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Northeast Wisconsin Technical College

31-413-336 053761 Line Electrician Field Training 2-A

Course Outcome Summary

Course Information

Description	31-413-336 LINE ELECTRICIAN FIELD TRAINING 2-A ...This course focuses on the installation of underground lines and equipment, underground troubleshooting, and trencher operation. Students will also learn the construction and design of single phase transformers. (Prerequisite: 31-413-330, Line Electrician Field Training 1)
Total Credits	5
Total Hours	180

Course History

Last Revision Date	3/16/2017
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Employability Skills

- Communicate Effectively
- Demonstrate Community and Global Accountability
- Demonstrate Personal Accountability
- Solve Problems Effectively
- Think Critically and Creatively
- Value Individual Differences and Abilities
- Work Cooperatively and Professionally

Program Outcomes

- TSA1 - Apply electrical theory
- TSA2 - Construct overhead electrical distribution systems
- TSA3 - Disassemble overhead electrical distribution systems
- TSA4 - Construct underground electrical distribution systems
- TSA5 - Disassemble underground electrical distribution systems
- TSA7 - Disassemble overhead electrical transmission system

Course Competencies

1. Layout of the Underground Distribution (UD) system

Assessment Strategies

by laying out the Underground Distribution (UD) system

Learning Objectives

- 1.a. Identify UD components
- 1.b. Explain UD layout
- 1.c. Work as team to develop layout
- 1.d. Locate wire

Criteria

Your performance will be successful when:

you explain current layout of UD system
you describe new layout of UD system
you locate wire using locator

2. Operate Underground Distribution (UD) excavating equipment

Assessment Strategies

by operating Underground Distribution (UD) excavating equipment

Learning Objectives

- 2.a. Operate Trencher
- 2.b. Dig trench
- 2.c. Backfill trench
- 2.d. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you verifies that all UD facilities have been located
you perform trencher/backhoe maintenance
you dig trench using trencher
you dig trench with shovel
you dig trench with backhoe
your trench is level with no sharp objects
you backfill excavation
you ready equipment for transportation or storage

3. Install Underground Distribution (UD) transformers/equipment

Assessment Strategies

by installing Underground Distribution (UD) transformers/equipment

Learning Objectives

- 3.a. Install underground cable and equipment
- 3.b. Practice making UD connections
- 3.c. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you install & make connections to a riser installation
you installs primary & secondary cable in trench
you install foundation for pad-mounted transformer
you install pad mounted transformer
you install ground rod, makes neutral & ground connections
you terminate primary cable

you install primary junction enclosure & switch gear
you terminate primary cable in junction enclosure
you install secondary pedestal
you terminate secondary cable in pedestal
you make proper connections in meter pedestal
you install a secondary riser on a pole
you install a primary riser on a pole
you terminate secondary cable
you test circuits for presence of voltage
you properly ground cables
you cut cable using cable cutter
you remove insulation with insulation stripper
you remove semi-con layer with silicon stripper
you clean conductor with wire brush
you splice primary cables
you splice secondary cables

4. Demonstrate proper procedure for entering manhole

Assessment Strategies

by demonstrating proper procedures for entering manholes.

Learning Objectives

- 4.a. Review OSHA standards for entering manholes
- 4.b. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you test air quality inside manhole
you open manhole cover
you drop lead for atmospheric conditions deep in manhole
you ventilate air into manhole
you barricade manhole
you set up tripod
you set up equipment to enter manhole
you demonstrate entering a manhole

5. Demonstrate proper work procedures inside manhole

Assessment Strategies

by demonstrating proper work procedures inside manhole.

Learning Objectives

- 5.a. Pull wire from one manhole to another
- 5.b. Make proper UD cable terminations
- 5.c. Demonstrate proper rigging techniques
- 5.d. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you install rigging equipment for proper cable pull
you demonstrate proper placement of Kelm grip
you demonstrate proper securing of Kelm grip
you determine proper measurements for cable terminations
you install cable without damage

6. Install poles in single/three-phase system

Assessment Strategies

by installing poles in single/three-phase system

Learning Objectives

- 6.a. Differentiate between single and three-phase systems

- 6.b. Set the pole
- 6.c. Interpret work order, plat map, staking sheets
- 6.d. Terminate wires to the overhead system
- 6.e. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

- you verify that all existing UD facilities have been located
- you interpret work orders, plat maps, staking sheets
- you assist in staking out a pole line
- you load & unload poles on a pole trailer
- you set pole to proper depth
- you plumb the pole
- you face the pole
- you backfill & tamp newly set pole

7. Frame poles for single/three-phase

Assessment Strategies

by framing poles for single/three-phase

Learning Objectives

- 7.a. Utilize Personal Protective Equipment (PPE)
- 7.b. Review proper hardware installation according to construction standards

Criteria

Your performance will be successful when:

- you drill bolt holes for installation
- you install hardware and equipment
- you install cross arms
- you install ground rods and connect ground wires
- you install fuse cut-out and lighting arrester

8. Perform proper pole climbing

Assessment Strategies

by properly climbing poles

Learning Objectives

- 8.a. Utilize Personal Protective Equipment (PPE)
- 8.b. Climb wood poles

Criteria

Your performance will be successful when:

- you use a safety strap
- you belt in and belt off of wood poles
- you double belt wood poles
- you ascend and descend free hand
- you ascend and descend belted in
- you coordinate hand and foot movement
- you lengthen and shorten safety strap properly to perform work
- you move around the pole free hand
- you move around the pole belted in
- you climb over cross arms and obstruction
- you hang a handline while on the pole
- you perform work with two hands

9. Perform proper truck operation

Assessment Strategies

by performing proper truck operation

Learning Objectives

- 9.a. Utilize Personal Protective Equipment (PPE)
- 9.b. Recognize worksite hazards
- 9.c. Operate digger derrick truck
- 9.d. Operate bucket truck

Criteria

Your performance will be successful when:

- you perform DOT inspection of vehicle
- you recognize worksite hazards
- you set up cones and signs to avoid worksite hazards
- you start engine
- you position truck for work, check soil, road, and shoulder
- you properly guard the work site
- you engage PTO
- you operate lower controls
- you perform inspection of digger derrick/bucket truck prior to use
- you raise and cradle the boom
- you raise outriggers
- you disengage PTO
- you attach trailer, detach trailer and park trailer
- you back vehicle and trailer
- you use hand signals
- you locate and operate pedestal override controls

10. Use hand and power tools

Assessment Strategies

by using hand and power tools

Learning Objectives

- 10.a. Utilize Personal Protective Equipment (PPE)
- 10.b. Display proper use of hand tools
- 10.c. Display proper use of power tools

Criteria

Your performance will be successful when:

- you select correct tools.
- you inspect tools.
- you adjust tools before and during each use.
- you clean and inspect tools.
- you store tools in correct location.

11. Tie knots and splice ropes

Assessment Strategies

by tying knots and splicing rope

Learning Objectives

- 11.a. Utilize Personal Protective Equipment (PPE)
- 11.b. Demonstrate how to tie knots
- 11.c. Demonstrate how to splice rope

Criteria

Your performance will be successful when:

- you tie a bowline
- you tie a double bowline
- you tie a bowline on a bight
- you tie a running bowline
- you tie a triple (rescue) bowline
- you tie a square knot
- you tie a figure eight knot

you tie a sheepshank
you tie a overhand knot
you tie two half-hitches
you tie a round turn and two half-hitches
you tie a snubber
you tie a catspaw
you tie a timber hitch
you make a back splice
you make a short splice
you make eye splice

12. Demonstrate rigging techniques

Assessment Strategies

by demonstrating proper rigging techniques

Learning Objectives

- 12.a. Utilize Personal Protective Equipment (PPE)
- 12.b. Demonstrate proper rigging techniques

Criteria

Your performance will be successful when:

you demonstrate proper use of slings
you make-up blocks
you inspect blocks
you properly handle blocks and rigging equipment

13. Install low pressure natural gas line

Assessment Strategies

by installing low pressure natural gas lines

Learning Objectives

- 13.a. Utilize Personal Protective Equipment (PPE)
- 13.b. Demonstrate proper plastic pipe heat fusion procedures

Criteria

Your performance will be successful when:

you will use a sniffer
you will change a replace gas meter
you will install gas lines in a trench

14. Operate construction equipment

Assessment Strategies

by operating construction equipment

Learning Objectives

- 14.a. Demonstrate safe operation of construction equipment
- 14.b. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you will use a trencher
you will use a backhoe/loader
you will use a plow
you will use a air compressor
you will use a hole hog/boring techniques

15. Perform plastic pipe heat fusion procedures

Assessment Strategies

by performing plastic pipe haet fusion procedures

Learning Objectives

- 15.a. Utilize Personal Protective Equipment (PPE)
- 15.b. Demonstrate proper plastic pipe heat fusion procedures

Criteria

Your performance will be successful when:

- you will make a socket fusion
- you will make a saddle fusion
- you will make a butt fusion