

SECTION 13: LADDER SAFETY AROUND ELECTRICAL HAZARDS

Regulatory Basis: 29 CFR 1926 Subpart X - 1926.1053 (Ladders), 1926.1060 (Training Requirements)

13.1 Critical Rule: Non-Conductive Ladders Only

When working near exposed energized electrical equipment, only FIBERGLASS or WOOD ladders shall be used. Aluminum and other metal ladders conduct electricity and are prohibited near energized equipment.

Even when not actively working on energized equipment, use fiberglass ladders as default on all electrical job sites.

13.2 Ladder Inspection - Before Every Use

Inspect before use. Remove from service if any of the following are found:

Step/Extension Ladders:

- Broken, missing, or loose rungs or steps
- Broken or damaged side rails
- Broken, missing, or worn non-slip feet
- Damaged rung locks or spreader braces
- Cracks, gouges, or splits in fiberglass rails
- Dirt, grease, oil, or wet paint on steps (clean before use)
- Bent or missing extension hooks

Stepladders:

- Broken or loose spreader/bracing
- Top cap damaged or loose
- Non-functional locking spreaders

Remove damaged ladders from service with tag "DO NOT USE - DAMAGED" and report to supervisor.

13.3 Setup and Use Requirements

Extension and Straight Ladders

- Angle: 4:1 ratio - base 1 foot out for every 4 feet of height (approximately 75.5° from horizontal)
- Extension above landing: extend minimum 3 feet above roof edge, landing, or work surface when used for access
- Secure top: tie off or hold top of ladder against movement (use standoffs if top cannot be tied)
- Secure bottom: use ladder feet, have another employee foot the ladder, or place on non-slip surface
- Single-access rule: only one person on a ladder at a time
- Face the ladder: always face the ladder when ascending or descending
- Three-point contact: both hands and one foot, or both feet and one hand, in contact with ladder at all times
- Carry nothing in hands: use tool belt, bucket, or hoist to get materials up; do not carry tools or materials while climbing
- Side stepping prohibited: do not lean or reach more than arm's length; move the ladder instead

Stepladders

- Spread fully - all four feet on ground, spreaders fully opened and locked
- Do not use top two steps (top cap is not a step)
- Do not climb on back bracing
- Stepladders not used as single ladders (closed/folded position)

General Rules

- Ladders placed on stable, level surface - never on boxes, barrels, or other unstable objects
- Never place ladder in front of door unless door is blocked, locked, or guarded
- Overhead clearance: be aware of overhead power lines and energized equipment when positioning ladders
- Ladder near energized equipment: maintain clearance - ladder must not contact energized parts; use fiberglass only
- Do not use metal ladder within 10 feet of overhead power lines

13.4 Ladder Storage and Transport

- Store ladders horizontally supported at multiple points to prevent warping
- Avoid storing against wall on end (can fall)
- Transport ladders secured in/on vehicle - no protruding ends without warning flag (red flag, 12" x 12", within 6 inches of end)
- Protect ladders from UV (fiberglass degrades in prolonged direct sunlight)

13.5 Ladder Training Requirements (29 CFR 1926.1060)

All employees who use ladders receive training before use:

- Nature of fall hazards in the work area
- Correct use of ladders (all types used)
- Maximum load-carrying capacity of ladders
- Proper inspection procedure

SECTION 14: TRENCHING SAFETY FOR CONDUIT INSTALLATION

Regulatory Basis: 29 CFR 1926.650 (Scope), 1926.651 (General Requirements), 1926.652 (Protective Systems)

14.1 Scope

This section covers underground conduit installation, direct-burial cable work, and any excavation or trench work performed by Demo Company LLC employees.

14.2 Competent Person Requirement

A Competent Person must be present at all excavations. The competent person is authorized to:

- Classify soil type
- Inspect the excavation daily and after any hazard-increasing event (rain, vibration, freeze/thaw)
- Order immediate evacuation if hazardous conditions are observed
- Shut down excavation work if protective systems are inadequate

Competent person for trenching: Robert Nguyen (designated 2026-01-01)

14.3 Underground Utility Locates - Call 811

Company policy: call/verify utilities before any digging. Texas legal trigger: Texas damage-prevention notice is required when work may disturb soil at or beyond the statutory trigger depth/window:

- Contact Texas 811 when the Texas damage-prevention trigger applies; company policy is to verify utilities before any digging even when the legal trigger is not reached
- In Texas, contact Texas 811 (<https://texas811.org>) at least 48 hours (excluding Saturdays, Sundays, and legal holidays) before excavation. Texas Utilities Code Sec. 251.151 requires notice no earlier than the 14th day before excavation and no later than the 48th hour before excavation.
- 16-inch depth trigger: The 811 notification requirement applies to excavation disturbing soil at a depth greater than 16 inches.
- Saturday rule: Tickets requested on Saturday become valid Tuesday at 11:59 p.m. (Saturday does not count toward the 48-hour period).
- Railroad Commission enforcement: Violations involving intrastate pipelines are enforced by the Railroad Commission of Texas under 16 TAC Ch. 18; penalties begin at \$1,000 per violation.
- Respect utility markings; expose utilities by hand-digging, potholing, or vacuum excavation within the operator-designated tolerance zone or as instructed by the utility owner
- Electrical lines require extra caution - assume any buried wire is energized
- If unmarked utility is struck: stop, treat as energized, call utility emergency number and 911

14.4 Soil Classification

Before selecting a protective system, competent person classifies soil:

Soil Type	Description	Examples
Type A	Cohesive, unconfined compressive strength ≥ 1.5 ton/ft ²	Hard clay, cemented soils (no cracks, undisturbed)
Type B	Cohesive, strength 0.5-1.5 ton/ft ² ; or fissured	Silt, sandy loam, unstable rock
Type C	Weakest; cohesive strength < 0.5 ton/ft ² or granular	Gravel, sand, submerged soil, Type A/B with cracks/prior disturbance

When in doubt, classify as Type C - use most protective system.

14.5 Cave-In Protection Requirements

Protection required for ALL trenches 5 feet or deeper. Protection may also be required for trenches under 5 feet if competent person identifies cave-in hazard.

Note: 29 CFR 1926 Subpart P (29 CFR 1926.650-.652) governs all private-sector excavation and trenching requirements in Texas. Some municipalities also require excavation permits - verify with local building department.

Option 1: Sloping/Benching

Soil Type	Maximum Slope Angle (from horizontal)
Type A	53° (¾H:1V)
Type B	45° (1H:1V)
Type C	34° (1½H:1V)

Option 2: Trench Box (Shield System)

- Pre-manufactured steel or aluminum trench shield
- Extend shield to within 2 feet of trench bottom
- Employees work only within shielded area
- Do not use trench box as a form or to restrain soil - employee protection only

Option 3: Shoring (Timber or Hydraulic)

- Hydraulic shoring most common for electrical conduit work
- Install according to tabulated data or registered engineer design

14.6 Access and Egress

- Ladders, steps, or ramps required in all trenches 4 feet or deeper
- Access point within 25 feet of all employees in trench
- Ladders must extend 3 feet above trench edge

14.7 Spoil Pile Management

- Spoil pile placed minimum 2 feet from edge of trench
- On sloped sites, place spoil on uphill side
- Do not place heavy equipment near trench edge (surcharge load)

14.8 Daily Inspections

Competent person inspects excavation:

- Before each shift and after any event that could increase hazards
- After rainstorms, freezing temps, vibration from equipment or traffic
- Inspections documented; deficiencies corrected before employees enter

14.9 Water Accumulation

- Do not enter trench with accumulated water unless special precautions taken
- Pump out water and allow drainage before entry
- Inspect soil stability after water removal - saturation weakens all soil types
- If water continuously accumulates: use water removal pump AND stay outside trench until water controlled

Excavations 20 Feet or Deeper: Excavations 20 feet or deeper require protective systems designed by a registered Professional Engineer per 29 CFR 1926.652(b)(1) and (c)(1). No tabulated data or manufacturer specifications may be used for excavations at this depth without PE review and approval.

Emergency Response and Rescue Planning

Before trench entry, the Competent Person must confirm emergency response arrangements for the excavation. Workers must not attempt untrained trench-collapse rescue or enter an unprotected collapse area. If a cave-in, hazardous atmosphere, water accumulation, utility strike, or other excavation emergency occurs:

- Stop work, remove exposed workers from the excavation area, and call 911/site emergency contacts.
- Keep workers out of the trench until the excavation is protected and qualified responders control rescue operations.
- Preserve utility-mark, inspection, and locate-ticket information for responders when it is safe to do so.
- Provide readily available rescue equipment, such as breathing apparatus, harness and line, or basket stretcher, where hazardous atmospheres exist or may reasonably develop during excavation work (29 CFR 1926.651(g)(2)).

SECTION 15: WORKING NEAR OVERHEAD POWER LINES

Regulatory Basis: 29 CFR 1926.416(a)(1) (Unguarded Live Parts); 29 CFR 1926.1408-.1411 applies only if crane/derrick operations are performed

15.1 Hazard

Contact with overhead energized power lines is a leading cause of construction fatalities. Electrical contractors are at heightened risk during:

- Service entrance installation near utility drop
- Installing conduit on structures with overhead lines nearby
- Raising conduit, ladders, or other tall materials
- Driving service vehicles or equipment under overhead lines
- Using aerial work platforms near lines

15.2 Minimum Safe Approach Distances (MAD)

The following minimum distances must be maintained from energized overhead power lines (including insulated lines - assume insulated lines are energized):

Voltage (Phase-to-Phase)	Minimum Approach Distance
Up to 50 kV	10 feet
Over 50 kV to 200 kV	15 feet
Over 200 kV to 350 kV	20 feet
Over 350 kV to 500 kV	25 feet
Over 500 kV to 750 kV	35 feet
Over 750 kV to 1,000 kV	45 feet

Distribution lines (residential/light commercial) are typically 4kV-35kV -> 10-foot minimum distance applies.

When voltage is unknown: maintain 10-foot minimum or contact utility for voltage identification.

15.3 Texas Health & Safety Code Chapter 752 - MANDATORY FOR TX ELECTRICAL CONTRACTORS

In addition to federal OSHA distances above, Texas has its own overhead power line statute that imposes separate obligations:

Tex. H&S Code Ch. 752 (Secs. 752.001-752.008) - High Voltage Overhead Lines:

1. 6-foot trigger distance: No person may operate equipment, use tools, or handle materials within 6 feet of a high-voltage overhead line (>600V) without complying with Ch. 752
2. 48-hour advance notification: Before performing any work that will bring a person, tool, or material within 6 feet of a high-voltage overhead line, the responsible party must notify the line operator at least 48 hours in advance - this requirement has NO federal equivalent
3. "Authorized person" exemption: Employees of the line operator working on the line itself may be exempt; Demo Company LLC employees are not treated as exempt under Ch. 752 unless utility/operator status is confirmed in writing for that specific task
4. Penalties: Violation of Sec. 752.007 carries a fine of \$100-\$1,000 and/or jail up to one year (Class B misdemeanor). Additionally, Sec. 752.008 imposes joint-and-several civil liability for damages to the line operator plus reimbursement of repair costs.

Both the federal 10-foot MAD and the Texas 6-foot/48-hour notification apply simultaneously. Contractors must comply with whichever is more restrictive for the situation. For most residential/commercial overhead lines, maintain the federal 10-foot MAD AND provide 48-hour notification to the line operator if any work will occur within 6 feet.

Notification log: Maria Lopez maintains a written log of all Ch. 752 notifications including: line operator contacted, date/time of notification, description of work, expected duration, and confirmation received. Retain with job file.

15.4 Before Starting Any Work Near Overhead Lines

1. Survey the work area - identify all overhead lines (power, communications, CATV) in and near the work zone
2. Determine voltage of lines if possible (contact utility company)
3. Establish a plan to maintain MAD at all times
4. Brief all employees on the hazard, line locations, and MAD before work begins

15.5 Options for Working Within MAD

If work cannot be completed while maintaining MAD:

Option A: De-energize and ground (preferred)

- Contact utility company to arrange de-energization and grounding
- Utility must de-energize and ground - this is NOT done by contractor employees
- Obtain written confirmation from utility before proceeding
- Cost and scheduling: allow adequate lead time

Option B: Insulated barriers

- Install protective covers/insulating barriers provided or approved by utility
- Barriers rated for voltage of the line
- Utility approval required before installing barriers on utility lines

Option C: Maintain MAD with warning lines

- Establish physical warning lines (high-visibility rope/tape) at MAD from lines
- Warning line serves as trigger - no personnel or equipment inside warning line without utility authorization

15.6 Cranes and Derricks - Subpart CC Distances

Crane/derrick work is outside this base electrical profile unless selected for the project. If crane or derrick operations are added, apply 29 CFR 1926.1407-1411, verify voltage and clearance distances with the utility/controlling contractor, and issue a separate lift/power-line plan before work begins.

Note: The 10-foot MAD table above applies to personnel and non-crane equipment per 29 CFR 1926.416(a)(1). Cranes, derricks, and similar hoisting equipment are governed by Subpart CC and require separate planning.

15.7 Equipment and Vehicle Height Awareness

- Know the height of all equipment, ladders, and loads before working near overhead lines
- Service vehicles with extended ladders: confirm line clearance before raising
- Aerial work platforms: pre-plan boom/platform height vs. line position
- Flag warning signals or spotters when equipment operates near lines