TVPPA Education & Training

TVPPA Lineman Apprenticeship Program

Self-Study Modules

Unit 1
Unit 2
Unit 3
Unit 4

Skills Labs

Pre-Apprentice Assessment
Digger Derrick Training
Fundamentals Lab 1
Construction Lab 2
Operations Lab 3
Underground Lab 4
Troubleshooting Lab 5

Final Exam

Workzone Traffic Control (online program)

This is a highly interactive, online course that walks the student through utility operations, fundamental WZTC practices, signs, channelizing devices, common applications and practices and flagger operations. Students have an opportunity to apply knowledge learned through practice activities such as demonstrating proper spacing of channelizing devices.

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TVPPA Lineman Apprenticeship Program Self-Study Modules

Unit 1

Lesson

1. Electricity A Necessity For Modern Life
2. Basic Tools and Equipment for Line Work
3. Line Work Communications
4. Working Safely
5. Ropes Knots Splices and Gear
6. Basic Electricity
7. Simple Ways of Making Electricity
8. Mathematics Review
9. More Mathematics
10. Introduction to DC Fundamental

Unit 2

Lesson

1. Electricity Generation and Transmission
2. Mathematics Formula Review
3. Trigonometry and Vectors
4. Alternating Current and Circuits w Resistance
5. Electric Current
6. Inductance in AC Circuits
7. Capacitors In AC Circuits
8. Series Circuits Resistance Inductive Reactance
9. Protective Grounding
10. The Use of Hot Line Tools

Unit 3

Lesson

1. Mathematics Formula Review
2. Safety Review
3. Electricity Distribution
4. AC Parallel Circuits
5. Three Phase Systems
6. AC Instruments and Meters
7. Measuring Electricity
8. Distribution and Transmission Poles
9. Stringing and Sagging Operations
10. Transformers

Unit 4

Lesson

1. Safety Review
2. Line Conductors and Connections
3. Underground Distribution Systems
4. Maintenance of Transmission Lines
5. Transformer Connections and Special Applications
6. System Operations
7. System Protection
8. Work Procedures
9. Insulators
10. Substations and Operations

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TVPPA Lineman Apprenticeship Program Skills Labs

Pre-Apprentice Assessment

The TVPPA Pre-Apprentice Assessment workshop is a 6.5 day class designed to help determine whether an employee or potential employee is suited for the demanding role of lineworker apprentice. Candidates are assessed on their ability to learn the various aspects of linework, especially climbing. Individual sessions focus on the hazards of electricity, grounding and rigging.

Participants stay physically and mentally challenged for the duration of the course and are placed "on call" at night. In addition to classroom discussion and hands-on exercises, students are assigned homework and tested extensively.

- Work site safety inspection
- Fitting & care of climbing tools and inspection
- Pole inspection & worksite hazards
- Knots: single bowline, round turn and 2 half hitches, clove hitch w/safety half hitch, timber hitch, square knot, bowline on a bight.
- Pole top rescue @ 10' level
- Climbing techniques
- Hand line use and makeup for storage
- Rigging to include hang single cross arm @ the 10' level.
- Student to provide 10' of ½ diameter rope for knot tying and splicing.
- Installing Line Conductors
- Safety
- PPE and Tool Inspection
- Climbing – including fall restraint instruction, changing positions, and circling the pole
- Climbing a 40 and 90 foot pole
- Rigging
- Handlines

Managers receive documentation of performance for each day of the workshop with instructor comments and evaluation of the student's potential to perform linework under stress, their capacity to learn and how well they follow orders. In addition, students may take behavior and values profiles and managers will receive reports on each individual's results and how closely they align with top performing linemen.

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Digger Derrick Training

The purpose of this training is to insure the safe and responsible operation of a Digger Derrick truck. With this training the intended outcome is for all those that are using these devices acquire the knowledge and skills to operate the equipment safely and productively.

Digger-Derrick Field Exercises

Each participant shall perform the following exercises to the satisfaction of the evaluator.

- Exercise #1 Pre-operational inspection & Pre-flight Operation
- Exercise #2 Hand Signals
- Exercise #3 Load Spotting and Landing
- Exercise #4 Load Control Obstacle Course
- Exercise #5 Digger Operation
- Exercise #6 Pole Setting

Material Handling Aerial Device Field Exercises

Each participant shall perform the following exercises to the satisfaction of the evaluator.

Exercise #1 Pre-operational inspection & Pre-flight Operation
Exercise #2 Inspect and Don Fall Protection Equipment
Exercise #3 Setting up and Leveling the Unit
Exercise # 4 Maneuvering the Platform
Exercise #5 Operating the Material Handling Jib
Exercise #6 Bucket Rescue
Exercise #7 Bucket Self-Rescue

Fundamentals Lab 1

- Safety
- PPE Inspection
- Testing the line to be energized
- Equal-Potential Grounding, single and three phase
- Rigging
- Pole Top Rescue
- Aluminum and copper ties
- Minimum approach distances
- OSHA 1910.269
- Work Area Protection

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Construction Lab 2

- Safety
- Job Briefings
- Pole top rescue on a 40’ pole
- Overhead construction
- Rigging & hang double cross arm on a 40’ pole
- Install aluminum & copper hand ties
- Install eye-splice in 3-strand rope
- Bucket Truck Rescue
- Guys and anchors
- Minimum approach distances
- Grounding
- Sagging
- Testing the line to be energized
- Insulating cover up

Operations Lab 3

- Safety
- Job Briefings
- Single phase theory
- Single Phase Transformer Connections
- Banking Single Phase Transformers Theory
- Three Phase Transformer Connections
- Aerial lift pre-flight inspection/ bucket safety
- Bucket truck rescue

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Underground Lab 4

- Safety
- Underground System Design. Radial, Loop & Dual Feeds.
- Under-ground cable design, preparation/installation
- Locating/cable fault finding for underground cable
- Makeup & installation of: terminations/connectors such as elbows, elbow lightning arrestors and terminators. Pot-heads & splices and bushing well insert
- Makeup & Installation of URD Equipment to include: Transformers, Live & Dead Front, Switching cabinets, junction boxes
- Grounding of underground cable and pad mounted transformers
- URD operations and construction
- Identification of Live & dead-front URD pad-mounted transformers
- URD troubleshooting
- URD tagging/switching
- Testing
- Installation
- Fusing

Troubleshooting Lab 5

- Safety
- PPE
- Hot line tools
- Protective devices
- OSHA/NFPA standards
- Testing line voltage
- Substation
- Breakers
- Regulators
- Capacitors
- Troubleshooting techniques

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Final Exam

The 2.5 day exam consists of a 110 question written test and a series of physical skills lab demonstrations. The written test includes questions covering objectives in Units 1-4 of the Lineman Apprenticeship Program. The skills lab demonstrations include objectives from Labs 1-5 and will vary for each final exam. Demonstration requirements will not be revealed for each exam until students are on the field. Scoring of the overall exam is weighted 40% for the written test and 60% for the skills lab demonstrations.

- Pole top rescue
- Bucket truck safety checks and pre-flight inspection
- Bucket truck rescue
- Inspection of personal protective equipment
- Proper conductor and hardware cover up techniques
- Proper technique while moving conductor from one structure to the next
- Proper procedure and checks to by-pass an OCR
- Transformer change out
- Personal protective grounding
- Bayonet fuses change out
- Personal protective grounding on a URD system
- Troubleshooting URD and distribution systems
- Transformer Connections

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