2010 FLORIDA LINEMAN COMPETITION

# Master & Journeyman Events

FMEA
FLORIDA MUNICIPAL ELECTRIC ASSOCIATION

## *CROSS ARM CHANGE OUT*

Mean Time: 8 minutes
Drop Dead Time: 15 minutes

In this event the three phase conductors (1/0 AAAC) are considered dead and grounded. The existing 8 ft. light cross arm, wrap-lock ties, pierce pins and insulators must be replaced. A complete set of all necessary hardware will be available on the ground at each event pole. New cross arm, pins and insulators may be assembled before time starts. The Lineman will replace existing cross arm with new equipment and send old cross arm down to the ground, re-secure conductors with new wrap-lock ties. All insulators must be removed from arm with nut/square washer back on pierce pins and separated from insulators before event is considered complete.

1. See General Rules and Additional General Rules

2. Teams will be allowed a 5- minute setup time before starting the event. All tools must be laid out on a competitor-supplied tarp in the designated work area.

3. Time starts at the judge's signal.

4. The new cross arm may be made up before the event starts.

5. Linemen may assist the ground man with rigging the new cross arm but will not be allowed to wear climbing tools while assisting.

6. Conductors can be floated.

7. Conductors are secured on a pierce pin and porcelain insulator with 1/0 AAAC wrap lock ties. (Screwdriver may be used to remove wrap lock ties, no knives or pliers)

8. After new cross arm is installed, conductors must be re-secured with wrap-lock ties. (Screwdriver may be used to install wrap lock ties, no knives or pliers)

9. The old rubber grommet may not fall to the ground, nor can the new one.

10. Time stops when both Linemen are back on the ground and hand line is made up.

***Teams will provide their own:***
12 X 12 tarp max.
Climbing tools
Hand line
Hand tools

## *Vertical Hurtman Rescue*

Mean Time: 4 minutes
Drop Dead Time: 8 minutes

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 opened before the climber can step onto the pole. It will be opened 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 top part and wrap around the pole a minimum of one and a half wraps, take the rope under mannequin's arms and tie three half hitches (the splice cannot be part of the knot). 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 tagman 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 were a real person. A 10x10 tarp will be provided and placed 5' from pole centered under switch.

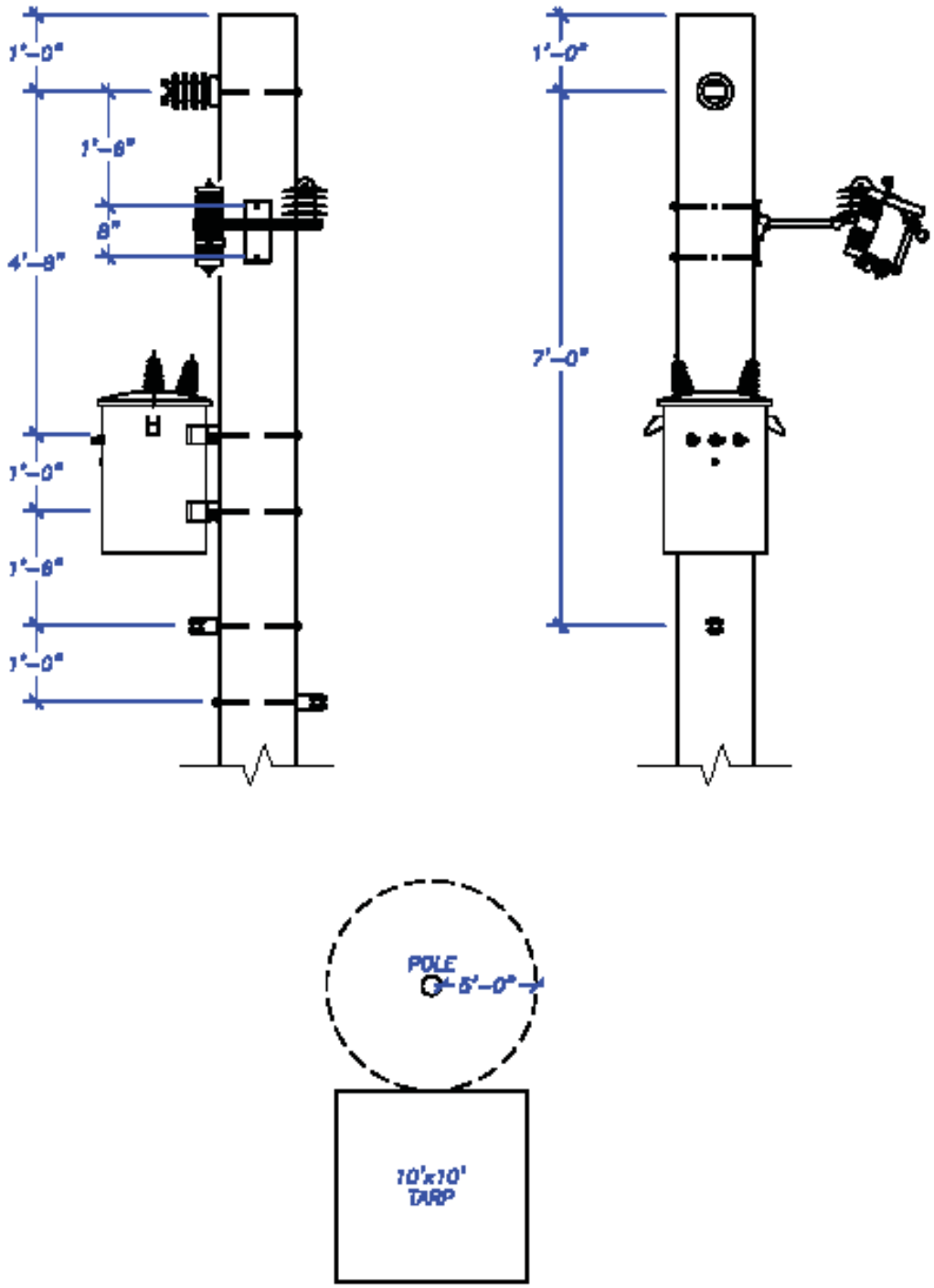
* Video will be posted on www.publicpower.com under the Competition section on how to do this event.

**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 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

## Vertical Hurtman Rescue



## *600 Amp Switch*

Mean Time: 9 minutes
Drop Dead Time: 12 minutes

This is a 4-kV event working with Class II or higher rubber gloves off of a pole. Team will replace a 600 amp under-slung switch on the end of an 8' cross arm on a 40' pole. The load can not be interrupted. The permanent jumpers will have two bolt terminal pads mounted to them and bolted to the switch and the switch, also will be connected to primary with bolted connectors.

1. Teams will be allowed 5-minutes for set up and questions
2. Both sides of neutral and clevis must be covered.
3. Permanent jumpers and switch must be covered while installing temporary jumpers, if installed by hand.
4. Primary must be covered while replacing switch.
5. Permanent jumpers can be unbolted and folded back under the cover or they can remain on switch in the air; however, they must be removed and re-installed on the ground, since it is a switch change.
6. Switch must be tested by operating it before the temporary jumper comes off.
7. Switch must be mounted the same way it was before the event.
8. Switch will have to come off the handline and touch the ground before sending it backup.
9. The use of a corrosion inhibitor gel on the two-hole pad must be simulated. This has to be done verbally so that the judge can hear.
10. This event is not complete until both Lineman are on the ground.

## *100 Amp Cutout Replacement*

Mean Time: 15 minutes
Drop Dead Time: 24 minutes

This event consists of replacing a 15 kV, 100 amp fused cutout on a single phase, straight line, overhead construction pole.

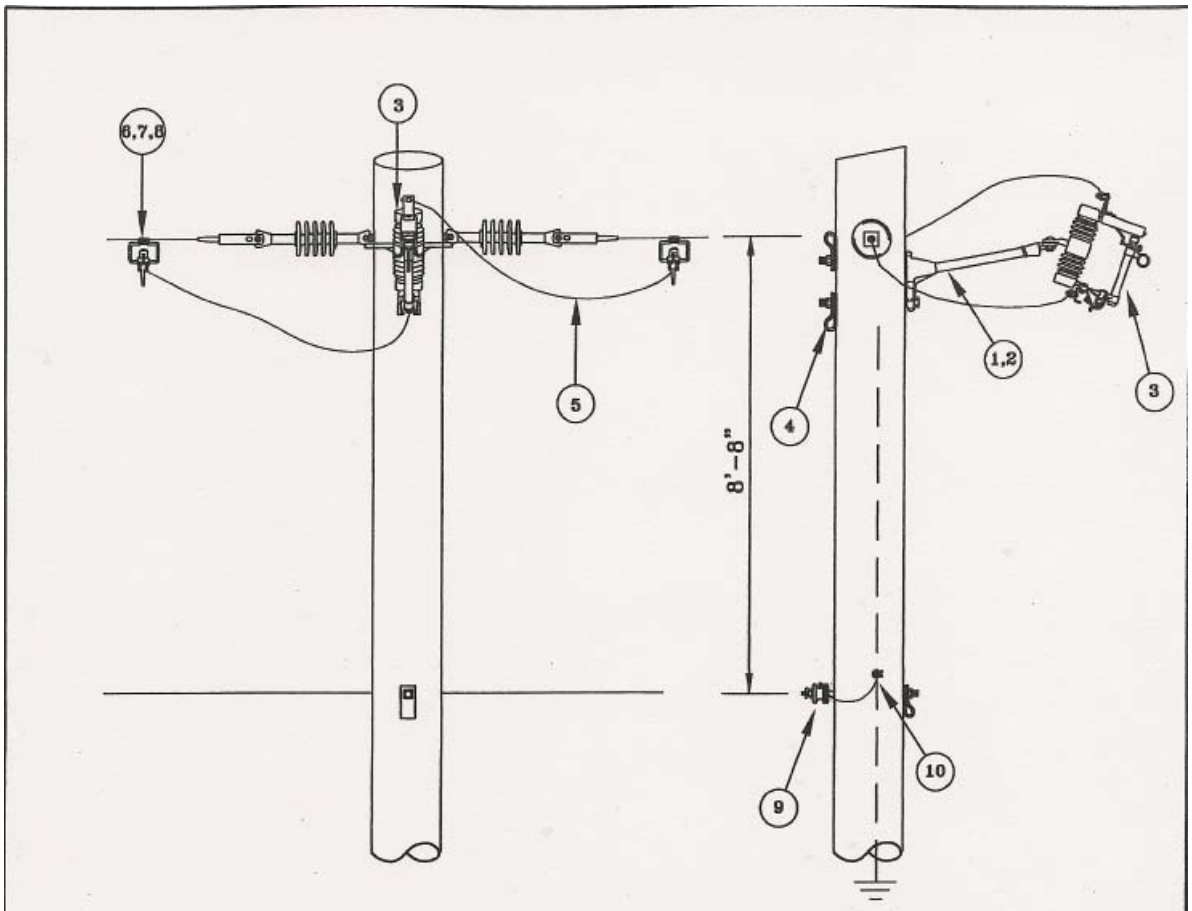
1. Teams will have 5 minutes to set-up, and all tools must be laid out on a 12x12 foot competitor supplied tarp in the designated work area, before the event begins.
2. Time starts at the judge's signal.
3. Class II Rubber Gloves will be worn ground to ground.
4. The Neutral can be covered with rubber goods.
5. The Primary conductor must be covered with rated hard cover applied with insulated handles of hot sticks.
6. All reach and fall rules apply. NESC minimum approach distances shall be observed.
7. The mechanical jumper shall be rated for a minimum of 12 kV. The mechanical jumper must be installed with hot sticks and control must be maintained at all times. No incidental contact will be allowed with the unprotected mechanical jumper. A section of hose may be placed on the mechanical jumper to prevent incidental contact with the pole or linemen. Electric continuity must be maintained at all times.
8. Positive control of stingers (jumpers) must be maintained at all times.
9. The door (fuse barrel) does not have to be opened in the air when the cutout is being removed or installed.
10. The team member on the ground must replace the fuse.
11. Stingers (jumpers) shall be removed from the cutout being replaced and installed on the replacement cutout by the groundman.
12. All connections must be brushed.
13. Time stops when the last journeyman has both feet on the ground.
14. Judging will continue until all material is packed up and the event site is restored to its original condition.

***Teams will provide their own:***

12 x12 Tarp
Hand line
Rubber & Hard Covers
Shotgun Stick
Mechanical Jumper

## *100 Amp Cutout Replacement*

Mean Time: 15 minutes
Drop Dead Time: 24 minutes




FRONT VIEW

SIDE VIEW

| | ITEM NUMBER | | QUANTITY | DESCRIPTION |
|---|---|---|---|---|
| CUT101 | 1 | | 3 | BOLT, GALV, THUR, 5/8 X 12 |
| | 2 | | 1 | BRACKET, ONE PHASE ARRESTER, CUTOUT |
| | 3 | | 1 | CUTOUT, 100 AMP |
| | 4 | | 3 | WASHER, SPRING 3/4" BOLT |
| | 5 | | 1.25 lbs | WIRE, BARE SOLID COPPER, #4 |
| | 6 | | 2 | CONNECTOR, LINE TAP |
| | 7 | | 2 | BALE, HOT LINE #2 SOL |
| | 8 | | 2 | CLAMP, HOT LINE |
| | 9 | | 1 | INSULATOR, SECONDARY SPOOL, WHITE |
| | 10 | | 1 | CONNECTOR VISE TYPE |

| | ORIGINAL | REVISION 1 | REVISION 2 | REVISION 3 |
|---|---|---|---|---|
| DRAWN: | TG | | | |
| CHECKED: | WW | | | |
| APPROVED: | WW | | | |
| APPROVED: | | | | |
| DATE: | 1/30/08 | | | |

CONSTRUCTION STANDARDS

TITLE:

100 AMP FUSE CUTOUT
FLORIDA LINEMAN'S COMPETITION

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### *Insulator Change Out*

Mean Time: 9 minutes
Drop Dead Time: 15 minutes

This event is simulated energized at 12kV. Teams will replace a pin insulator on an outside phase construction with an 8' cross arm. The 1/0 AAAC conductor (no armor rod/line guard) will be tied in to the insulator with a single hot tie (see specification figure B) and when tied "in" should have no more or no less than six complete wraps with the loops on top. The conductor must be tied and controlled with insulated hot sticks and an insulated lay-out arm must be utilized to temporarily hold the conductor when the insulator is being changed. When untying and laying "out" the conductor, the team must maintain at least two positive points of control at all times after one side of the hot tie has been removed until the conductor is secure in the layout arm. When laying "in" the conductor, two positive points of control must be maintained at all times from the time the conductor leaves the layout arm until at least one side of the hot tie (six wraps) is completely tied in. Teams may apply an insulated link stick to the conductor with a tag rope attached allowing the ground man to hold the conductor down in the insulator, which will be considered one positive point of control.

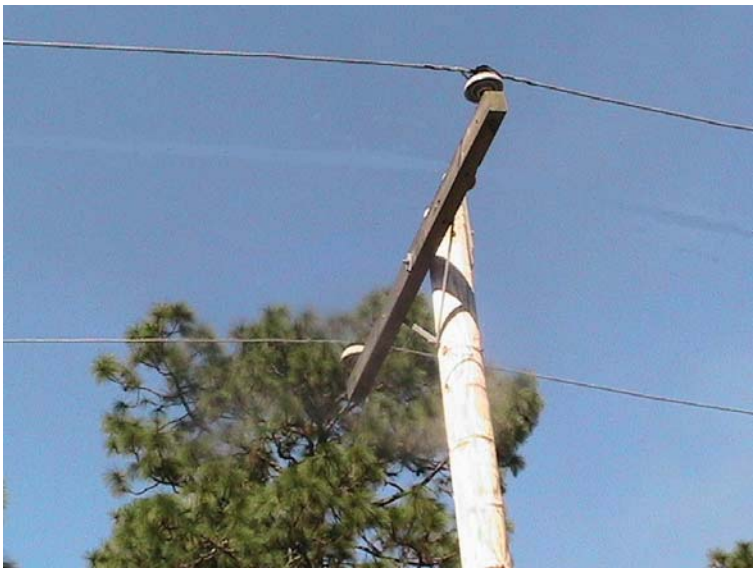
1. Teams will cut their own tie wire (#4 Aluminum) when they enter the event area.
2. Teams will have 5 minutes to set-up, and all tools must be laid out on a 12x12 foot competitor supplied tarp in the designated work area.
3. Time starts at judge's signal.
4. The hot-ties will be made-up on the new insulator after the event time starts.
5. Climbers must wear class II or higher rated rubber gloves ground to ground.
6. Neutral and neutral clevis must be covered with rated cover-up before ascending above.
7. The cross arm must be covered with rated cover-up when tying and un-tying conductor.
8. A maximum of three inches of tie wire will be allowed sticking up after the six complete wraps have been made when tying "in".
9. NESC 2002 minimum approach distance must be maintained at all times.
10. Grip all stick (shotgun) must not be used to control conductor.
11. Time will stop when both climbers have both feet on the ground.
13. All general rules apply.

## *Insulator Change Out*

Mean Time: 9 minutes
Drop Dead Time: 15 minutes

### *SPECIFICATION FIGURE*

1. Specification Figure A – photo



2. Specification Figure B – Installing Single “Hot” Tie on Single Insulator

2010 FLORIDA LINEMAN COMPETITION

# Apprentice Events

FMEA
FLORIDA MUNICIPAL ELECTRIC ASSOCIATION

### *Refuse and Close Cutouts*

Mean Time: 6 Minutes
Drop Dead Time: 8 minutes

This event will show the Apprentice hand and eye coordination. The event will simulate the refusing and closing of 3 cutout disconnects on a pole.

1. Personal Protective Equipment including Hard Hats, Work gloves and Safety glasses are required for this event.

2. This is a Non-Rubber Glove, Non-Pole Climbing - Time based event. Long sleeve shirts are not required for this event.

3. Time will start at the command of the Judge of the event.

4. Each Apprentice will remove 3 open disconnects barrels from their holders by means of an extendo (pogo) stick.

5. All three barrels must be lifted out and taken to the ground.

6. The doors must be lowered to the ground without falling to the ground.

7. Once all three doors have been removed and placed on the ground, the Apprentice will then re-hang the 3 door in their holders.

8. Only after all three doors are in place shall the Apprentice close the doors.

9. Time will stop once all three doors are closed.

10. The Apprentice after time has stopped must open all three doors to the open position.

11. Time will stop once doors are closed but judging will continue until the extendo stick is retracted.

## *Vertical Hurtman Rescue*

Mean Time: 5 Minutes
Drop Dead Time: 9 minutes

The apprentice will be given 5 minutes to set up and ask questions. The apprentice must open the switch (cutout) before he can step onto the pole. The switch will be opened from the ground using an extendo stick and rubber gloves. The stick must be off the ground and body anytime the stick is touching anything energized. The apprentice must wear rubber gloves ground to ground. Apprentice will split handline and loop bottom part of handline around mannequin's legs. Then take the top part and wrap around the pole a minimum of one and a half wraps, take rope under mannequin's arms and tie three half hitches (the splice can not be in the knot). The mannequin can then be lowered to the ground while the groundman (he will be provided) uses the bottom part of rope tied to the mannequin's legs to pull the mannequin out away from the pole and hardware. An attempt must be made to keep the mannequin off of the pole and other hardware. However the mannequin can touch the pole, service, or the neutral on the way down and there will be no deductions. There will be no deduction for anything that the groundman does. The mannequin must hit the ground gently as if it were a real person.

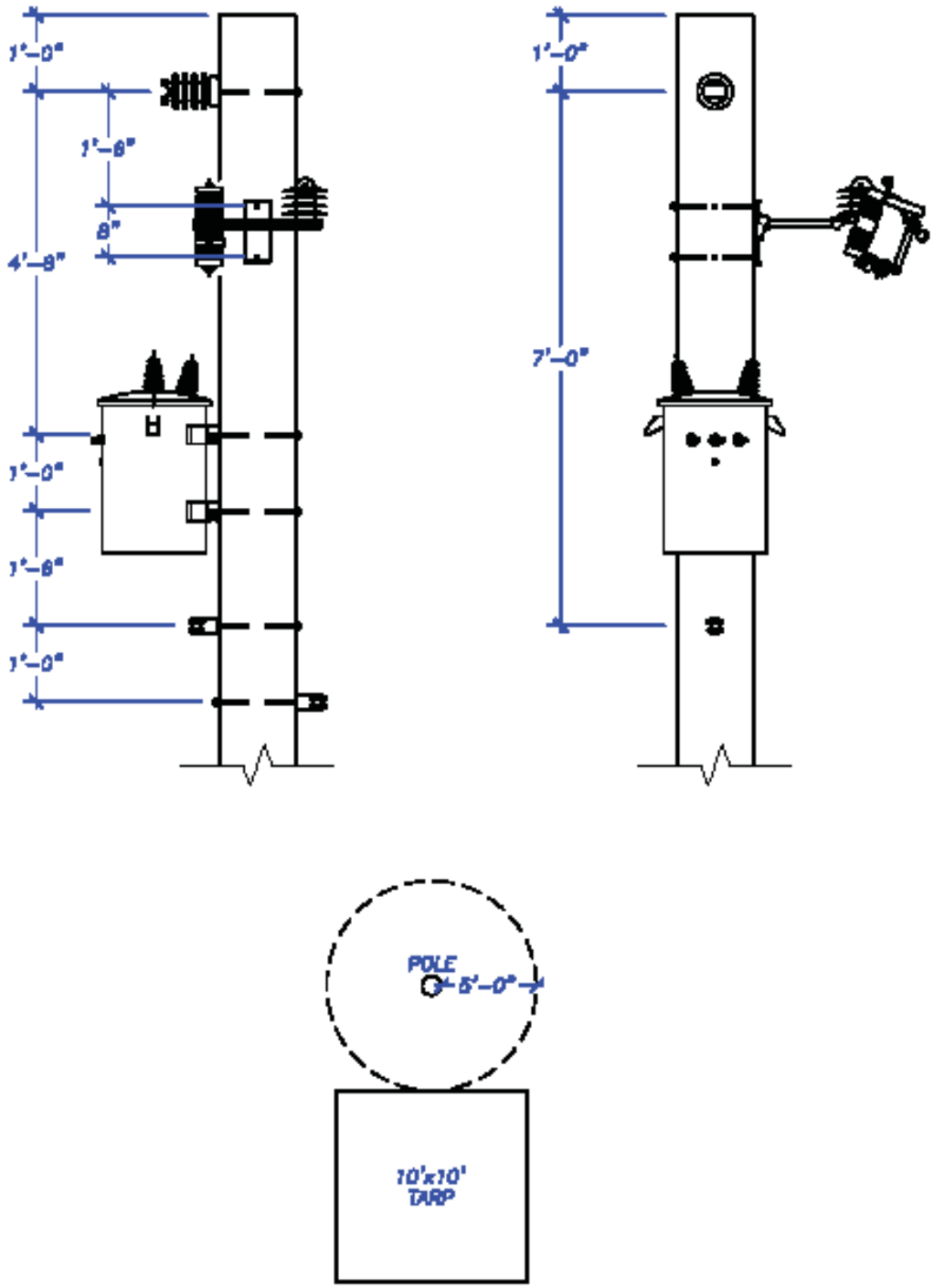
* Video will be posted on www.publicpower.com under the Competition section on how to do this event.

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

***Apprentices will provide their own:***

Extendo Stick

## Vertical Hurtman Rescue



## *Obstacle Course*

Mean Time: 15 Minutes
Drop Dead Time: 20 minutes

The purpose of the event is to follow the guidelines exactly, climbing safely and professionally. The Apprentice will climb the pole and perform specific tasks at four different stations.

1. Time starts at the judges signal with apprentice standing an arm's length from pole.
2. Apprentice must take a handline up the pole.
3. Apprentice must start at top of pole and work down.
4. Work gloves with a gauntlet must be used ground to ground. (No driving gloves etc.)
5. Climb pole to top, remove switch and install on opposite side of cross arm.
6. Descend to next cross arm, remove insulator and install on opposite side of cross arm.
7. Descend to next cross arm, remove fiberglass bells and install on opposite side of cross arm.
8. Descend to next cross arm, remove insulator and install on opposite side of cross arm.
9. No free fall or hot-dogging is allowed. The Apprentice must be in control at all times.
10. Any tools or material dropped may be sent back up by the judge but all general rules apply.
11. The time stops when first foot hits the ground.

## *Obstacle Course*

Mean Time: 15 Minutes
Drop Dead Time: 20 minutes

## *Cross Arm Brace Change*

Mean Time:15 Minutes
Drop Dead Time: 20 minutes

This is a de-energized event. The event consists of replacing one of the two cross arm braces. The cross arm must maintain the horizontal position while replacing the brace. The brace will be removed, sent to the ground on a handline hook and back up the pole on the handline hook (The brace will be simulated as new once the brace touches the ground). Once the brace has been replaced, the time will stop when the apprentice has one foot on the ground. The pole will be 40' with a 10' cross arm with no insulators or conductors.

1. Apprentice will have a five-minute set up time before starting the event.
2. Time starts at the judge's signal, after the five-minute set up time.
3. Hardhat, safety glasses and leather gloves are required (rubber gloves are not required).
4. Apprentice will carry the handline on his belt when climbing the pole. It is acceptable to hang the handline on the cross arm. The apprentice will operate the handline to lower and raise materials.
5. The apprentice may choose which brace to replace and must tell the judge before climbing the pole.
6. The brace will be removed and lowered down on the handline hook. Once the brace touches the ground, it will be simulated as new and may be sent back up on the handline hook (If the brace should come off the hook at ground level, the judge will put it back on the handline hook. No points will be deducted but time will continue).
7. Once the brace has been replaced, all hardware will be secured using a wrench (not finger tight).
8. The handline may be sent to the ground once the apprentice is completed and is ready to climb down the pole.
9. Time stops when apprentice has one foot on the ground.

## *Street Light Head Change Out*

Mean Time:14 Minutes
Drop Dead Time: 21 minutes

This is a de-energized event. This event consists of replacing a rental light on a 4 foot arm on a 30' pole. Secondary connection will be disconnected and re-connected with split-bolt connectors. A hook for hanging the material bag will be installed on pole near light.

1. Apprentice will be allowed a five-minute setup time before starting the event.
2. Apprentice may pre-wire head and load materials on the ground in the five-minute setup time.
3. Time starts when Apprentice is ready and at the judge's signal within five-minute setup time.
4. Hardhat, safety glasses and leather gloves required. (Rubber gloves are not required in event.)
5. Apprentice will ascend pole with hand line, pull up grunt bag on hand line, hang on pole and change out light.
6. Light is to be disconnected from the secondary feed.
7. Bulb, shade, and photo control are to be removed from the damaged head.
8. Shade may be placed over top of pole while replacing head.
9. Remove old head and install new head.
10. Re-install existing bulb, shade and photo control on new head installation.
11. Secondary is to be re-connected to light.
12. Time stops when old head is lowered and on the ground in material bag on hand line as last step of event.
13. Judging will continue until Apprentice is on the ground.

***Apprentices will provide their own:***
Handline
Grunt Bag

## *Street Light Head Change Out*

Mean Time:14 Minutes
Drop Dead Time: 21 minutes

**TYPE:**

**CATALOG #:**

**APPLICATION**

The RMA Area Light comes complete and ready for mounting in areas such as barnyards, service drives, storage facilities and roadways with light traffic.

**SPECIFICATION FEATURES**

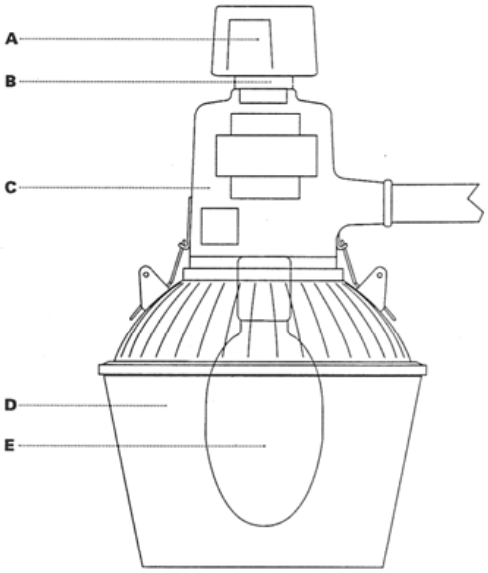
**A···Photocontrol**
Optional NEMA photocontrol available.

**B···Photocontrol Receptacle**
Standard with photocontrol receptacle.

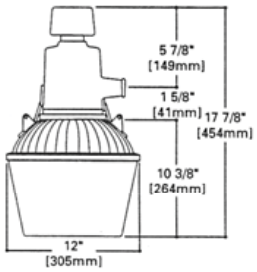
**C···Housing**
Die-cast aluminum head with slipfitter for 1 5/8" to 2 3/8" O.D. pipe.

**D···Optics**
Open bottom acrylic refractor standard. Choice of reflector/refractor assemblies.

**E···Lamp**
Choice of high pressure sodium, or mercury vapor lamp sources.




**DIMENSIONS**

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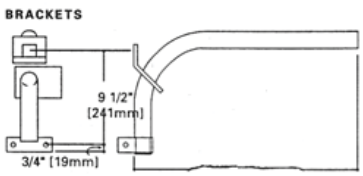


**COOPER LIGHTING**