



# The 18<sup>th</sup> Annual Florida Lineman Competition

## Journeyman Team Events



## 4kV Four Bell Change Out

Chief Judge: Richard Boley, OUC

**Mean Time:** 16 minutes

**Drop Dead Time:** 21 minutes

### Event Summary:

This event is a 4kV-simulated energized event (rubber gloves). The primary is #2 Alum. with 4# CU over arm jumpers on an 8' fiberglass cross arm. This will be a 2 wire 4kv event no center phase. The objective is to change all 4 dead-end insulators under the mean time in a professional and safe manner. Continuity must be maintained with the "over arm jumper" or by means of a temporary jumper. Adequate covering must be used to protect from violating safe encroachment distances, accidentally energizing hardware, pole, and or cross arms. Tools used for this event must be approved live line tools. Rated for 4kV or above.

\*Note the drawing shows wood arms and braces it will be fiberglass arms no braces.

### Event Specifications:

1. See General Rules.
2. Teams will be allowed a five minute set up time for questions and set up.
3. Both sides of neutral and clevis must be covered.
4. If temporary jumper is used it must have approve rated cover for 4kv or more.
5. Only approved live line tools can be used to rig conductor.
6. Rigging not rated for energized work must be insulated from primary voltage.
7. Permanent jumper must be covered while changing dead-end insulators.
8. Pins must be facing pole and can be checked before the 5 minute set up time.



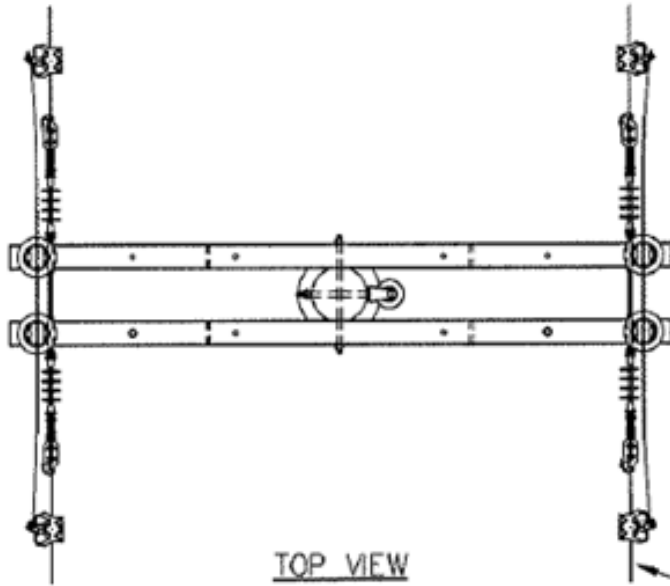
The 18<sup>th</sup> Annual

# Florida Lineman Competition

Journeyman Team Events

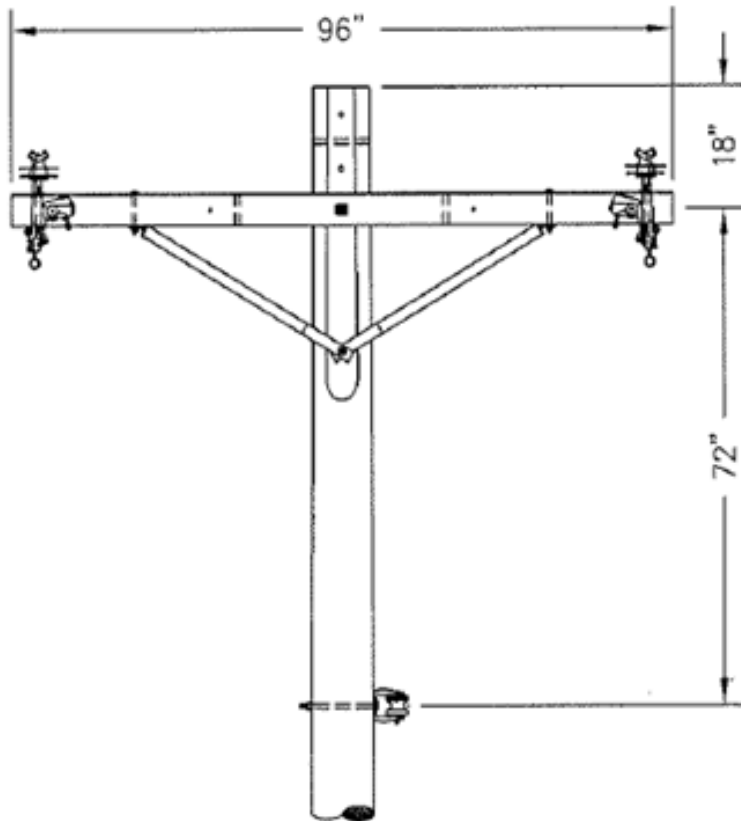


## 4kV Four Bell Change Out

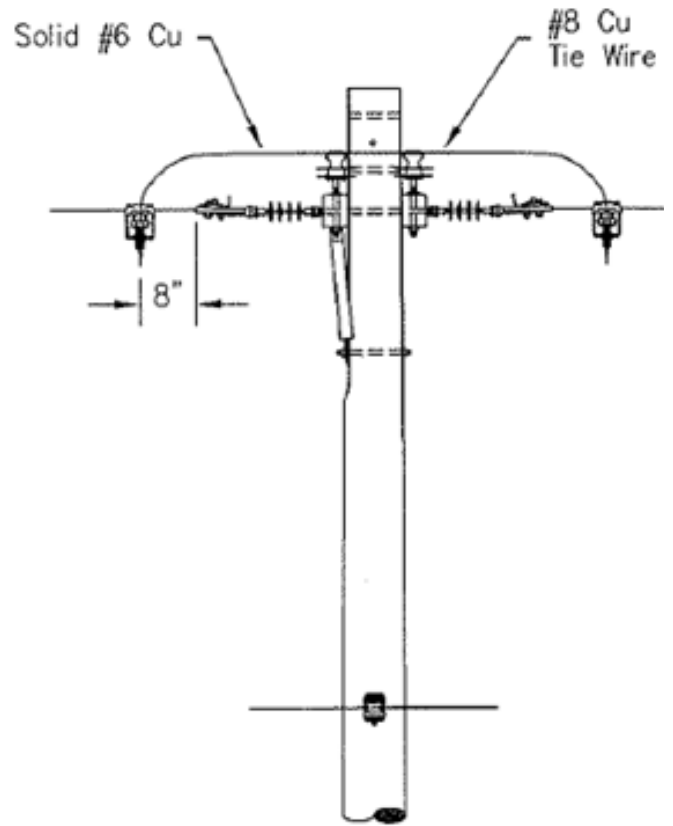


TOP VIEW

#2 ACSR



FRONT VIEW



SIDE VIEW



The 18<sup>th</sup> Annual

# Florida Lineman Competition

## Journeyman Team Events



## 4KV Pole Transfer - Conductor, Transformer & Switch

Chief Judge: Paul Bailey, City of Tallahassee

**Mean Time:** 15 minutes

**Drop Dead Time:** 18 minutes

### Event Summary:

At the start of this event the designated groundman for the team will be required to toss a rope (3/8 inch) over the neutral & secure it with three (half hitches) on an anchor head located 20 ft. from the pole before the first climber is allowed to ascend the pole. (note: - the 3/8 rope will be provided) The groundman will have three chances to successfully toss the rope. If he fails to do so in three tries there will be a two point deduct and the event will continue. Teams will be required to transfer all conductors, transformer, & switch to the new pole. Both poles will be framed, teams will not strip out the old pole. Poles will be set 4' apart. The transformer must be lowered to the ground and raised to position on the new pole utilizing a minimum of 2 to 2 block sheaves (transformer weights 225 lbs). There will not be any secondary's in the transformer, however teams will need to follow proper procedures to de-energize the transformer to transfer it then energize it once transferred.

Rope toss, once both lineman have belted off in working position the groundman may remove the rope. The rope will be hand coiled and on the tarp before time is stopped (before last climber's first foot hits the ground). If the rope isn't hand coiled and on the tarp before then it will be a 2pt deduct.

Primary and Neutral #2 Alum. and all Copper #4 solid

### Event Specifications:

1. Teams will have five minutes to set up before the start of the event.
2. Time will start at the judge's signal.
3. First climber can start climbing once the groundman has secured the rope toss with three half hitches.
4. Neutral must be covered before climbing above it.
5. Primary must be untapped from below the neutral.
6. All connections must be brushed.
7. Two points of control must be maintained when moving the phase conductor.
8. Time will stop when the last climber's first foot hits the ground.
9. During the rope toss if the rope goes over the phase there will be a 10 point deduct. No deduct if the rope strikes the phase.
- 10.

### Materials provided:

- 3/8-inch single braid rope
- Neutral Preform Tie Wrap
- Hendrix HPI-VT – (TONKA TOY Insulator) - Primary Insulator

**Teams will provide their own tools.**



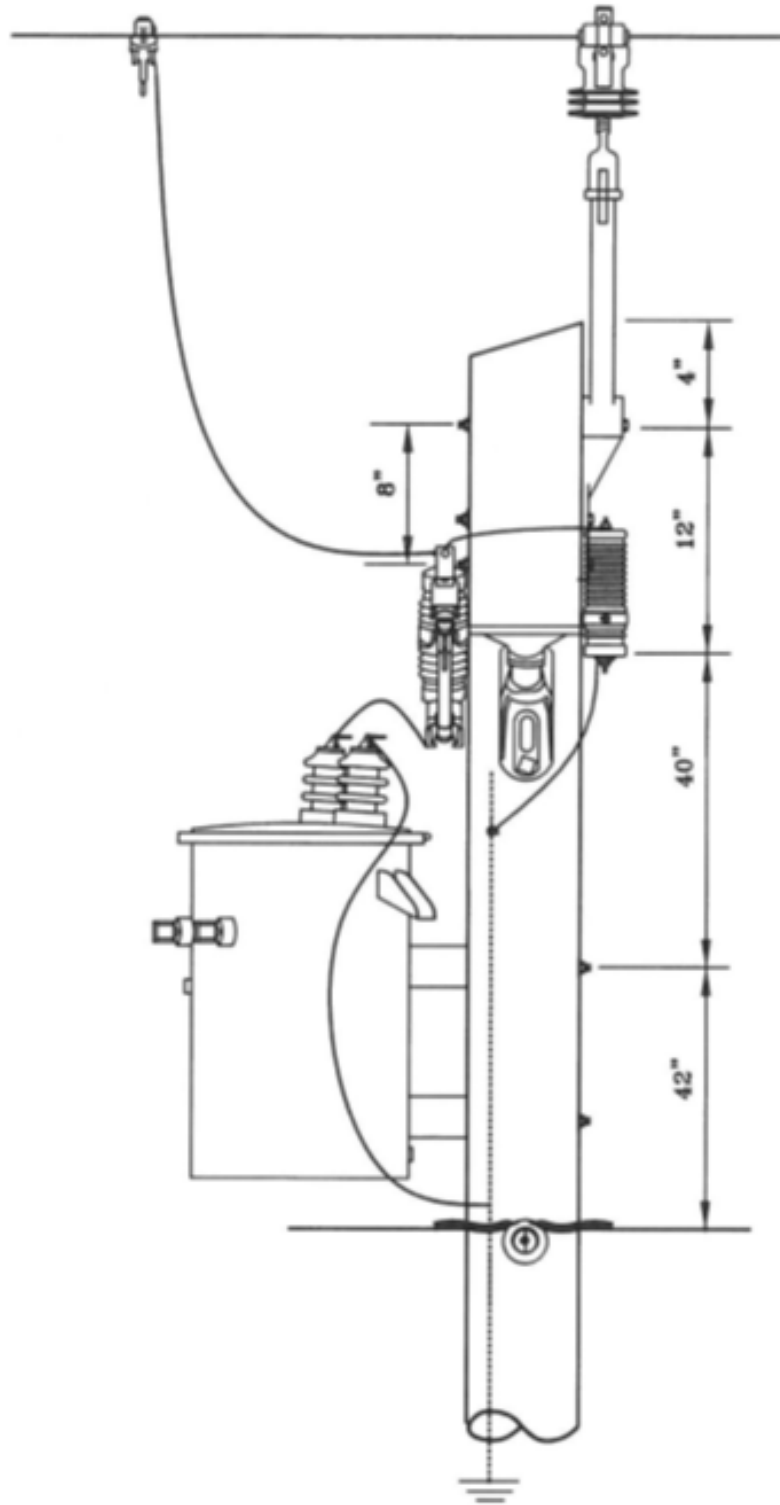
The 18<sup>th</sup> Annual

# Florida Lineman Competition

Journeyman Team Events



## 4KV Pole Transfer - Conductor, Transformer & Switch



SIDE VIEW



The 18<sup>th</sup> Annual

# Florida Lineman Competition

## Journeyman Team Events



## 15kV Switch Replacement

Chief Judge: Paul Page, Lakeland Electric

**Mean Time:** 12 minutes

**Drop Dead Time:** 15 minutes

### Event Summary:

Teams will jumper out a 15kV solid door switch with a minimum #2 mechanical by-pass jumper. Line side jumper will be #4 sol. cu. poly. with a hot line clamp. Load side jumper will be #4 sol. cu. poly with 2-PG connectors. Once line side jumper is removed, the primary must be covered with a pin hood and conductor cover on the side the cutout is mounted on. Load side jumper will remain on the conductor (removed from bottom of switch) and must be held in the clear with a jumper stick or secured with a Tie Back Clamp- Chance catalog # C400-0600 (or similar tool) while switch is being replaced. Take-off must be covered with a Dead-end Cover. Tool used on load side switch terminal will be choice of team but must be operated with a hotstick. Line side jumper must be removed from old switch and installed in new switch by groundman.

### Event Specifications:

1. Teams will be allowed a 5-minute setup time before starting the event.
2. Time starts at the Judges signal with fall- arrest detached from the pole.
3. Climbers must wear minimum Class II rubber gloves ground to ground.
4. Neutrals must be covered with rated cover.
5. All primary cover must be applied with a hotstick (no hanging shotguns, approved attached hotsticks only).
6. All conductors must be brushed prior to connection (no simulations).
7. Time stops when last Lineman has both feet on the ground.
8. Judging will continue until area is returned to original form.
9. All tools and equipment when not being used must remain on the tarp during the event.

### Teams will provide their own:

- 12x12 Tarp
- Handline
- Guts
- Split blanket
- Clothes pins
- Hard covers
- By-pass jumpers
- Shotgun sticks
- Conductor brush
- Hotstick wrench
- Dead-end cover
- Nose bags
- Gut bags
- Jumper stick or Tie back



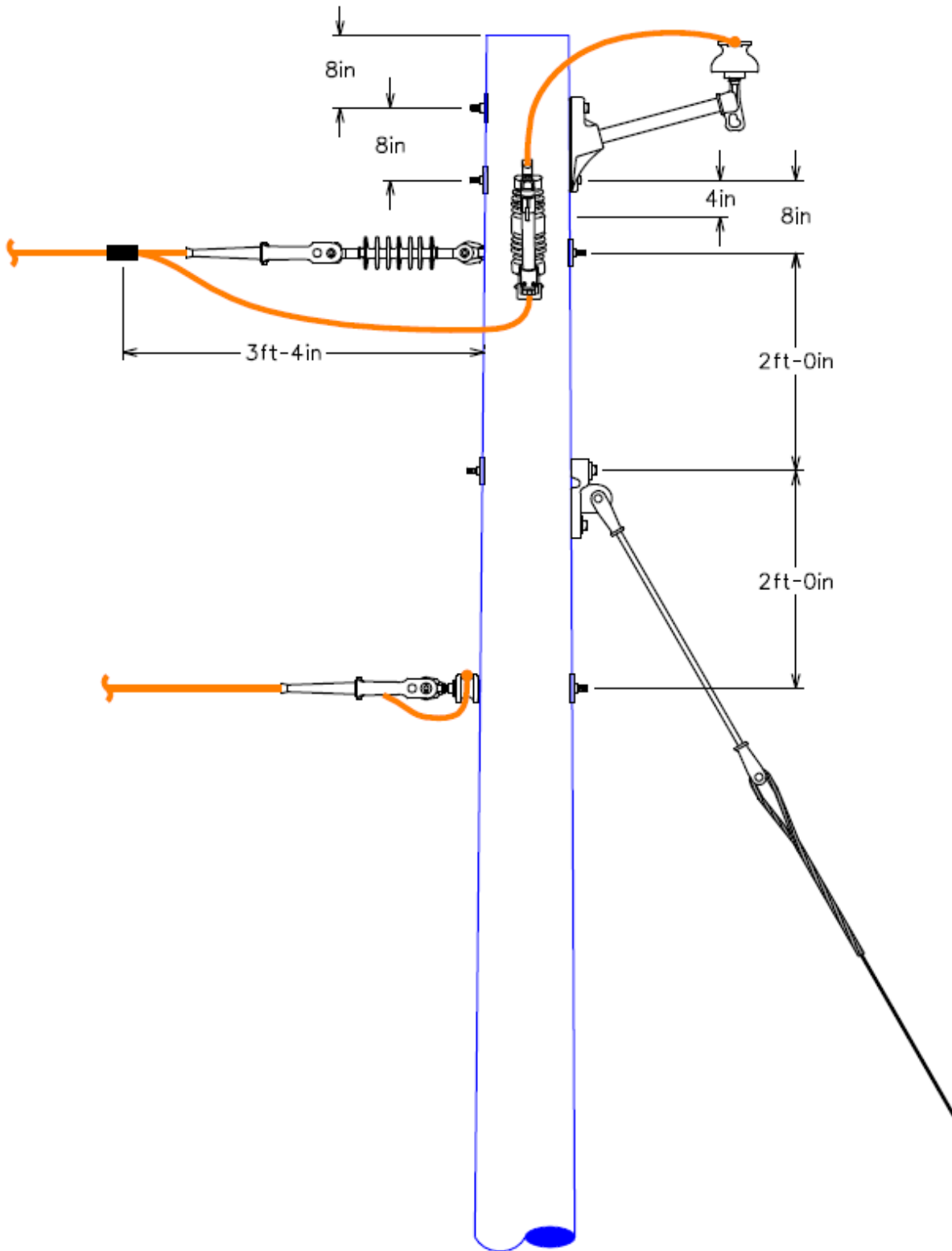
The 18<sup>th</sup> Annual

# Florida Lineman Competition

Journeyman Team Events



## 15kV Switch Replacement





The 18<sup>th</sup> Annual

# Florida Lineman Competition

Journeyman Team Events



## Journeyman Mystery Event

Chief Judge: Jason Wright, KUA

**Mean Time:** ? minutes

**Drop Dead Time:** ? minutes

### Event Summary:

Event details and specifications will be given to all competitors after registration, Friday March 9.



The 18<sup>th</sup> Annual

# Florida Lineman Competition

Journeyman Team Events



## Journeyman Mystery Event





The 18<sup>th</sup> Annual

# Florida Lineman Competition

## Journeyman Team Events



## Vertical Hurtman Rescue

Chief Judge: Lamar Whitaker, Beaches Energy Services

**Mean Time:** 4 minutes

**Drop Dead Time:** 8 minutes

### Event Summary:

This team event will be run one time with all three team members participating to rescue the hurtman. Teams have 5 minutes to set up and ask questions. The switch (cutout) feeding the transformer must be open before the climber can step onto the pole. It will be open from the ground using an extendo stick and rubber gloves. The stick must be off the ground and the body anytime it is touching anything energized. The climber must wear rubber gloves ground to ground. Lineman will split handline and loop bottom part of handline around mannequin's legs. Then take the rope under mannequin's arms and tie three half hitches (the splice cannot be part of the knot). Once the mannequin has been tied off the climber will utilize the "OX Block" with a minimum of one full wrap or two clicks on the fiction bar. The mannequin can then be lowered to the ground while the third member of the team uses the bottom part of handline tied to the mannequin's legs to pull mannequin on to the tarp. You must attempt to keep the mannequin off of the pole and hardware. There will be **NO** gigs for incidental contact of the mannequin on the pole, neutral or service provided the tag man is making an honest attempt. The mannequin must land with **all** of this body on the tarp provided, and he must hit the ground gently as if it where a real person. A 10x10 tarp will be provided and placed 5' from pole centered under switch.

\* Video will be posted on [www.publicpower.com/floridalinemancompetition](http://www.publicpower.com/floridalinemancompetition) under the Judge Q&A section on how to do this event. (Note you will use the OX Block and not wrap the pole like the video)

### Event Specifications:

1. Time starts at judges signal with all team members at least an arm's length from pole and extendo stick.
2. All rubber gloves will be in glove bag cuffs down with no fingers protruding.
3. Lineman's belt and hooks will be on the ground opposite the switch side of the pole.
4. Extendo stick will be lying flat on tarp fully retracted.
5. All three team members must be used. One must climb, one must open switch, and one must tag the mannequin.
6. Time will stop when mannequin is on the tarp with **slack** on the handline, and extendo stick is fully retracted and back on tarp.
7. Climber will stay on pole and help hang mannequin.
8. Team will close switch back after time stops. Any team member can close it back and work gloves can be used.
9. You must use the eye to open and close switch.
10. When time starts extendo stick will be lying flat on tarp and must be back on tarp fully retracted before time will stop.
11. Climber must stay in 5-foot circle while he has his gaffs on.
12. Rubber gloves or work gloves must be worn anytime you are working or handling tools and equipment.
13. You must cut the Bashlin 57-A insert. There will be a 10-point deduction for cutting the belt in the wrong place.
14. The blade of the climber's knife must not be exposed while climbing.
15. Judges will use a 4" PVC conduit between the rope and the mannequin to evaluate the rope knot, the eye splice can not be in any part of the knot.
16. You may use any standard knot or hitch on the mannequin's legs that can be easily removed (including placing the rope through the hook, but it must not come off).

### Teams will provide their own:

- Extendo Stick

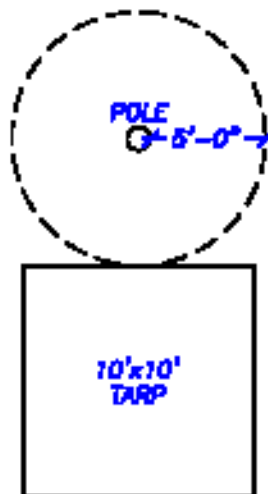
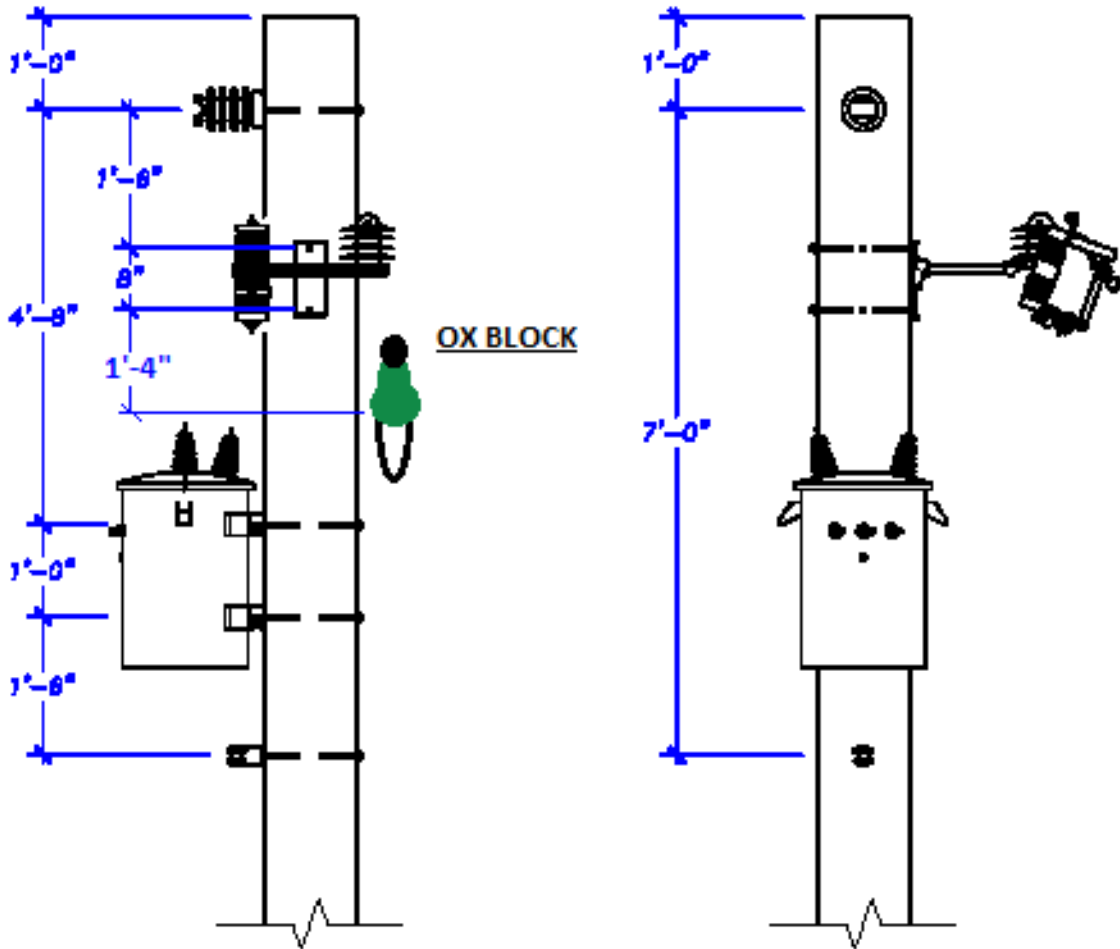


# The 18<sup>th</sup> Annual Florida Lineman Competition

## Journeyman Team Events



### Vertical Hurtman Rescue





# The 18<sup>th</sup> Annual Florida Lineman Competition

## Apprentice Events



## Double Dead-end Multiskirt Changeout

Chief Judge: Leonard Holton, JEA

**Mean Time:** 8 minutes

**Drop Dead Time:** 12 minutes

### Event Summary:

This is a dead and grounded event. The construction Spec will be single-phase straight-line double dead-end. There will be a jumper across the top of the pole, tied in on the pole top pin. The Apprentice will change out both multiskirts.

### Event Specifications:

1. The line will be #2 Alum. and a #4 Copper jumper.
2. Web hoist with grip/grips must be used (strap cannot be put in a position that could damage it).
3. The apprentice will have a 5-minute set up time. In this time the apprentice can prepare materials and ask any questions.
4. Apprentice is required to bring and use their own handline, hoist, nose bag and tools. No straight lines will be allowed.
5. All material will go up and down in a nose bag.
6. Time starts at the judge's signal.
7. Apprentice is required to transition over the neutral.
8. Time stops when the apprentice has both feet on the ground.
9. After time has stopped, fall protection will be checked before the apprentice unbuckles from the pole.
10. All PPE must be worn when you are at the event station.



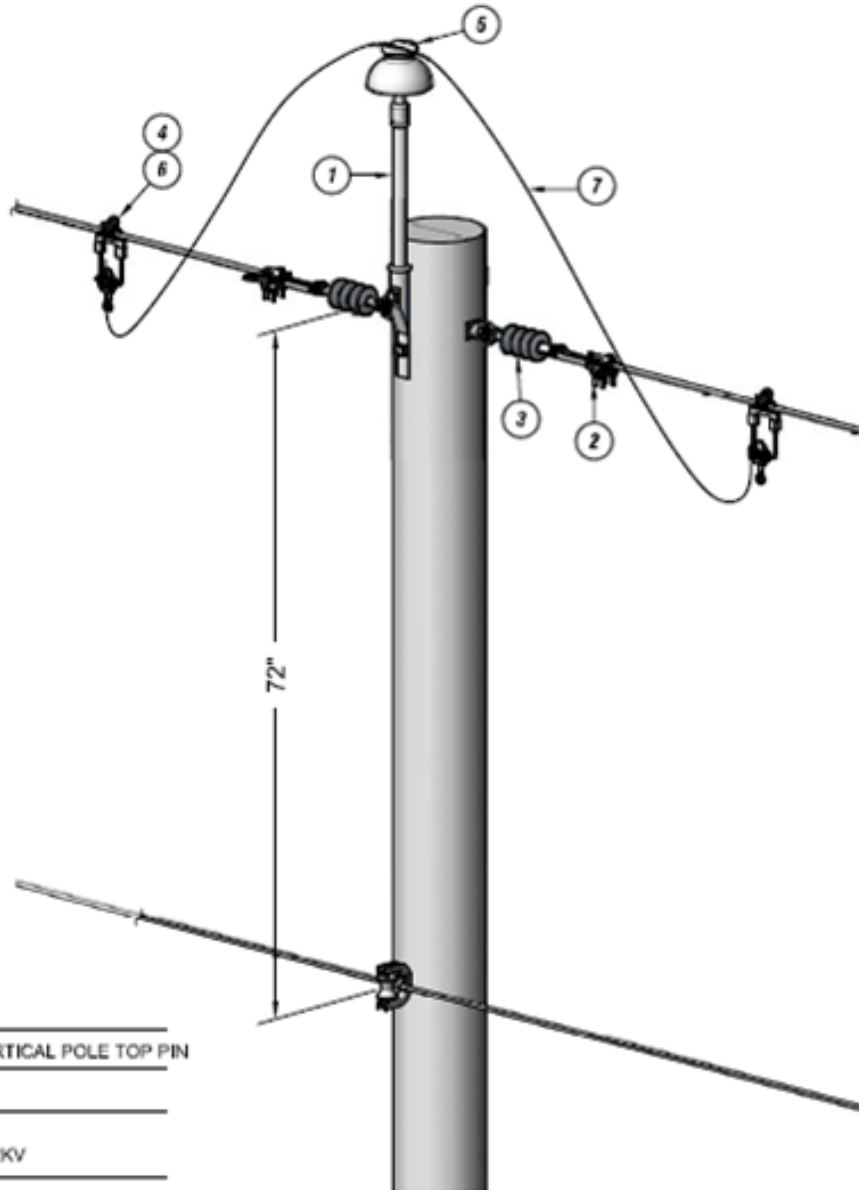
The 18<sup>th</sup> Annual

# Florida Lineman Competition

Apprentice Events



## Double Dead-end Multiskirt Changeout



REF. #	MANUF.	DESCRIPTION
1	MACLEAN	BRKT FIBERGLASS VERTICAL POLE TOP PIN
2	MACLEAN	DEADEND SHOE
3	K-LINE	INSUL SUSP CLEVIS & TONGUE PLASTIC 12KV
4	RELIABLE HUBBELL	CONN STIRRUP AL 6 TO 1/O AWG STR
5	CHANCE	INSUL. PIN TYPE 12KV PORCELAIN
6	CHANCE	HOT TAP MED.
7	NEHRING SOUTHWIRE	JUMPER WIRE SOLID #8 CU



The 18<sup>th</sup> Annual

# Florida Lineman Competition

Apprentice Events



## Hurtman Rescue

Chief Judge: Chris Henry, Ocala Electric Utility

**Mean Time:** 4 minutes

**Drop Dead Time:** 6 minutes

### Event Summary:

This event will be simulated dead. Time starts at the judge's signal with apprentice standing at least an arm's length from pole in any direction.

*Note:* The lineman's belt, hooks and rubber gloves in bag will be lying on the ground at arm's length from the pole. (You may tool up bare handed).

### Event Specifications:

1. Looking at the pole from the 8' cross arm side, the hand line will be hung on the right side simulating an injury to a right-handed person. The hurt man will hang on the cross arm side of the pole with both ends of the safety straps through the braces. The Neutral will be on the opposite side of the pole where the hand line will be hung. Note: The "OX Block" will be utilized with a minimum of one full wrap or two clicks on the fiction bar. The OX Block will be attached to the arm just outside of the cross arm brace.
2. Mannequin should be tied under arms with three half hitches. Note: (eye splice should not be used as part of the hitches). The half hitch is the only acceptable knot. A 4" conduit will be used to measure tightness of knot.
3. Be sure to call out "headache" loudly when you drop out the split hand line.
4. A Bashlin belt 57-N will be used on the mannequin. You must cut the Bashlin 57-A insert. There will be a 10-point deduction for cutting the belt in the wrong place.
5. Mannequin must be lowered smoothly to the ground without coming into contact with the pole.
6. Time will stop when the mannequin is on the ground and there is slack in the hand line. Note: There must be one gaff in the pole at all times when climbing down the pole and proper belt adjustment maintained as you will be judged until you leave the event.
7. The mean time for this event is 4 minutes. The drop dead time is 6 minutes.
8. The apprentice must use the hand-line provided.
9. Rubber gloves will be required for this event. Gloves must be worn ground to ground.
10. Deductions will be subtracted from 100, resulting in the final score.



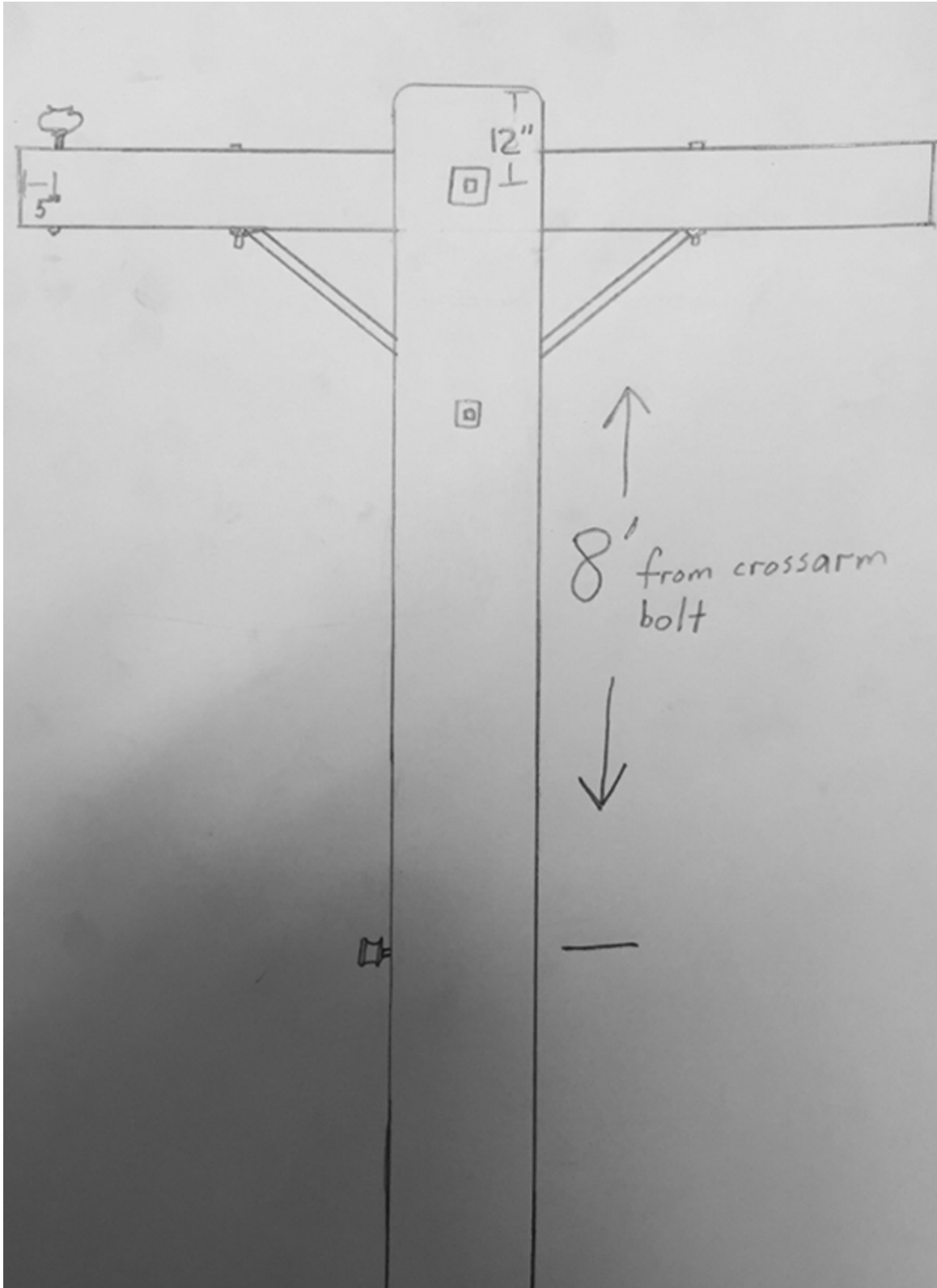
The 18<sup>th</sup> Annual

# Florida Lineman Competition

Apprentice Events



## Hurtman Rescue





# The 18<sup>th</sup> Annual Florida Lineman Competition

## Apprentice Events



## Jumper Replacement

Chief Judge: Nick Rector, Ocala Electric Utility

**Mean Time:** 6 minutes

**Drop Dead Time:** 8 minutes

### Event Summary:

Apprentice must make up and install new jumper with pin and insulator. The jumper (#2 insulated aluminum) will be connected to the phase using 2 parallel groove connectors. The #2 wire will be double dead ended on an 8' fiber glass arm. All connections must be brushed before being made. The jumpers will be tied (#4 insulated tie wire) on the ground and inspected by the judge before being installed. Existing jumper, pin and insulator must be removed and the new one installed in its place. Time will start on the judge's signal and will stop after the first foot is back on the ground.

### Event Specifications:

1. Apprentice will have a 5 minutes setup time.
2. Material maybe laid out but not put together (this includes rolling up tie wires) in setup time.
3. All conductors must be brushed prior to connection.
4. All work on the ground will be performed in leather gloves.
5. All work on the pole will be performed in class 2 rubber glove.
6. Example of tie can be found in the twelfth edition of Lineman and Cableman handbook on page 508 figure 22.31

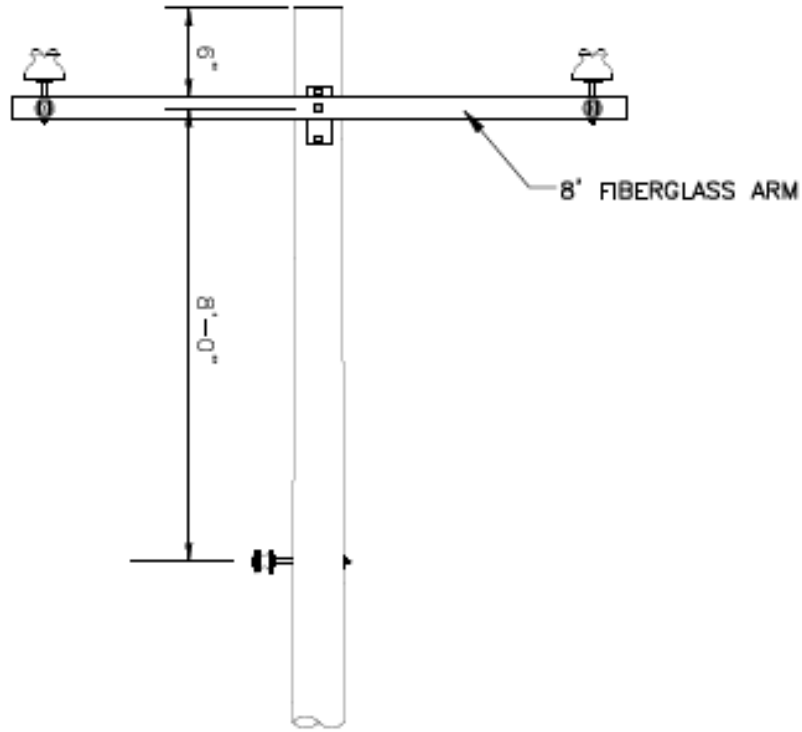


# The 18<sup>th</sup> Annual Florida Lineman Competition

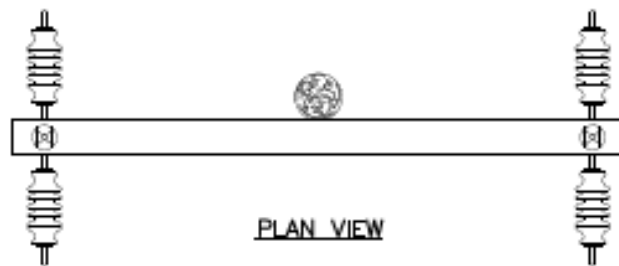
## Apprentice Events



### Jumper Replacement



FRONT VIEW



PLAN VIEW





The 18<sup>th</sup> Annual

# Florida Lineman Competition

Apprentice Events



## Apprentice Mystery Event – 8' Wood Crossarm Relocation & Knot Tying

Chief Judge: Sam Holt, City of Tallahassee

**Mean Time:** 6 minutes

**Drop Dead Time:** 9 minutes

### Event Specifications:

1. Apprentice will have a five minute set up time before starting event.
2. Time starts at judges signal with fall arrest detached from the pole.
3. Hand line must be hung on the pole before work begins.
4. Hand line must be railroaded before climbing down.
5. Time will stop when both feet are on the ground.
6. Fall arrest must remain on the pole for inspection.
7. Hand line must be made up before leaving the event area.

### Materials provided:

- A running hand line (must be secured on the pole before any work is preformed and rail roaded out before descending to appropriate position to tie the knots)
- Grunt bag
- 10' long  $\pm$  x 3/8" diameter length of three strand rope (must be placed in diddy bag during 5-minute setup time)

*NOTE:* If any items are dropped the judge will place the item(s) in the grunt bag (grunt bag will be in place on the tarp, does not need to be carried up). The apprentice will have to retrieve the dropped Item(s) by lowering the hook on the handline. The grunt bag shall be hoisted and secured prior to retrieving any items from it.

## 8' wood cross arm relocation

*(Leather glove event)*

A single 8' wooden arm will be framed with three (3) insulators in place at the top of a 40' pole. There will be a neutral on the pole, the neutral must be transitioned over. Apprentice must relocate fully assembled cross arm to opposite side of pole. All items must tightened, not over tightened.

- Cross arm will be on a 5/8" machine bolt with curve washer on the pole and a square washer on the arm.
- Arm braces will be on a 1/2" machine bolt with one (1) square washer.

*NOTE:* All square washers must have proper orientation (SQUARE)



# The 18<sup>th</sup> Annual Florida Lineman Competition

## Apprentice Events



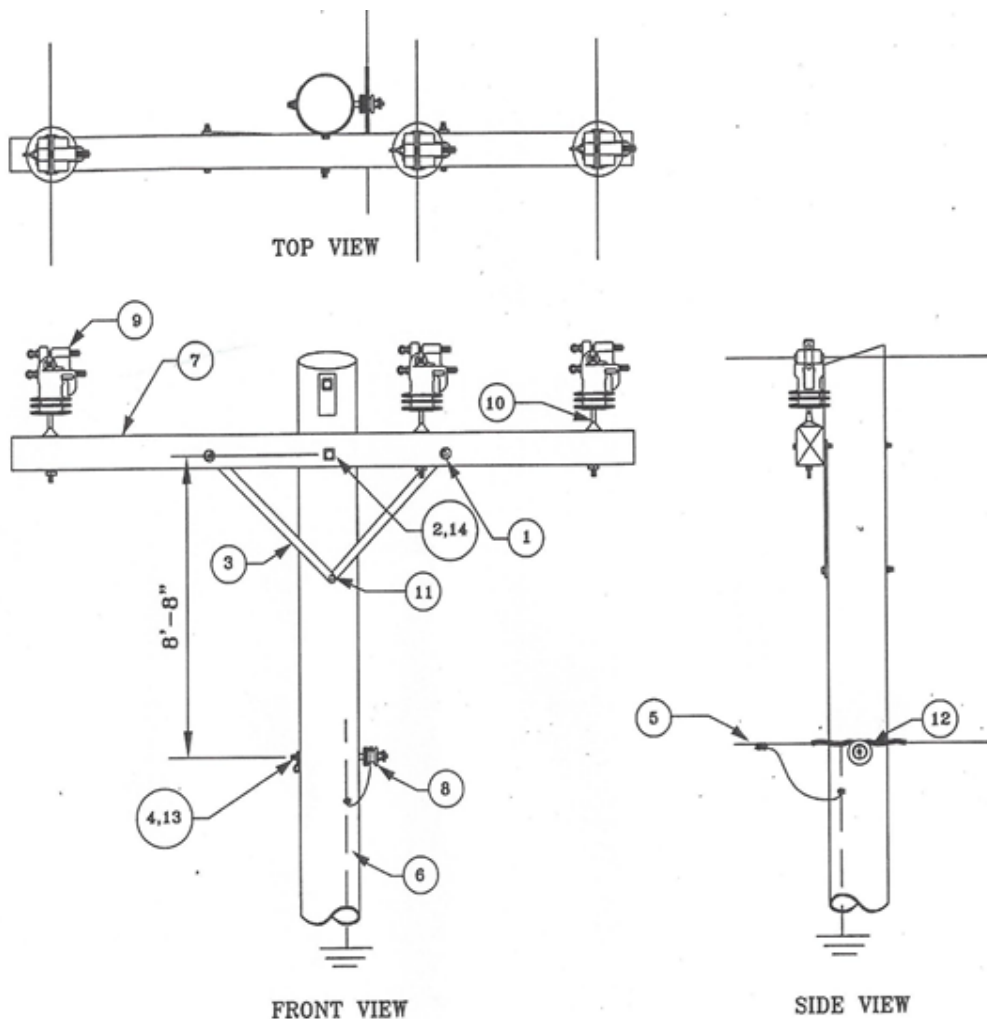
## Apprentice Mystery Event

### Knot tying:

*(Leather glove event)*

- After completing the task up the pole the apprentice will tie the knots around the pole before getting off the pole.
- Apprentice will tie 4 knots in any order: Bowline (inside or outside), Square knot, Clove hitch w/a half hitch, and a timber hitch (three tucks, no more no less).
- Apprentice shall be on the pole for the knot tying. Climbers will be approximately 1' and 3' above ground level (indicated by flagging tape), this will also allow the judge to observe and confirm each knot is tied correctly and inspect the pole safety device to insure it is properly adjusted. A 10' long  $\pm$  x 3/8" diameter length of three strand rope will be provided.

**NOTE:** After completing the knot tying the rope must be coiled and placed in diddy bag before making the final descent.





# The 18<sup>th</sup> Annual Florida Lineman Competition

## Apprentice Events



## Phase Clip In

Chief Judge: Nick Short, Lakeland Electric

**Mean Time:** 5 minutes

**Drop Dead Time:** 8 minutes

### Event Summary:

Apprentice will Climb a 40-ft. pole and put the handline in service on the pole or on the 8-ft. light crossarm before work begins. One phase of the two-phase line will be tied in with a #4 aluminum tie wire on a C-neck pin type insulator. The other phase will be in a traveler on an eye-nut mounted to the bottom of the opposite pierce pin below the crossarm. The phase must be removed from the traveler and tied in on the pierce pin. The traveler and eye-nut must be re-located to the opposite pierce pin. The eye-nut must be fully threaded onto the pin. That phase must be un-tied and placed in the traveler. The new tie wire may be carried up in a ditty bag and the old one must be carried down in one as well.

### Event Specifications:

1. Apprentice will have a five-minute set-up time before event starts.
2. Tie wire may be made up during set-up time.
3. Time starts at judge's signal with fall arrest detached from the pole.
4. Handline must be attached to the pole or arm before work begins.
5. Handline must be railroaded before climbing down.
6. Time stops when both feet are on the ground.
7. Fall arrest must remain on the pole for inspection.
8. Handline must be made up before leaving the event area.

- 1- 7" Sherman & Reilly XS-100 traveler
- 1- Light wood crossarm w/steel strap braces
- 2- C-neck pin type insulators
- 2- pierce pins
- 1- 5/8" eye nut
- Neutral will be mounted as shown, 6-ft. from through bolt in arm

### Materials provided:

- #4 Al. Tie Wire- 6ft. long
- Top Tie will be according to the 10th Edition of the Lineman's Handbook Section 22.51



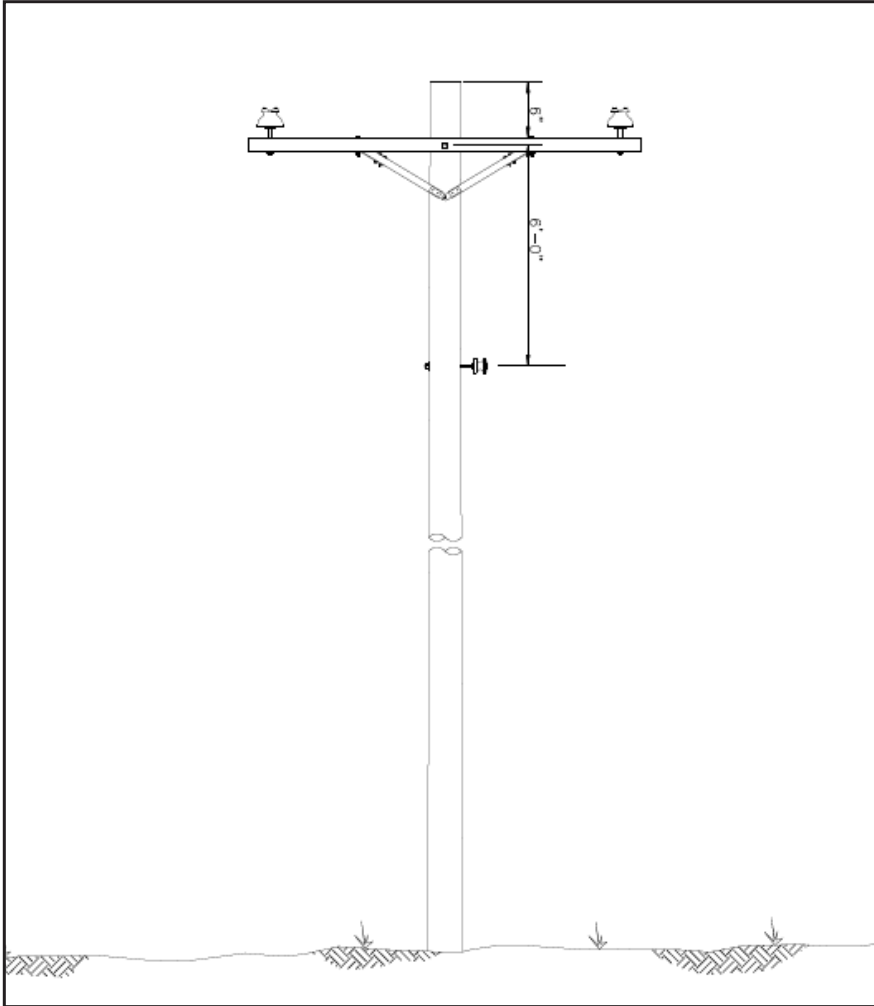
The 18<sup>th</sup> Annual

# Florida Lineman Competition

Apprentice Events



## Phase Clip In





The 18<sup>th</sup> Annual

# Florida Lineman Competition

Apprentice Events



## Written Test

Chief Judge: David Sparks, Gainesville Regional Utilities

**Mean Time:** 30 minutes

**Drop Dead Time:** 36 minutes

### Event Specifications:

1. The written test will take place Friday afternoon at 4:00 PM.
2. There will be fifty questions worth 2 points each.
3. The questions will come from the 16th Edition of the APPA SAFETY MANUAL:
  - Definitions
  - Section 114: Cardiopulmonary Resuscitation (CPR), First Aid, and Automated External Defibrillators (AEDs)
  - Section 503.1 – 503.7: Vehicle Operations
  - Section 506: Tools and Equipment
  - Section 507: Overhead Distribution and Transmission
  - Section 509: Underground Lines and Equipment
4. This will not be an open book test.
5. No notes, cell phones or other electronic devices will be allowed.
6. You will be able to find out your score on Saturday after completing your events.
7. Your test score will not be averaged in with the events on Saturday, however;

### The top five written test scores will be awarded as follows.

- 1st place will be awarded five points toward their overall score on Saturday.
- 2nd place will be awarded four points toward their overall score for Saturday.
- 3rd place will be awarded three points toward their overall score for Saturday.
- 4th place will be awarded two points toward their overall score for Saturday.
- 5th place will be awarded one point toward their overall score for Saturday.

**NOTE:** If the apprentices' utility does not currently use the APPA Safety Manual, copies may be purchased by contacting APPA's publications department at (202) 467-2926 or by visiting APPA's Product Store at [www.PublicPower.org/Store](http://www.PublicPower.org/Store).