Title 16 Economic Regulation
Part 1 Railroad Commission of Texas
Chapter 3 Oil & Gas Division

Rule 21 Fire Prevention & Swabbing

(i) Any rubbish and debris that might constitute a fire hazard shall be removed to a distance of at least 150 feet from the vicinity of any well, tank, or pump station. All waste shall be burned or disposed of in such manner as to avoid creating a fire hazard.

Texas Administrative Code – Part I (2 of 4)

TAC
Title 16 Economic Regulation
Part 1 Railroad Commission of Texas
Chapter 3 Oil & Gas Division

Rule 21 Fire Prevention & Swabbing

(l) Operation and maintenance of electrical power lines. An operator must construct, operate, and maintain an electrical power line serving a well site or other surface facility employed in operations incident to oil and gas development and production in accordance with the National Electrical Code published by the National Fire Protection Association and adopted by the Texas Department of Licensing and Regulation in §73.100 of this title (relating to Technical Requirements).

Nation Fire Protection Association – NFPA 70

The **National Electrical Code** (NEC) is a set of safety standards that dictate how electrical systems should be installed and maintained. NEC regulations are critical in preventing electrical failures that could result in fires or equipment malfunctions. Some key aspects of the NEC for oil and gas facilities include:

- Proper grounding and bonding of electrical equipment.
- Protection of electrical circuits from overcurrent.
- Classification of hazardous areas and installation of explosion-proof equipment.

Texas Administrative Code – Part I (3 of 4)

TAC
Title 16 Economic Regulation
Part 1 Railroad Commission of Texas
Chapter 3 Oil & Gas Division

Rule 14 Plugging

(b) Commencement of plugging operations, **extensions**, and testing.

(2) Plugging operations on each dry or inactive well shall be commenced within a period of one year after drilling or operations cease and shall proceed with due diligence until completed unless the Commission or its delegate approves a plugging extension under §3.15 of this title (relating to Surface Equipment Removal Requirements and Inactive Wells).

Texas Administrative Code – Part I (4 of 4)

TAC
Title 16 Economic Regulation
Part 1 Railroad Commission of Texas
Chapter 3 Oil & Gas Division

Rule 15 Surface Equipment Removal Requirements and Inactive Wells

(f) Application for an extension of deadline for plugging an inactive land well.

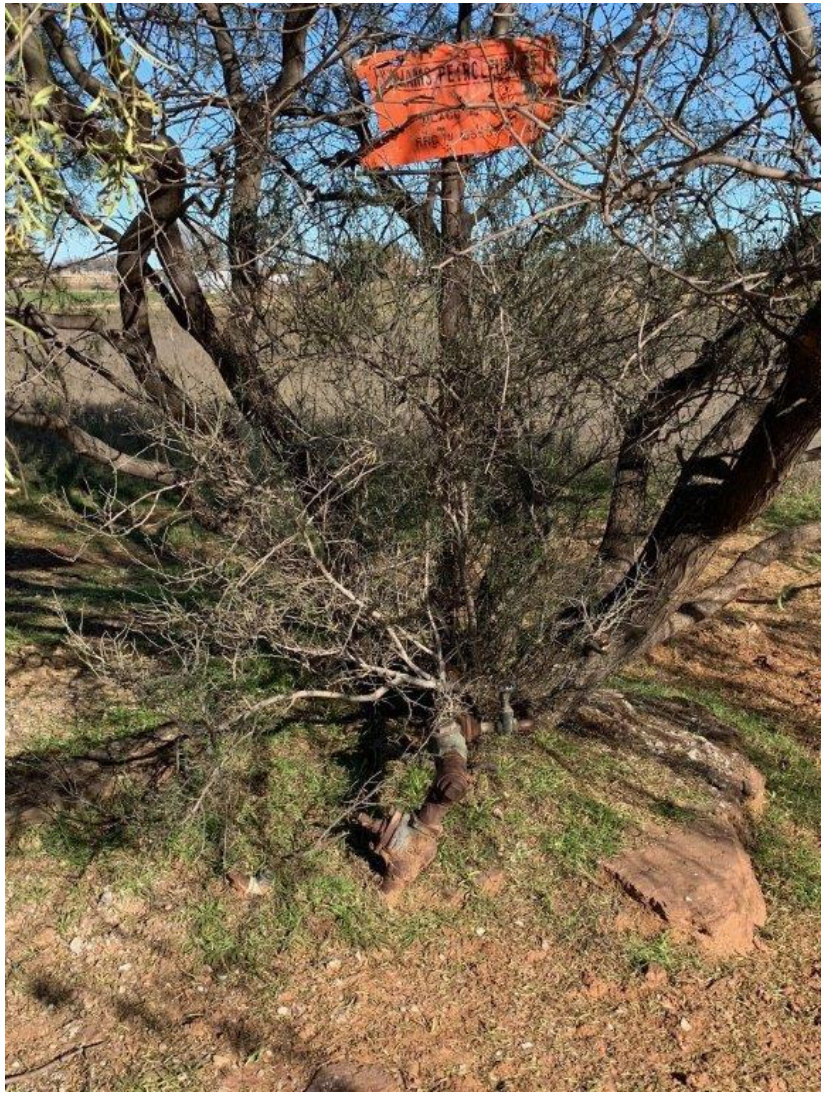
(2) An operator must include the following in an application for an extension of the deadline for plugging an inactive well:

(A) an affirmation made by an individual with personal knowledge of the physical condition of the inactive well pursuant to the provisions of Texas Natural Resources Code, §91.143, stating the following: that the operator has physically terminated electric service to the well's production site; and either:

LET’S GET STARTED

What Well Status Does This Apply To?

Inactive / Orphan Wells



&

Active Wells

SWR 15(a)(8)

Physical Termination of Electrical Service to the Well's Production Site

Disconnection of the electric service to an inactive well site at a point on the electric service lines most distant from the production site toward the main supply line in a manner that will not interfere with electrical supply to adjacent operations, including cathodic protection units.

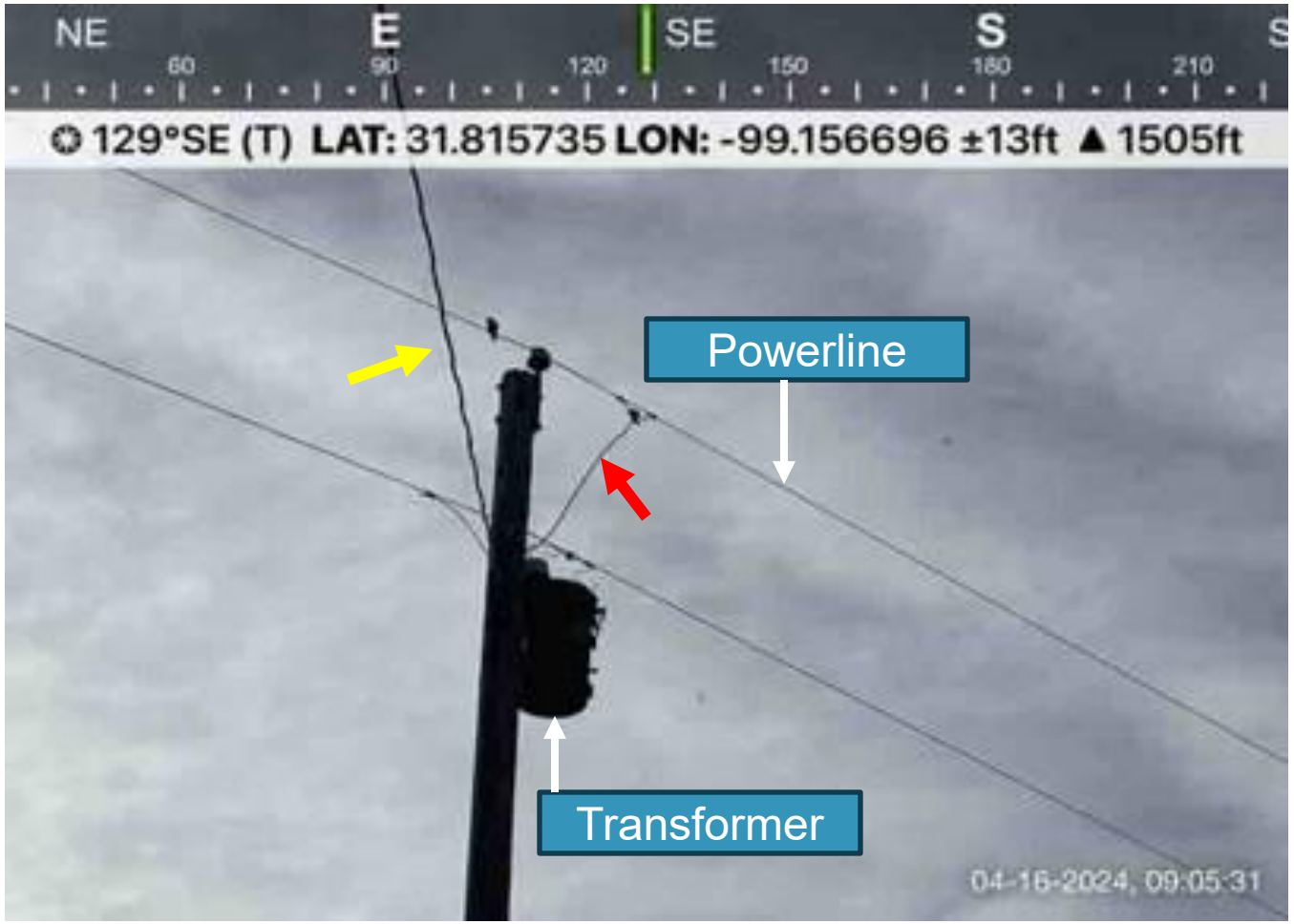
Inactive Wells Under SWR 14(b)(2) and SWR 15(f)(2)(A)

Electrical Lines are to be Disconnected

Impressed Current Cathodic Protection System

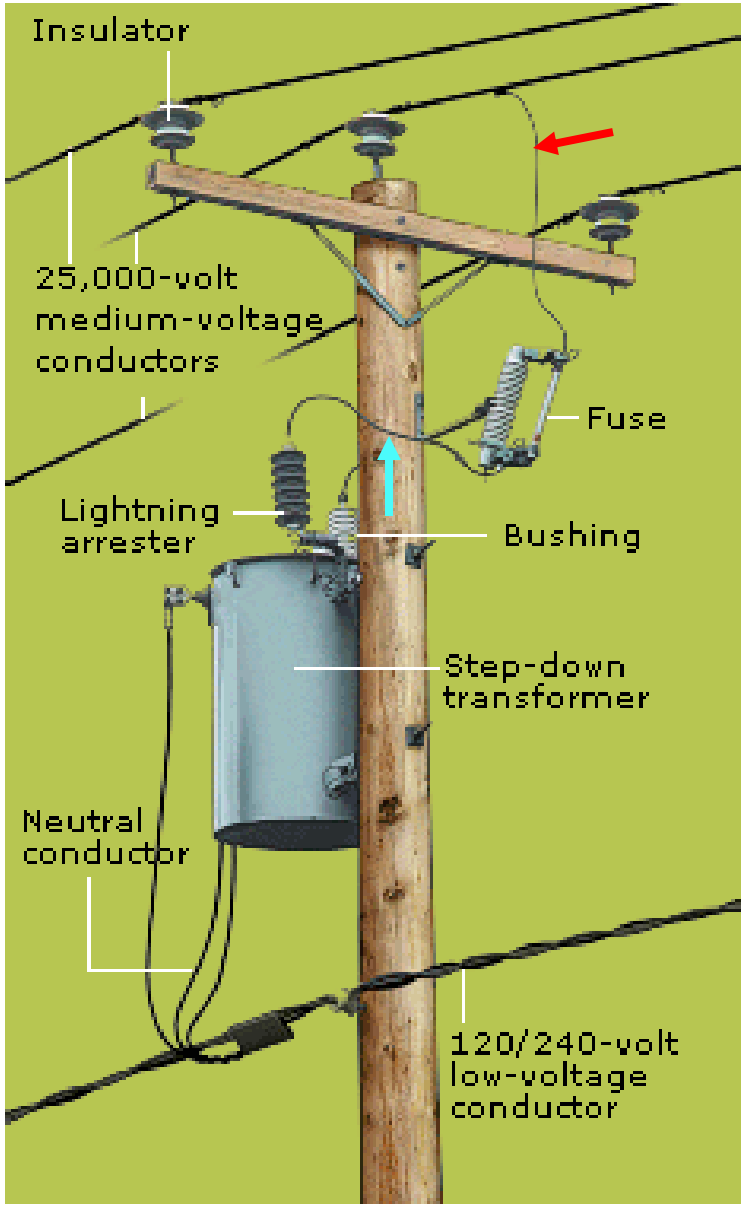
- **Rectifier** (yellow arrow)
  - Rectifier converts the AC to DC for cathodic protection systems.

Working from the Top Down – No Fuse



- Powerline on Power Pole
  - Jumper Wire going from the line to the Transformer
    - Red Arrow
- Transformer on Power Pole
  - Line running from the Transformer to the Meter Pole.
    - Yellow Arrow

Working from the Top Down – Inline Fuse



- Powerline to Fuse
  - Jumper Wire going from the line to the Fuse
    - Red Arrow
- Fuse to Lightning Arrester
  - Line running from the Fuse to Lightning Arrester
    - Light Blue Arrow
- Lightning Arrester to Transformer
- From Transformer to Service Line

Electrical Fuse Connected and Disconnected

Fuse Connected

Fuse Disconnected

Height for Overhead Service

- **NEC 225.18** Clearance for Overhead Conductors and Cables
  - Overhead spans of open conductors and open multiconductor cables of not over 1000 volts, nominal, shall have a clearance of not les than the following:

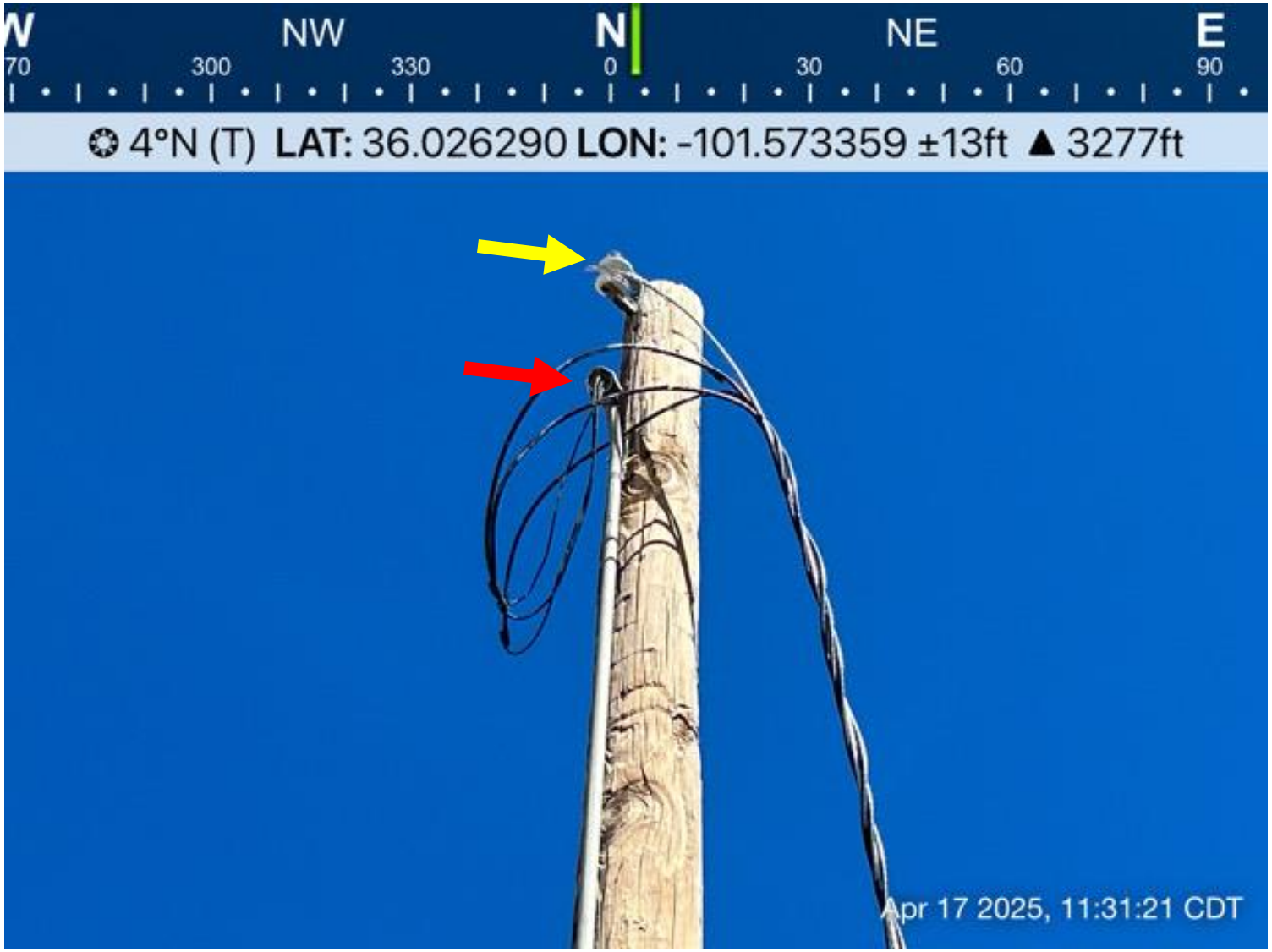
    4. 18 feet – over public streets, alleys, roads, parking areas subject to truck traffic, driveways on other than residential property, and other land traversed by vehicles, such as cultivated, grazing, forest, and orchard

Service Head Requirements (1 of 2)

- **NEC 230.51**

(A) Service-Entrance cable must be supported within 1 foot of the weatherhead, gooseneck, raceway connections, or enclosure. Supports must be at intervals not exceeding 30 inches.

  - Support – Yellow Arrow
  - Weatherhead – Red Arrow



Service Head Requirements (2 of 2)

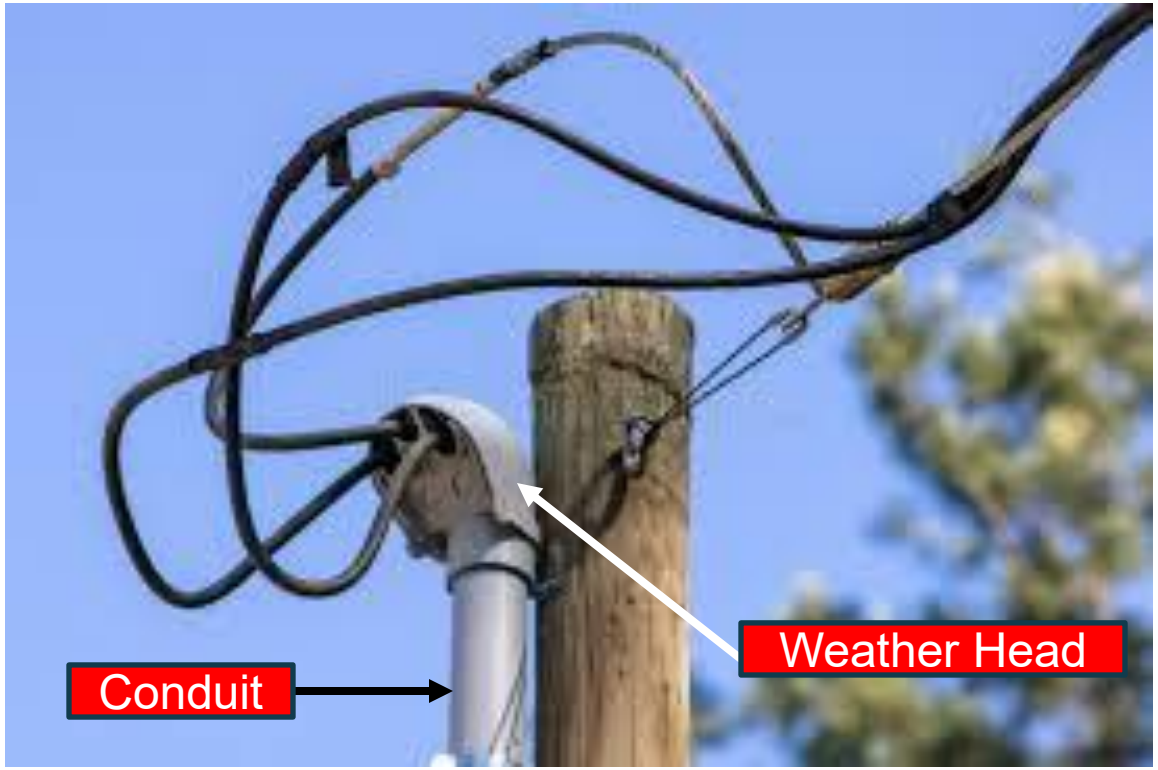
- **NEC 230.54** Overhead Service Locations

(B) Service-Entrance Cables Equipped with Service Head or Gooseneck. Service-entrance cables shall be equipped with a service head. The service head shall be listed for use in wet locations.

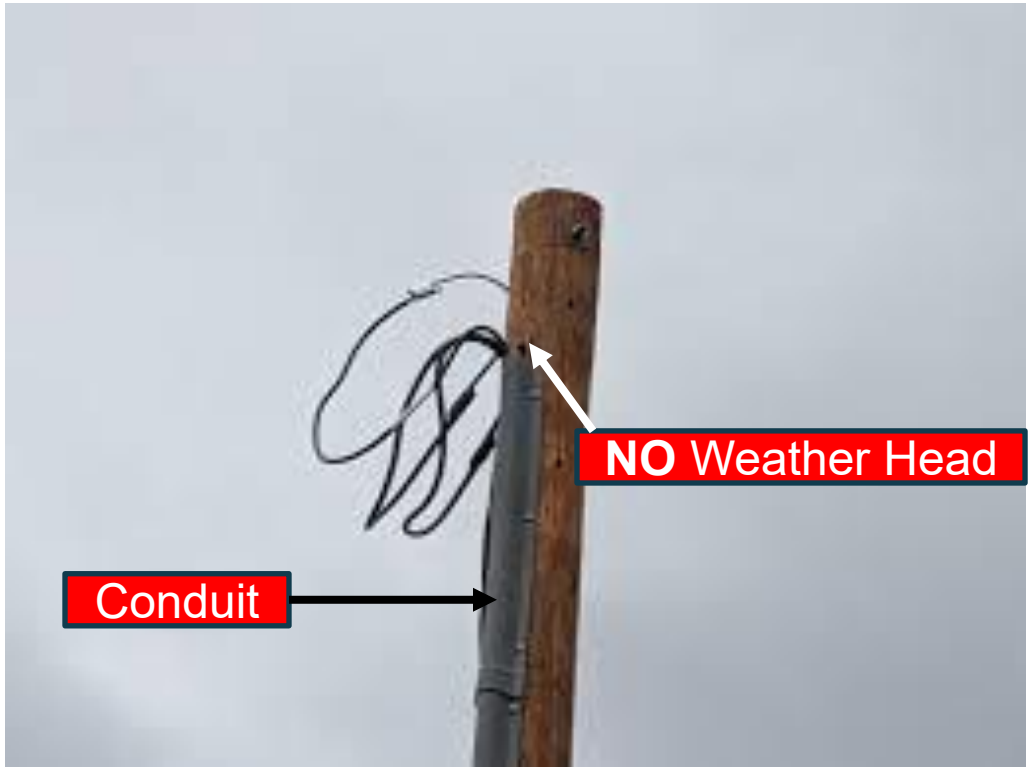
(C) Service Heads and Goosenecks Above Service-Drop or Overhead Service Attachment. Service heads on raceways or service-entrance cables and goosenecks in service-entrance cables shall be located above the point of attachment of the service-drop or overhead service conductors to the building or other structure.

Transformer to the Weather Head

Weather Head - Compliant

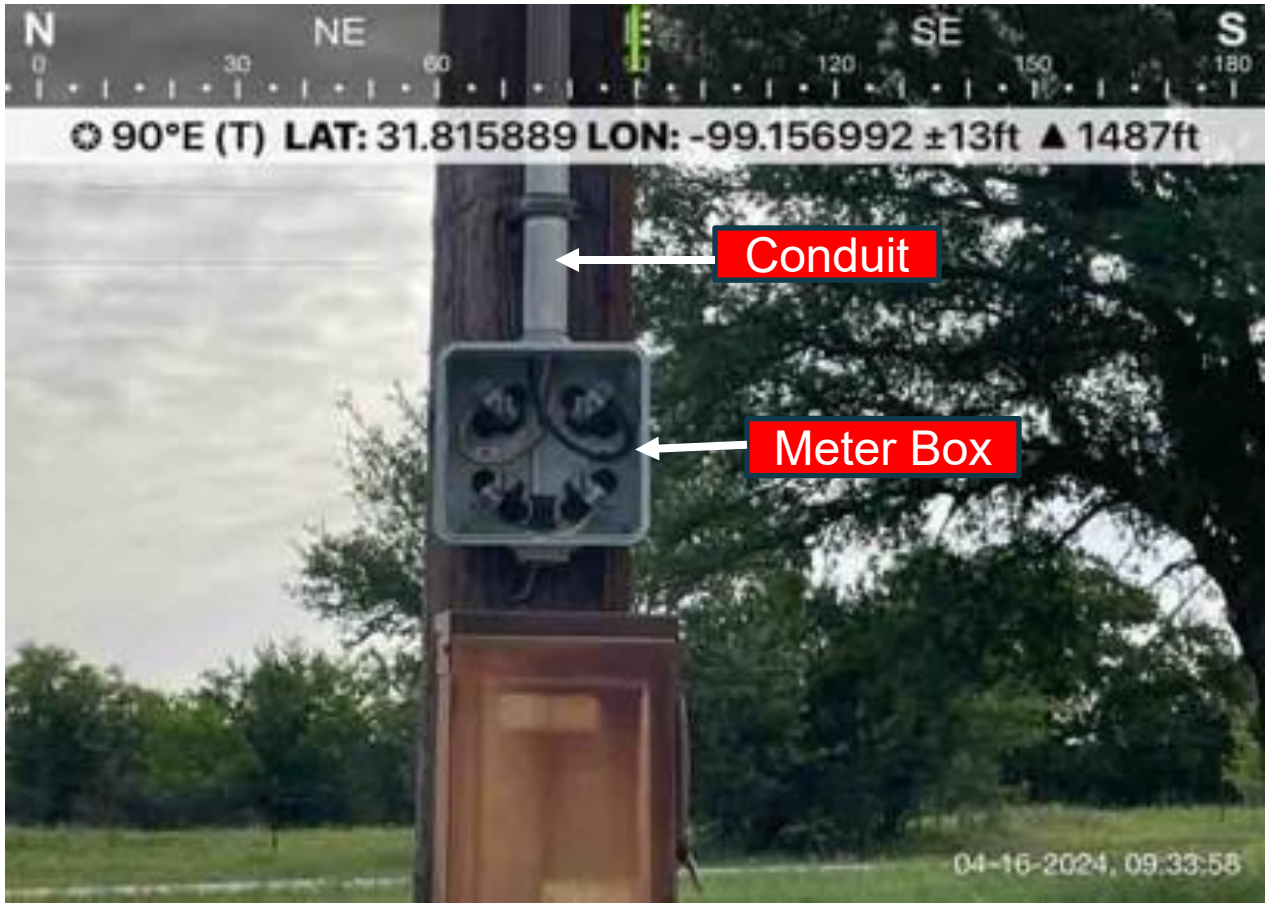


Weather Head - Non-Compliant

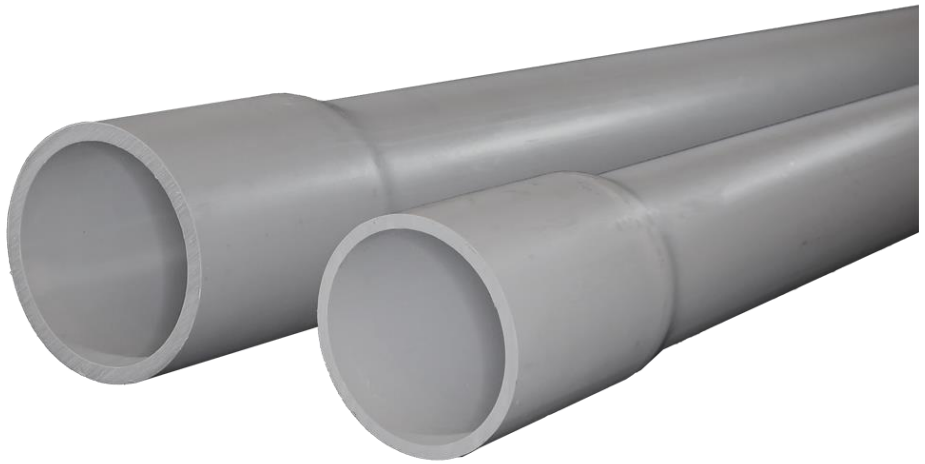


Weather Head and Conduit to Meter Box

- Conduit brings the “live” wires into the meter box.
  - No Meter Can
- Meter box is Energized
  - No Main Disconnect
    - Would be located inline above the meter box.

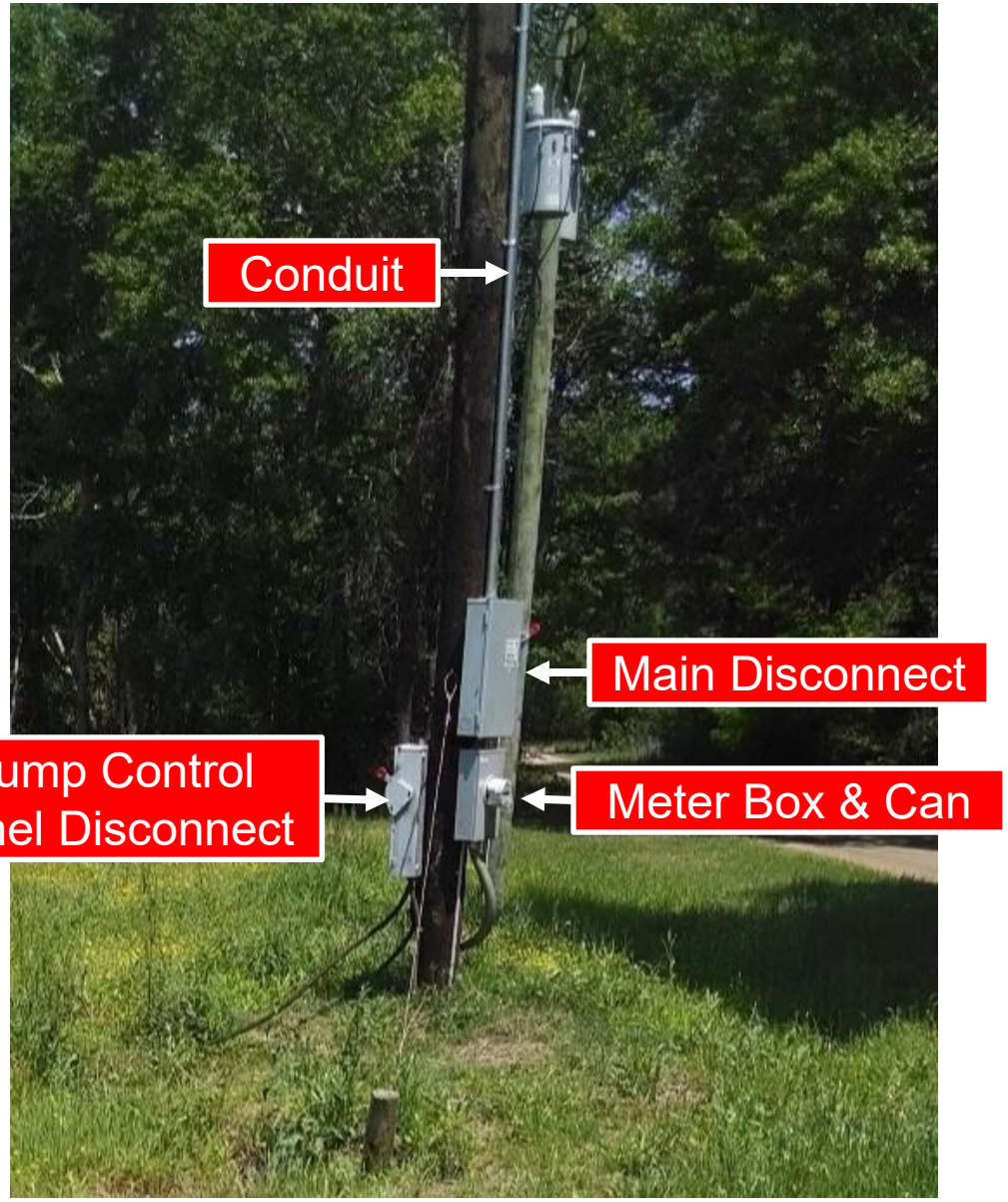


Rigid Conduit Commonly Used



- Schedule 40 PVC Conduit
  - Used as conduit for wires next to poles.
  - Burial
  - Light Industrial Use
- Schedule 80 PVC Conduit
  - Outdoor and Underground Installations
  - Thicker walled than Schedule 40

Weather Head to Main Disconnect



- Main Disconnect
  - Takes the line from the Transformer
  - In Conduit down the pole to
  - Main Disconnect
    - Located above the Meter Box
  - Meter Box with Meter Can
    - Through Liguidtight Flexible Metal Conduit (LFMC)
  - Pump Control Panel Disconnect
    - Wires leaving are **NOT** in Conduit
- Both Disconnects are in ON

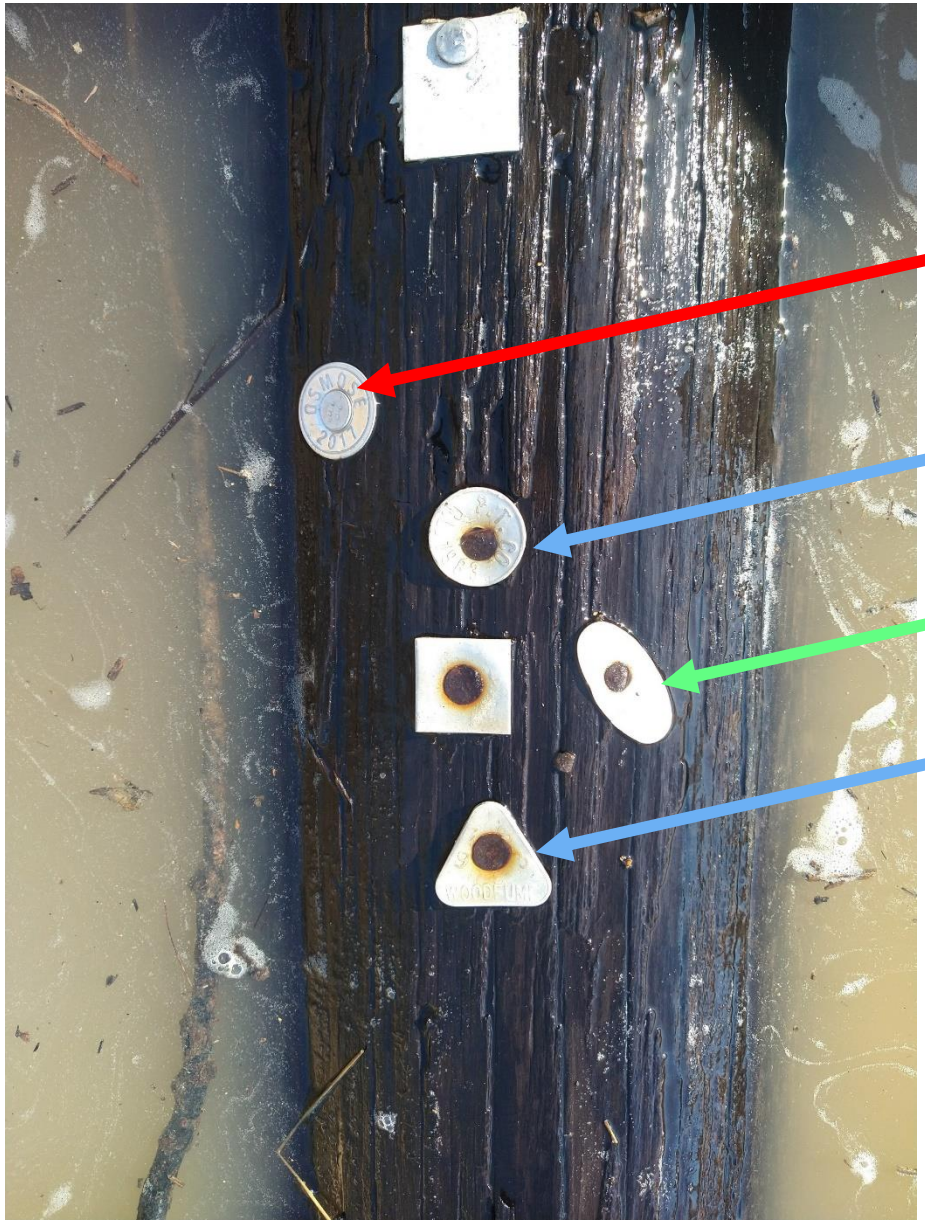
Electrical Power Pole – Prior to Drop Service

- Electric Company Name & Pole Number
  - Electrical Company will put a number on the pole for identification. (Red arrow)

Electric Power Pole – Inspection Tag

- OSMOSE
  - Company that performs inspections of the power poles.
- 2017
  - The year the pole was inspected
- Woodfume
  - Fumigant that is sprayed on the pole to help prevent decay and insects in wood poles.

Power Pole Inspection Tags



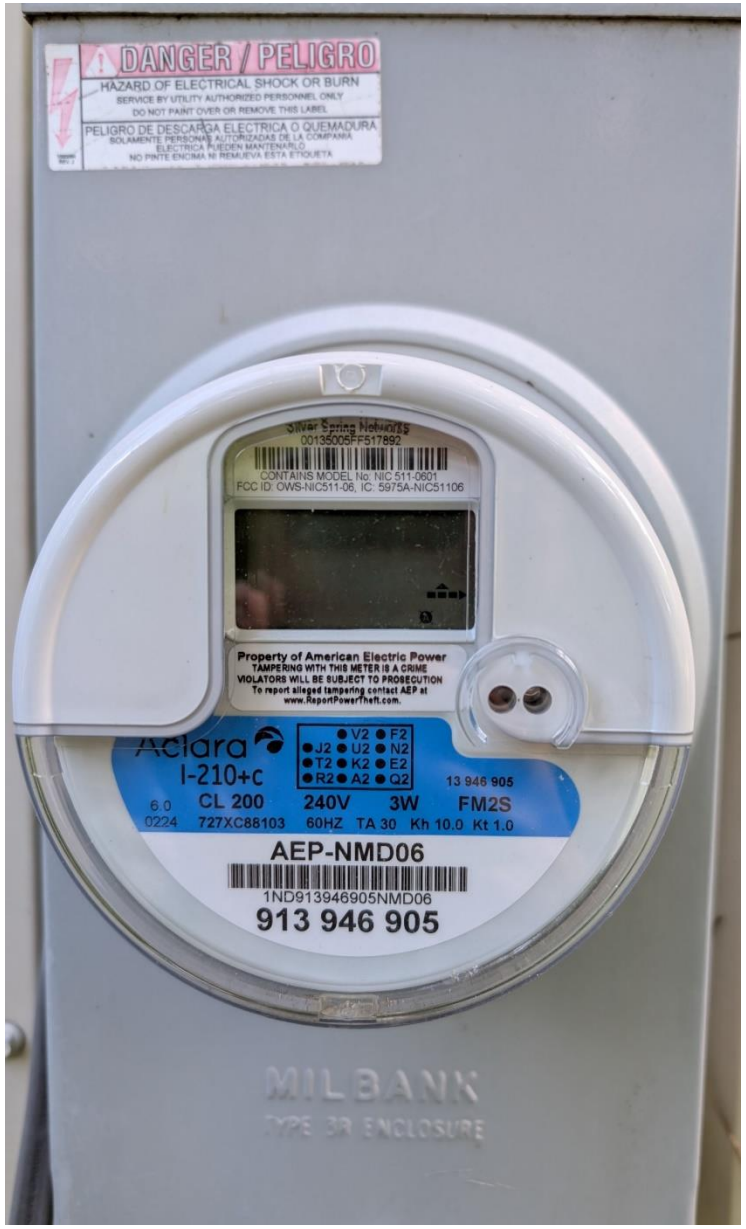
OSMOSE 2017

P.T. CO. G.L.1983

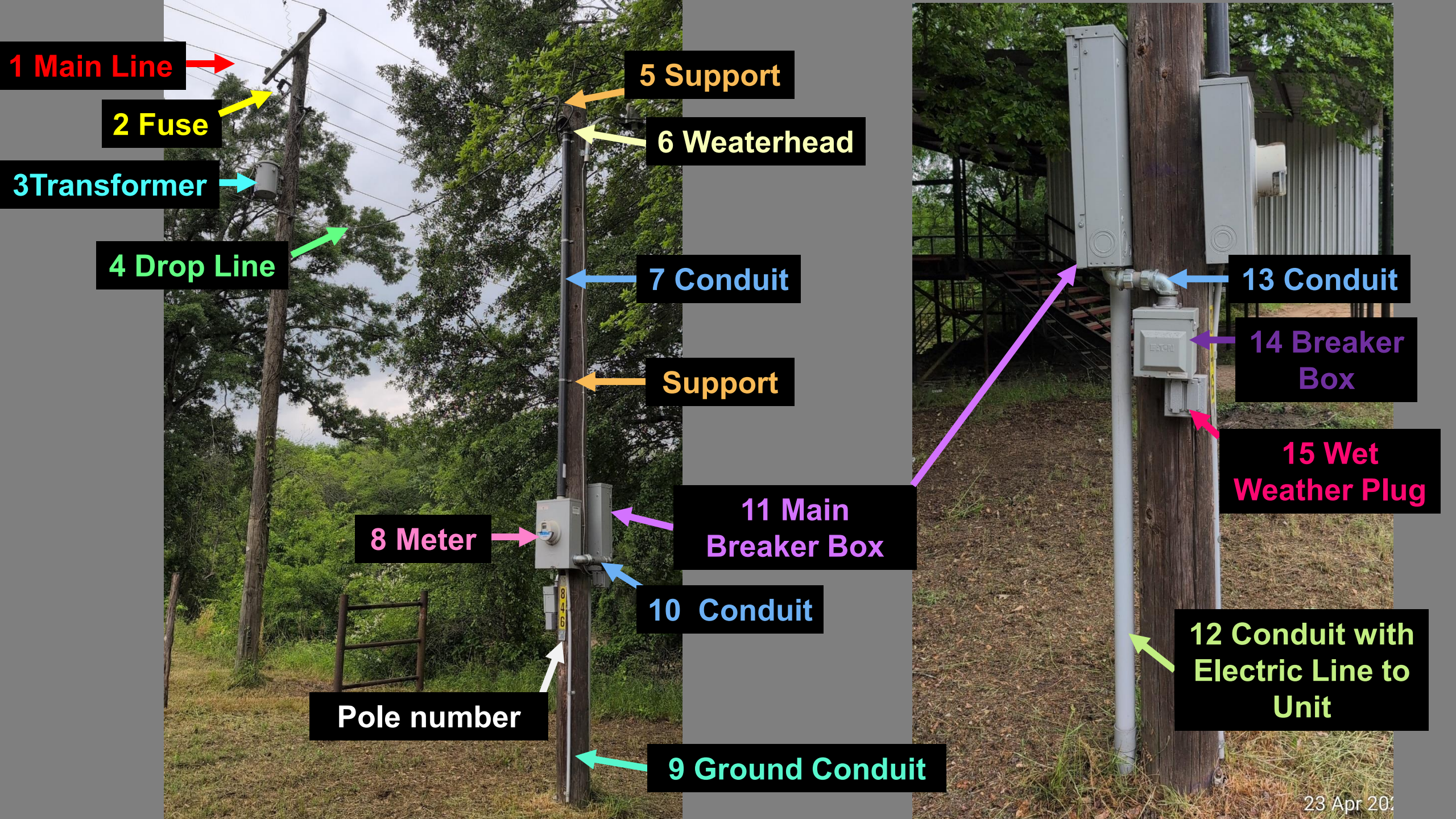
CHAPMAN POLE 1995

WOODFUME 1983

Electric Meter



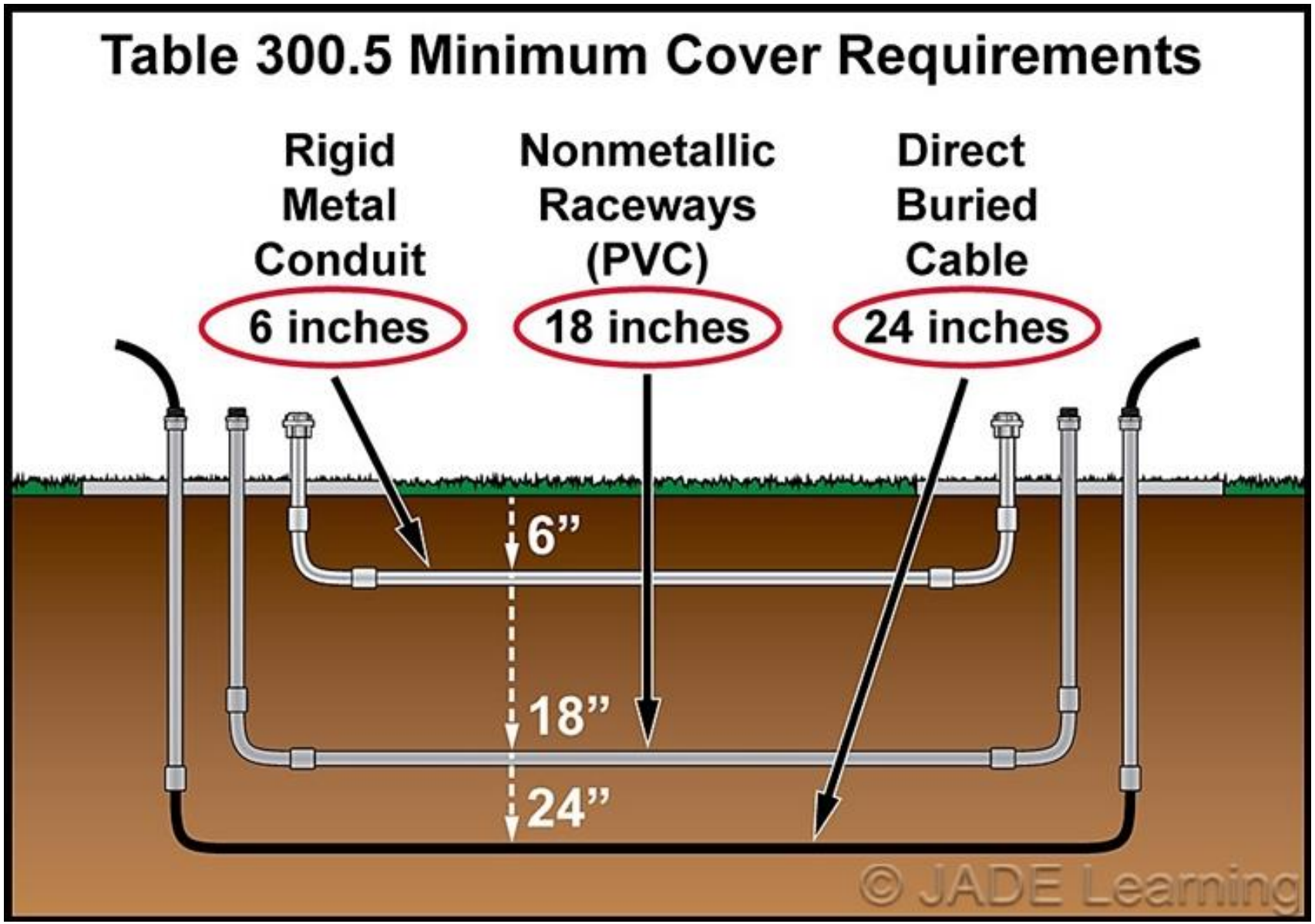
- Record Serial Numbers off the Meter if it is available.
- Take a picture of readings if available.
  - Multiple pictures as the meter shows different readings.


1 Main Line
2 Fuse
3Transformer
4 Drop Line
5 Support
6 Weaterhead
7 Conduit
Support
8 Meter
11 Main Breaker Box
10 Conduit
Pole number
9 Ground Conduit
13 Conduit
14 Breaker Box
15 Wet Weather Plug
12 Conduit with Electric Line to Unit
23 Apr 20

Common Flexible Conduits in the Oilfield

- Liquid Tight Flexible Metal Conduit (LFMC)
- Flexible Metal Conduit (FMC)
  - Electromagnetic Interference (EMI) / Radio Frequency Interference (RFI) Shielding
- Flexible Metallic Tubing (FMT)
- Liquid Flexible Non-Metallic Conduit (LFNC)

How Low Should It Go?



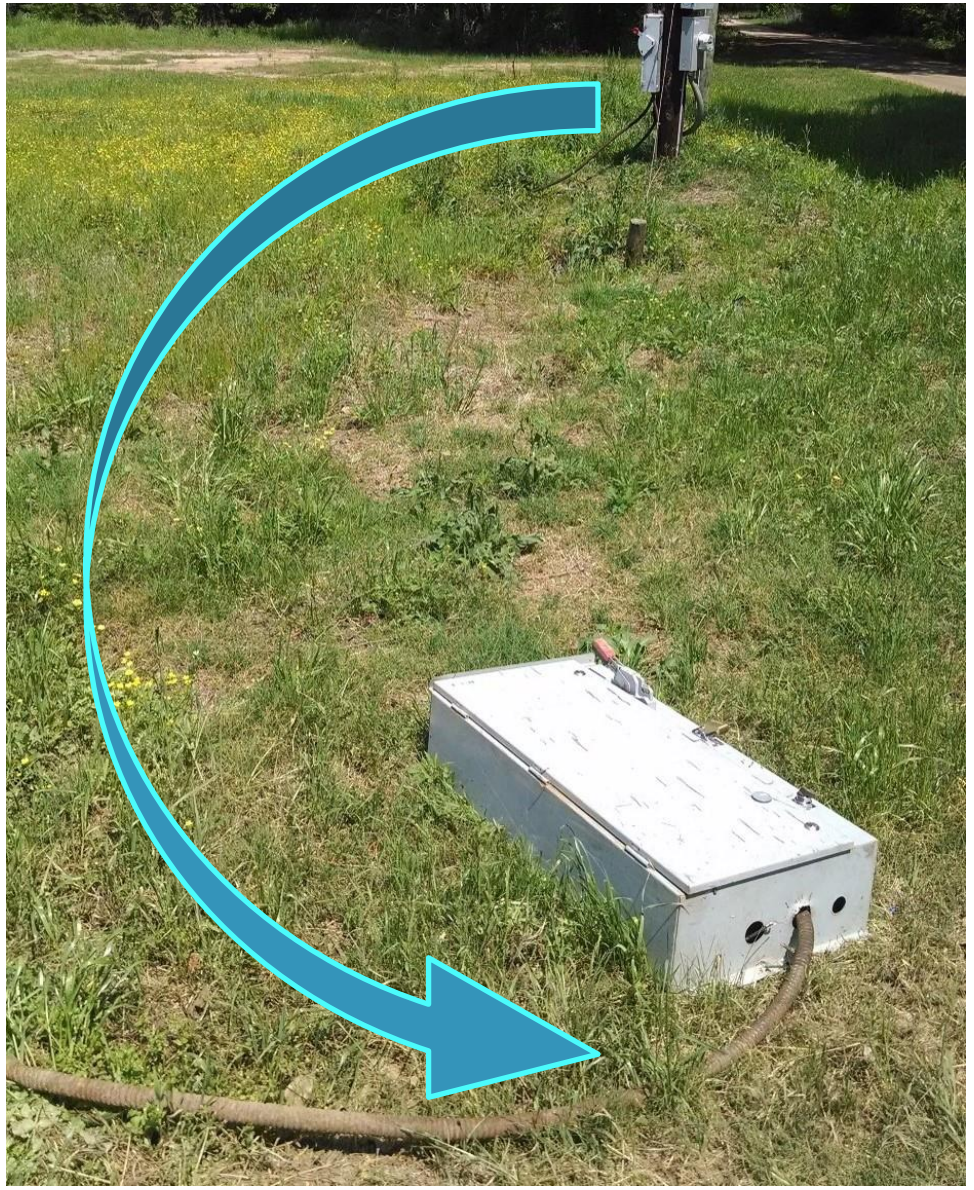
Electrical Issues at the Tank Battery

- **NEC 300.5 – Underground Installations.**

  (d) Protection from Damage. Direct buried conductors and cables emerging from the ground shall be protected by enclosures or raceways extending from the minimum cover distance required by Section 300.5(a) below grade to a point at least 8 feet above finished grade. In no case shall the protection be required to exceed 18 inches below finished grade.

Disconnect at Pole to Pump Control Panel

- Conduit needed for the wires coming out of the disconnect at the pole.
- LFMC is coming out of the Pump Control Panel
  - LFMC can be left on top of the ground
  - LFMC must be label for direct burial if it is buried.
- Pump Control Panel should be on a pole, NOT on the ground.



Examples – Pump Control Panel

Control Panel NOT Securely Mounted

Control Panel Securely Mounted

Maintaining All Things Electrical

- Maintenance of Electric
  - The flexible metallic tubing has corroded and needs to be replaced.

TNRC - Maintenance is Required

Wires are Exposed Conduit Disconnected

Conduit is Split Exposing Wires

Damaged Protective Sleeve of Wires

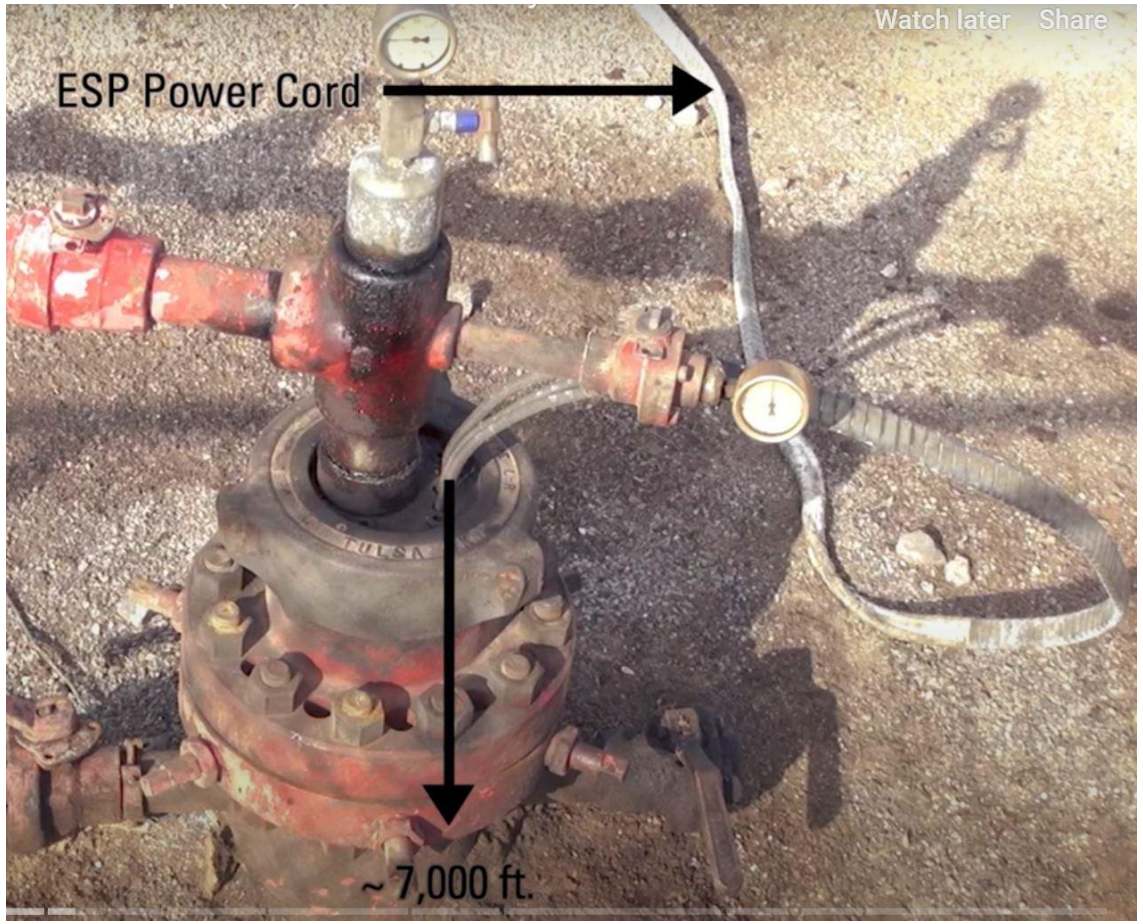
Wires are Exposed

Protective sleeve has been damaged

Control Panel to Electrical Submersible Pumps

- **REDA Cable** is used with ESP
  - Wires wrapped in a metal sheath coming from the control panel to the well.
  - This cable is acceptable to be on top of the ground.

REDA Cable to Wellhead



- REDA Cable runs up to the Wellhead.
- Wires then run through the wellhead and down to the ESP.

REDA Cable Sheath will Corrode and Degrade

Traffic over the Cable Sheath

Environmental Condition Effect the Sheath

REDA Cable That was Inside the Wellbore Downhole

Receptacles on Location

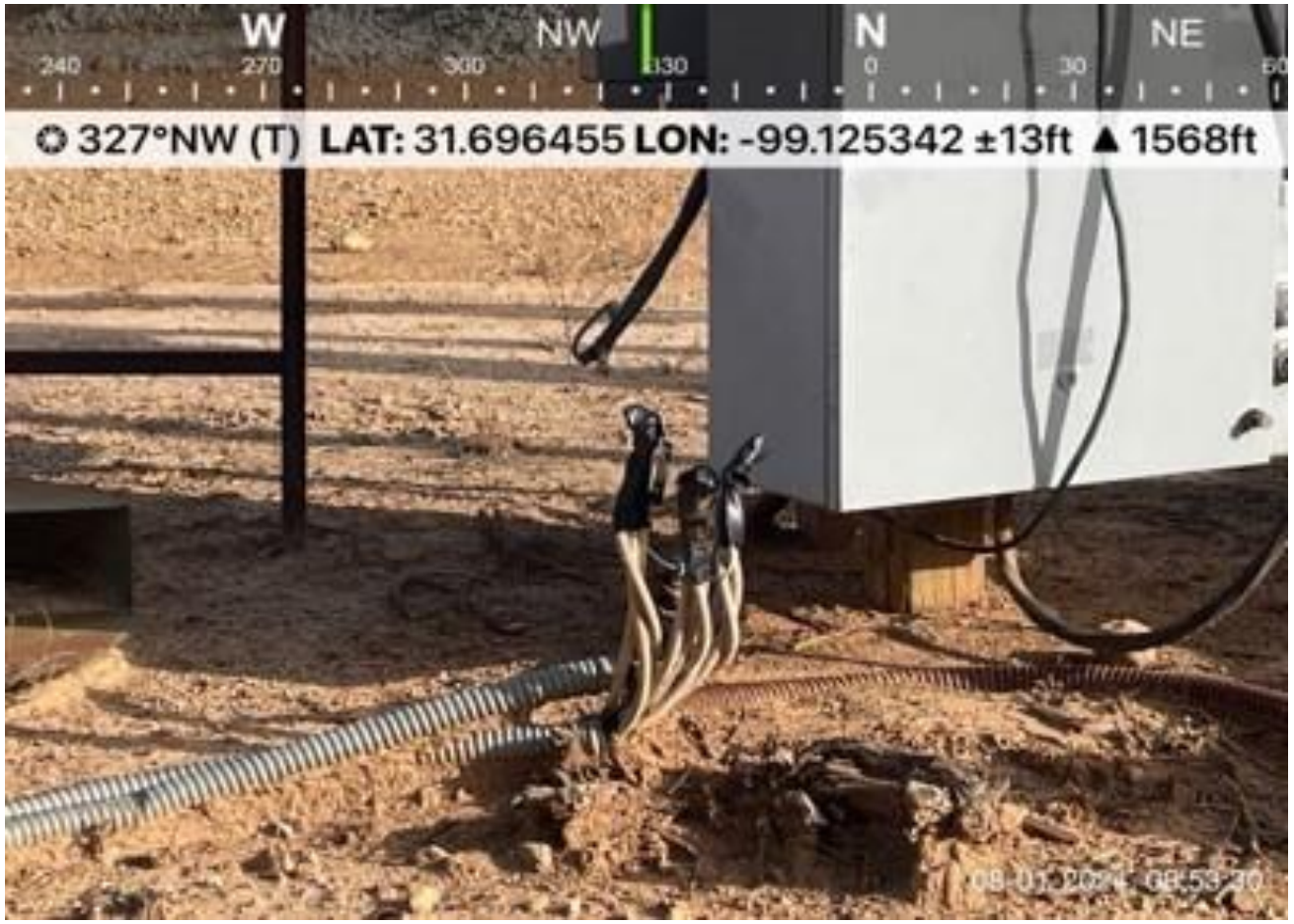
- **NEC 406.9** Receptacles in Damp & Wet Locations
  - 406.9(A) – Damp Locations
  - 406.9(B) – Wet Locations
- Covers are required over these receptacles.

Leviton Extra Duty While-In-Use Covers

Splicing Wires Together

- **NEC 590.4(G) Splices.**

  A box, conduit body, or other enclosure, with a cover installed, shall be required for all splices.

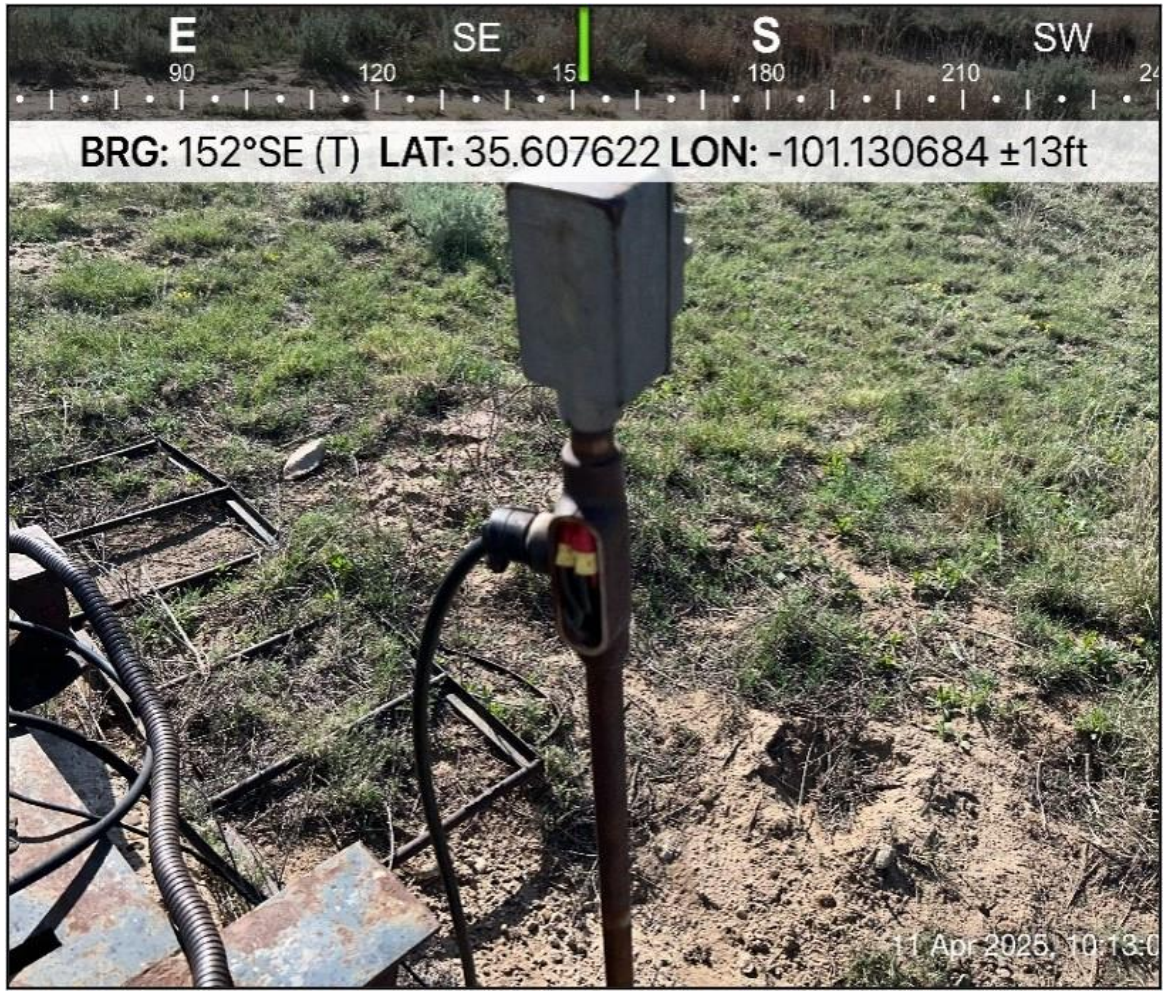


Pump Control Panel to Pumping Unit

- Wires coming from the Control Panel must be in Conduit to the Pumping Unit.
  - Once at the Pumping no wires should be exposed.
  - Cover is missing on the junction box. (Yellow arrow)

Maintenance Needed

Examples – What to Look for in Splices



Exposed Wires Not Connected

Disconnect is in the "ON" positions.
BUT
Does not appear to have a meter.
(Yellow arrow)

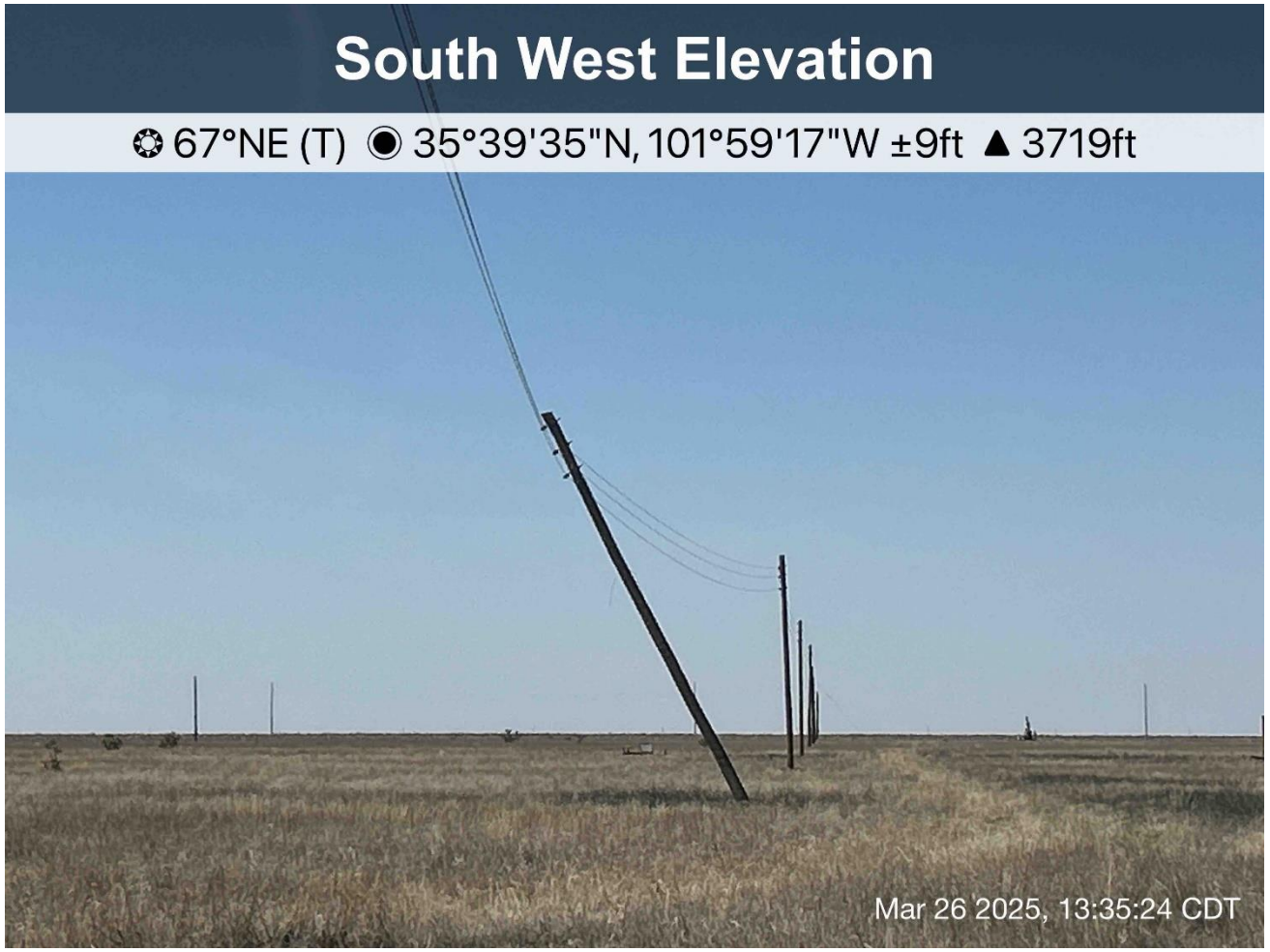
ALWAYS be careful where you have exposed wires.
(Blue arrows)

Follow Electric Lines Carefully

Other Violations – Non-Compliance with SWR 21(I)

Powerlines Below Height Requirement

Powerlines are Potential Fire Hazard



To the Right, To the Right…To the Left To the Left

Hazardous Condition for the Lines

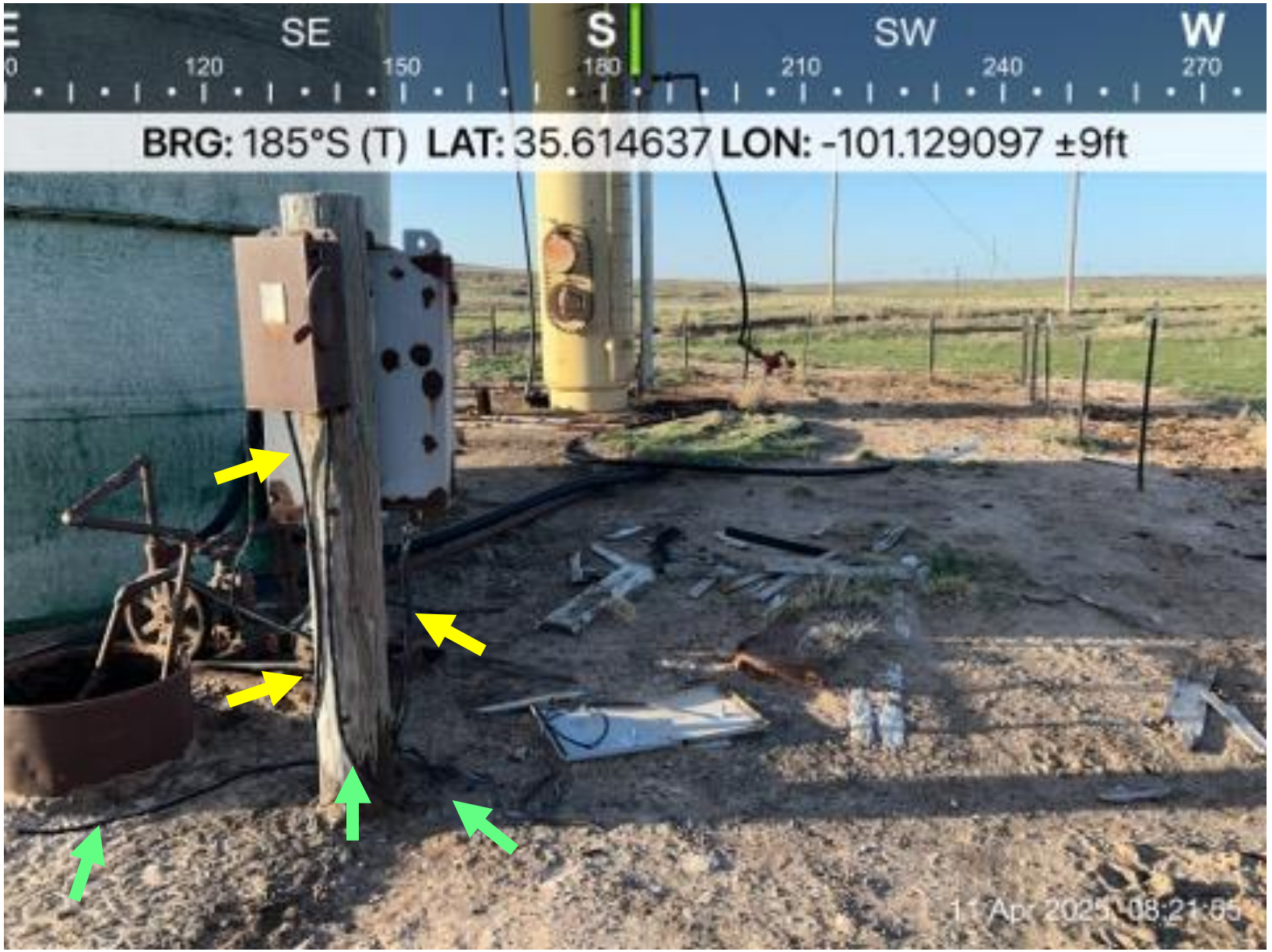
Condition of the Pole = Hazardous Condition for Lines

Down, Down…

Powerlines Pose a Fire Hazard

Powerlines on the Ground

Electrical Issues at the Tank Battery



- Wiring coming into the disconnect is not in conduit or buried. It is laid out on top of the surface.
  (Green arrow)
- Wiring coming out of the disconnect box going into the control panel is not in conduit.
  (Yellow arrow)

Yeah…NO!

Disconnect is on Extension Cord is Hot

Extension Cord is Directly Wired In

Again NO!

- Electric Lines should be in conduit, NOT running on top of the ground

Texas Nature Resource Code

TNRC
Title 3. Oil & Gas
Subtitle B. Conservation and Regulation of Oil and Gas
Chapter 91. Provisions Generally Applicable
Subchapter A. General Provisions

Sec. 91.019. STANDARDS FOR CONSTRUCTION, OPERATION, AND MAINTENANCE OF ELECTRICAL POWER LINES. An operator shall construct, operate, and maintain an electrical power line serving a well site or other surface facility employed in operations incident to oil and gas development and production in accordance with the National Electrical Code published by the National Fire Protection Association and adopted by the Texas Commission of Licensing and Regulation under Chapter 1305, Occupations Code.

Added by Acts 2009, 81st Leg., R.S., Ch. 442 (H.B. 2259), Sec. 3, eff. September 1, 2009.

Texas Administrative Code – Part II

TAC
Title 16 Economic Regulation
Part 2 Public Utility Commission of Texas
Chapter 25. Substantive Rules Applicable to Electric Service Providers
Subchapter B Customer Service and Protection

§25.29. Disconnection of Service

(c) Disconnection without prior notice. Electric utility service may be disconnected without prior notice for any of the following reasons:

(1) where a known **dangerous condition** exists for as long as the condition exists. Where reasonable, given the nature of the **hazardous condition**, the electric utility shall post a notice of disconnection and the reason for the disconnection at the place of common entry or upon the front door of each affected residential unit as soon as possible after the service has been disconnected;

Texas Administrative Code – Part II

TAC
Title 16 Economic Regulation
Part 2 Public Utility Commission of Texas
Chapter 25. Substantive Rules Applicable to Electric Service Providers
Subchapter D Records, Reports, and Other Required Information

§25.94. Report on Infrastructure Improvement and Maintenance.

Each year, an electric utility must file with the PUCT a report that contains a description of the utility's activies related to:

1) Identifying areas in its service territory that are susceptible to damage during severe weather and hardening transmission and distribution facilities in those areas.

2) Vegetation management; and

3) Inspecting distribution poles.

Government Code

GOV'T
Title 4. Executive Branch
Subtitle B. Law Enforcement and Public Protection
Chapter 417. State Fire Marshall

Sec. 417.008. RIGHT OF ENTRY; EXAMINATION AND CORRECTION OF **DANGEROUS CONDITIONS**.

(c) The state fire marshal shall order the removal of a building or structure or other remedial action if he finds that:

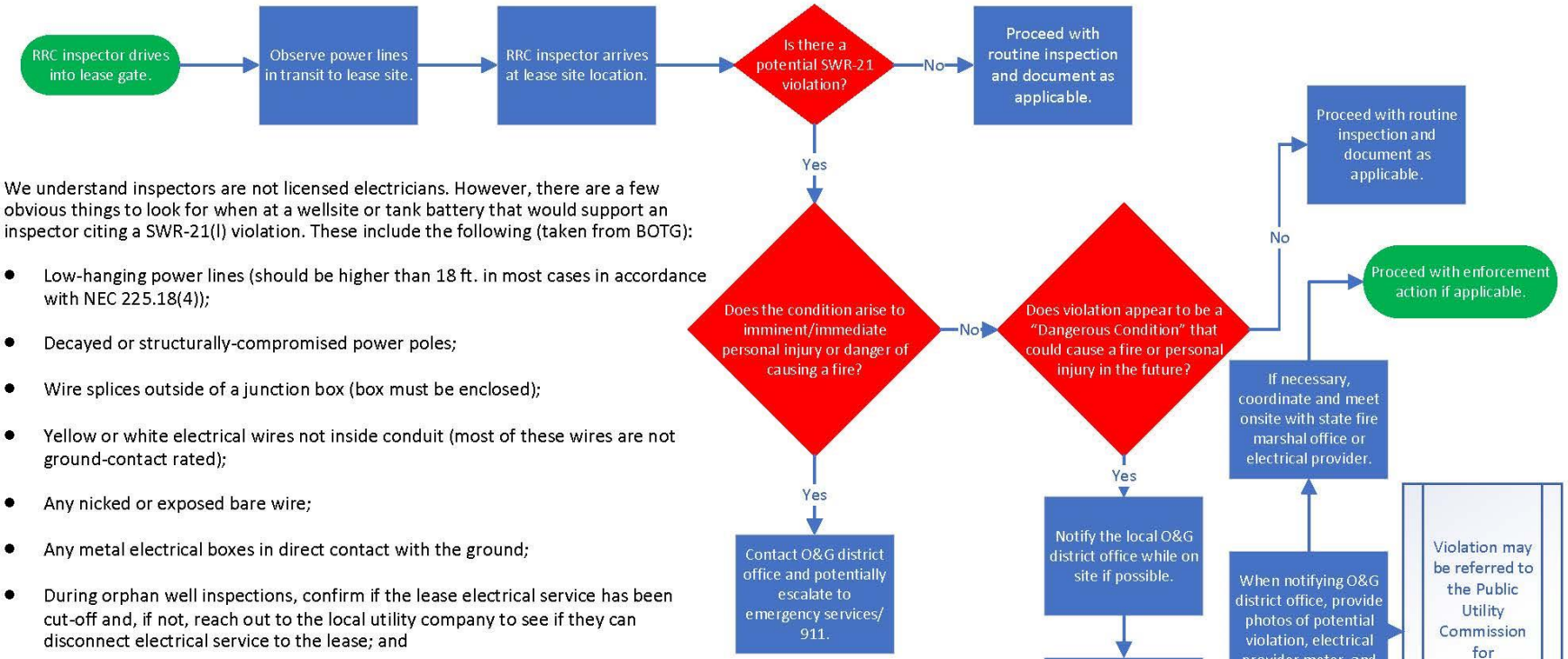
(3) any other condition exists that is dangerous or is liable to cause or promote fire or create danger for fire fighters, occupants, or other buildings or structures.

(d) The occupant or owner of the building or premises shall immediately comply with an order made by the state fire marshal under this section.

Process Guidelines for SWR-21 Considerations

Routine inspection

RRC Inspector and O&G District Office



We understand inspectors are not licensed electricians. However, there are a few obvious things to look for when at a wellsite or tank battery that would support an inspector citing a SWR-21(l) violation. These include the following (taken from BOTG):

- Low-hanging power lines (should be higher than 18 ft. in most cases in accordance with NEC 225.18(4));
- Decayed or structurally-compromised power poles;
- Wire splices outside of a junction box (box must be enclosed);
- Yellow or white electrical wires not inside conduit (most of these wires are not ground-contact rated);
- Any nicked or exposed bare wire;
- Any metal electrical boxes in direct contact with the ground;
- During orphan well inspections, confirm if the lease electrical service has been cut-off and, if not, reach out to the local utility company to see if they can disconnect electrical service to the lease; and
- Inspectors should be looking at electrical connections at well sites and at tank batteries. There is not a need to follow electric feeder lines that go all the way back to the transmission lines. However, if an inspector witnesses a low-hanging electrical line (below 18 feet from ground surface) along their route to a well or tank battery, and it's on the lease, they should notate/cite SWR violations in their inspection report.

Helpful links:

1. Website link showing fire departments in Texas and contact information.

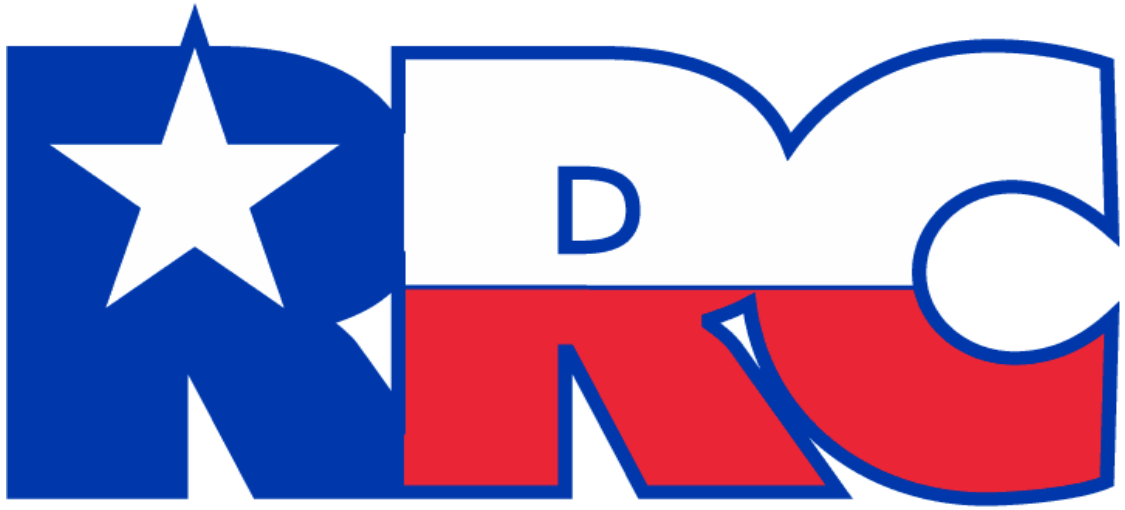
https://fireconnect.tfs.tamu.edu/SearchFireDepartments/Index

2. Website link showing the counties that have a Fire Marshal.

https://txfmapp.org/

3. Website Link showing electric service areas and contact information.

https://experience.arcgis.com/experience/a097c23753814128aba0de41bbd729cd



RAILROAD COMMISSION OF TEXAS

Questions