



4kV Lightning Arrester Change Out

Mean Time: 8 minutes

Drop Dead: 12 minutes

Chief Judge: Richard Boley, Orlando Utilities Commission

Event Summary:

This event consists of replacing 2 bad 5kA surge arresters mounted a 10' wood cross arm with flat steel braces.

Event Specifics:

1. The conductor will be 1/0 AAAC.
2. 10' wood cross arm with steel flat braces will be used mounted 12" from the top of the pole.
3. The neutral will be 7' down from the cross arm bolt.
4. "L" brackets will be mounted 12" in from the steel pin and insulator.
5. All grounds and jumpers will be #4 soft drawn copper (there will be new 24" jumpers precut for teams to pick up when entering the event).
6. Hotline clamp and Aluminum saddles will be used, changed out, and there will be a new set at the event station.
7. The arresters will be Hubbell IEC 5kA mounted on steel L-brackets (L-brackets will not be changed out).
8. All connections must be properly brushed with an approved brush.
9. All material will be made up after the time starts and broken down before the time stops.
10. Arresters must be untapped and tapped with approved hot stick method.
11. All NESC Safe Work Practices must be followed.
12. See General Rules and Additional General Rules.
13. Teams will be allowed a five-minute setup time before starting the event.
14. Time will start when the judge signals to go.
15. Time will stop when the last climber has both feet on the ground or the team calls time due to breaking down the material.
16. Climbers must wear class II or higher rubber gloves ground to ground.
17. The neutral must be covered with rated cover.
18. The primary must be covered with rated cover.
19. M.A.D. must be maintained from all uncovered conductor.
20. All material, tools, and equipment must be sent up and down using the handline with a material bag.

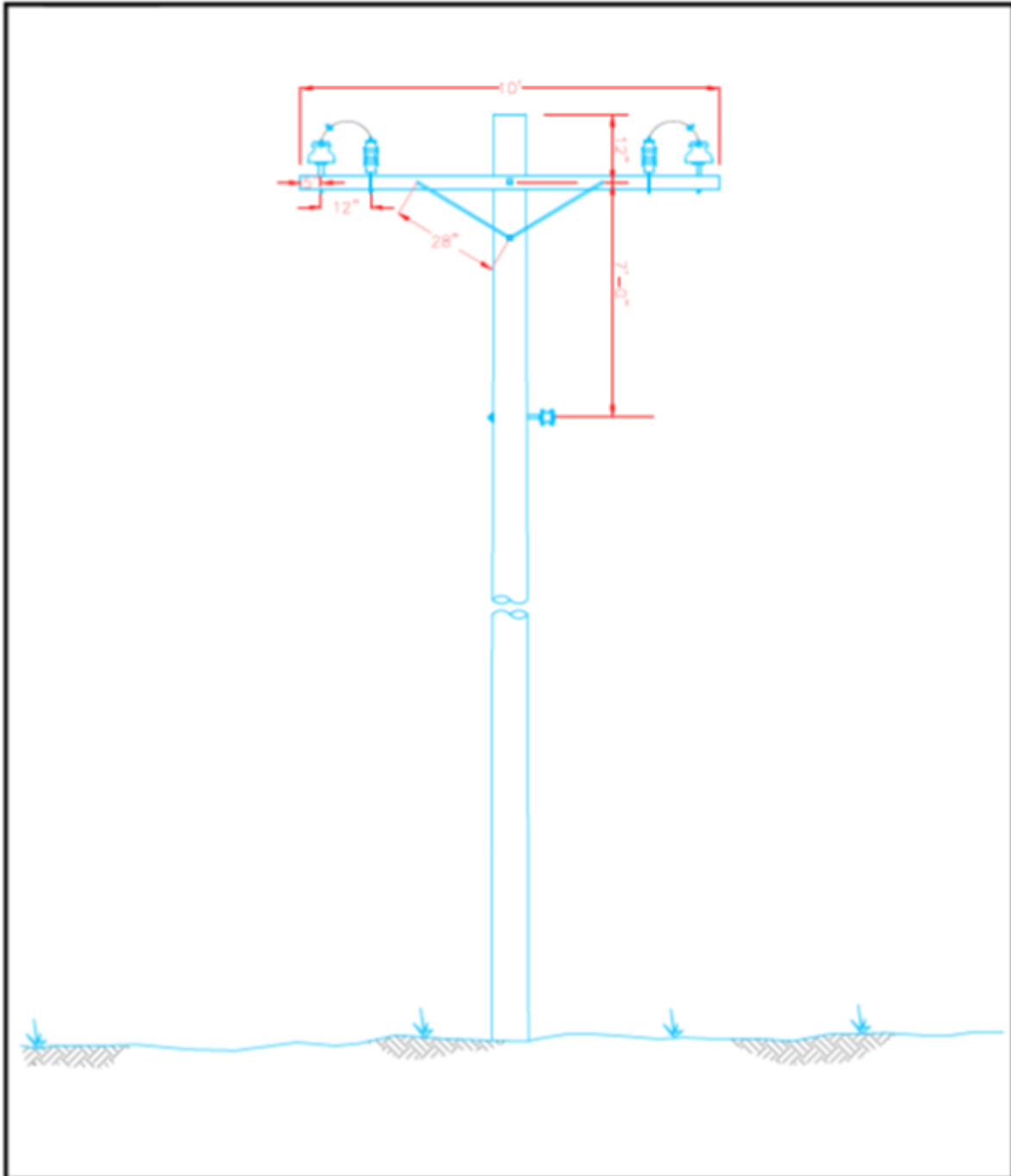
Teams will provide their own:


- Handline
- Nose bags
- Hot Sticks
- Hand tools
- Cover
- Tarp

FLORIDA LINEMAN COMPETITION



4kV Lightning Arrester Change Out



Engineer: <u>MH</u>	SUBJECT: <u>OVERHEAD DISTRIBUTION</u>				Orlando Utilities Commission	OH103018
Drawn: <u>CG</u>	DETAIL: <u>GENERAL</u>					
Checked: <u>JA</u>	PHASE CLIP IN 8' WOODARM W/ FLATBRACES					
Approved: _____	NO.	DATE	REVISION			
Date: <u>10-30-18</u>	1					
	2					
	3					



12kV Dead End Insulator Change Out

Mean Time: 12 minutes

Drop Dead: 15 minutes

Chief Judge: David Wolfe, *Kissimmee Utility Authority*

Event Summary:

This event consists of replacing a poly dead end insulator on a 12kV single phase line, using rated hot sticks. Primary will be double dead ended on the pole with a #4 coated CU jumper on a standoff bracket. Teams will only be required to replace one poly bell of their choice.

Event Specifics:

1. Conductor will be #2 AAAC.
2. Primary will be worked with rated hot sticks while maintaining M.A.D.
3. A rated link stick must be used on conductor hoists/blocks.
4. All primary cover must be applied with rated hot sticks (No hanging shotguns) approved attached hot sticks only.
5. Two points of positive control must be maintained (Two Hands) at all times while handling energized jumper.
6. Rated cover must be applied to opposite side of bell that's being changed.
7. New bell must be sent up in a grunt bag.
8. Climbers must wear class II rubber gloves.
9. Neutral must be covered with rated cover.
10. Teams will be allowed 5 minute set up time.
11. Time will start on judges signal with fall arrest detached from pole.
12. Time will stop when last lineman has both feet on the ground.
13. All general rules must be followed.
14. All tools and equipment not being used must remain on tarp during event.
15. Judging will continue until area is returned back to its original form.

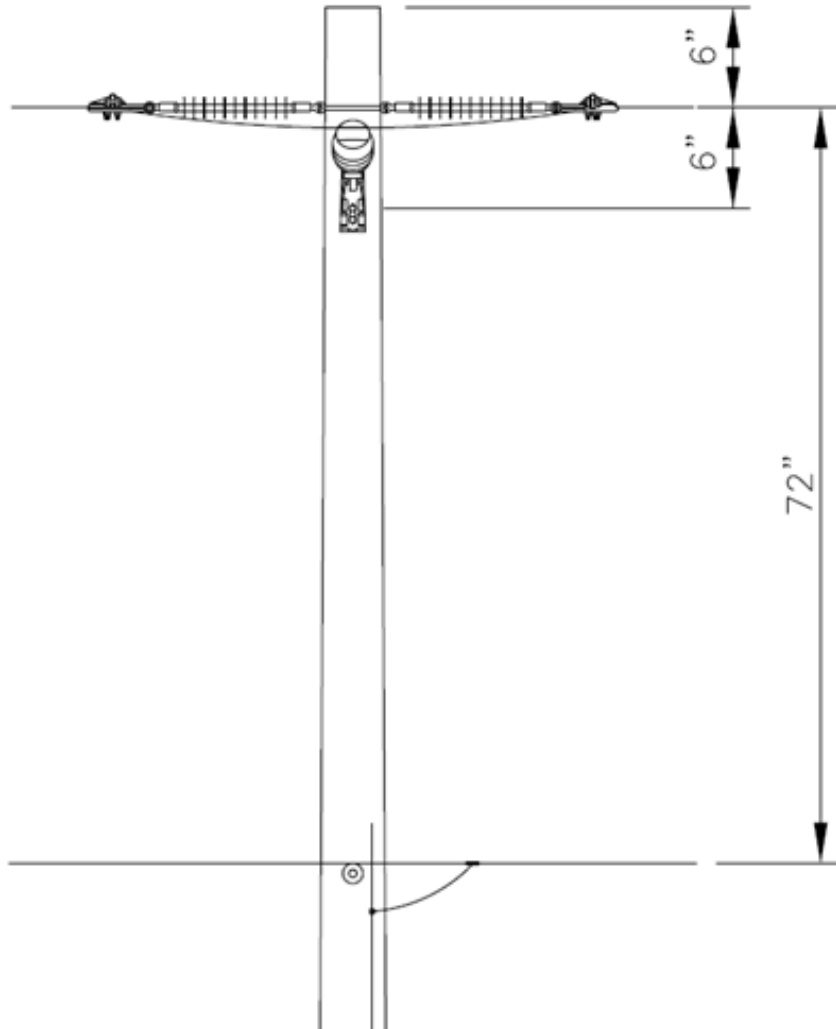
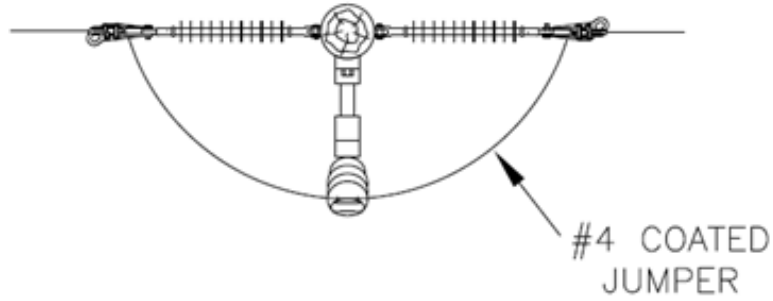
Minimum List of Tools for Event:

- Handline
- Grunt Sack
- Slack blocks or hoists and grip

FLORIDA LINEMAN COMPETITION



12kV Dead End Insulator Change Out



FLORIDA LINEMAN COMPETITION



115kV Transmission Line Bell Change Out

Mean Time: 10 minutes

Drop Dead: 12 minutes

Chief Judge: Mike Hatcher, *City of Tallahassee*

Event Summary:

Teams will be changing out the center bell on a string of seven 10 inch ball & socket 30K transmission line bells. The construction will be a 25 degree running angle built with 477 ACSR conductor sagged at 2K. The bell to be changed will be clearly marked. The line will be grounded on each end of the event. Teams will also install their own personal ground at the event pole they are working on, proper means and methods will be used at all times during the event. All rigging shall be rated and in good working order.

Event Specifics:

1. Conductor will be 477 ACSR.
2. Teams must maintain MAD at all times when installing the personal ground.
3. Improper rigging will not be allowed, all rigging equipment shall be rated and in good working order.
4. Broken or chipped bells will be a 10 point deduction.
5. Bells will be 30K Ball & socket with a 30K Y-Ball on the top end and a 30K socket clevis with a 477 angle shoe on the armor rodded conductor.
6. Teams will be allowed 5 minute set up time.
7. Time will start on judges signal with fall arrest detached from pole.
8. Time will stop when last lineman has both feet on the ground.
9. All general rules must be followed.
10. All tools and equipment not being used must remain on tarp during event.
11. Judging will continue until area is returned back to its original form.

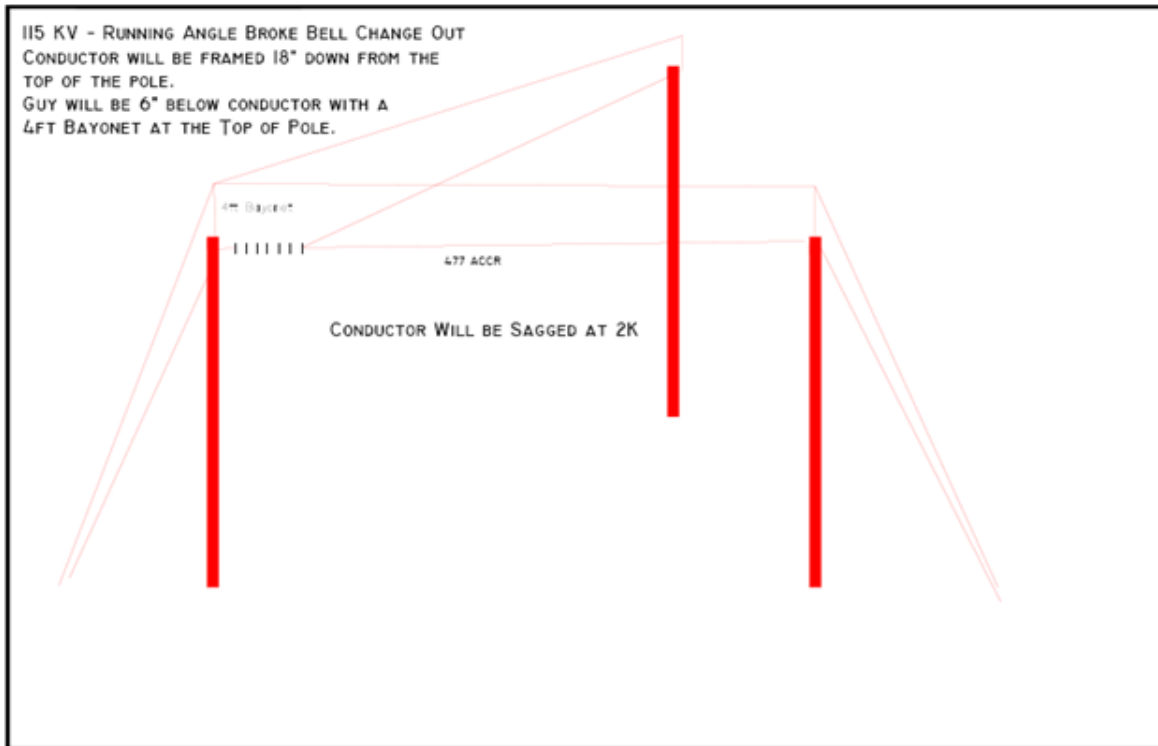
Minimum List of Tools for Event:

- Handline
- Grunt Sack
- Slack blocks or hoists and grip
- 9/16" wrench

FLORIDA LINEMAN COMPETITION



115kV Transmission Line Bell Change Out



FLORIDA LINEMAN COMPETITION



Mystery Event

Mean Time: ? minutes

Drop Dead: ? minutes

Chief Judge: Jason Wright, *Kissimmee Utility Authority*

Event Summary:

Event summary and specifics will be presented to all competitors after registration on March 1.

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Vertical Hurtman Rescue

Mean Time: 4 minutes

Drop Dead: 8 minutes

Chief Judge: Lamar Whitaker, *Beaches Energy Services*

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 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 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 2 ½ full wraps or 3 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 hard-ware. 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 under the Competition section on how to do this event.

(Note you will use the OX Block and not wrap the pole like the video)

Event Specifics:

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. **Mannequin must be lowered smoothly to the ground without coming into contact with the pole and must be completely stopped within 5 feet of the ground then laid gently on the trap. If the mannequin is not completely stopped there will be a 2 point deduction.**
7. Time will stop when mannequin is on the tarp with slack on the handline, and extendo stick is fully retracted and back on tarp.
8. Climber will stay on pole and help hang mannequin.
9. Team will close switch back after time stops. Any team member can close it back and work gloves can be used.
10. You must use the eye to open and close switch.
11. When time starts extendo stick will be lying flat on tarp and must be back on tarp fully retracted before time will stop.
12. Climber must stay in 5-foot circle while he has his gaffs on.



Vertical Hurtman Rescue

13. Rubber gloves or work gloves must be worn anytime you are working or handling tools and equipment.
14. You must cut the Bashlin 57-A insert. There will be a 10-point deduction for cutting the belt in the wrong place.
15. The blade of the climber's knife must not be exposed while climbing.
16. 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.
17. 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:

- Extendo stick

Judging Guidelines

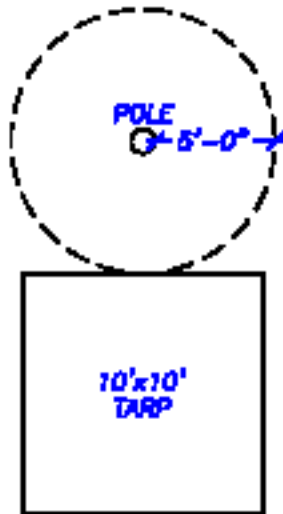
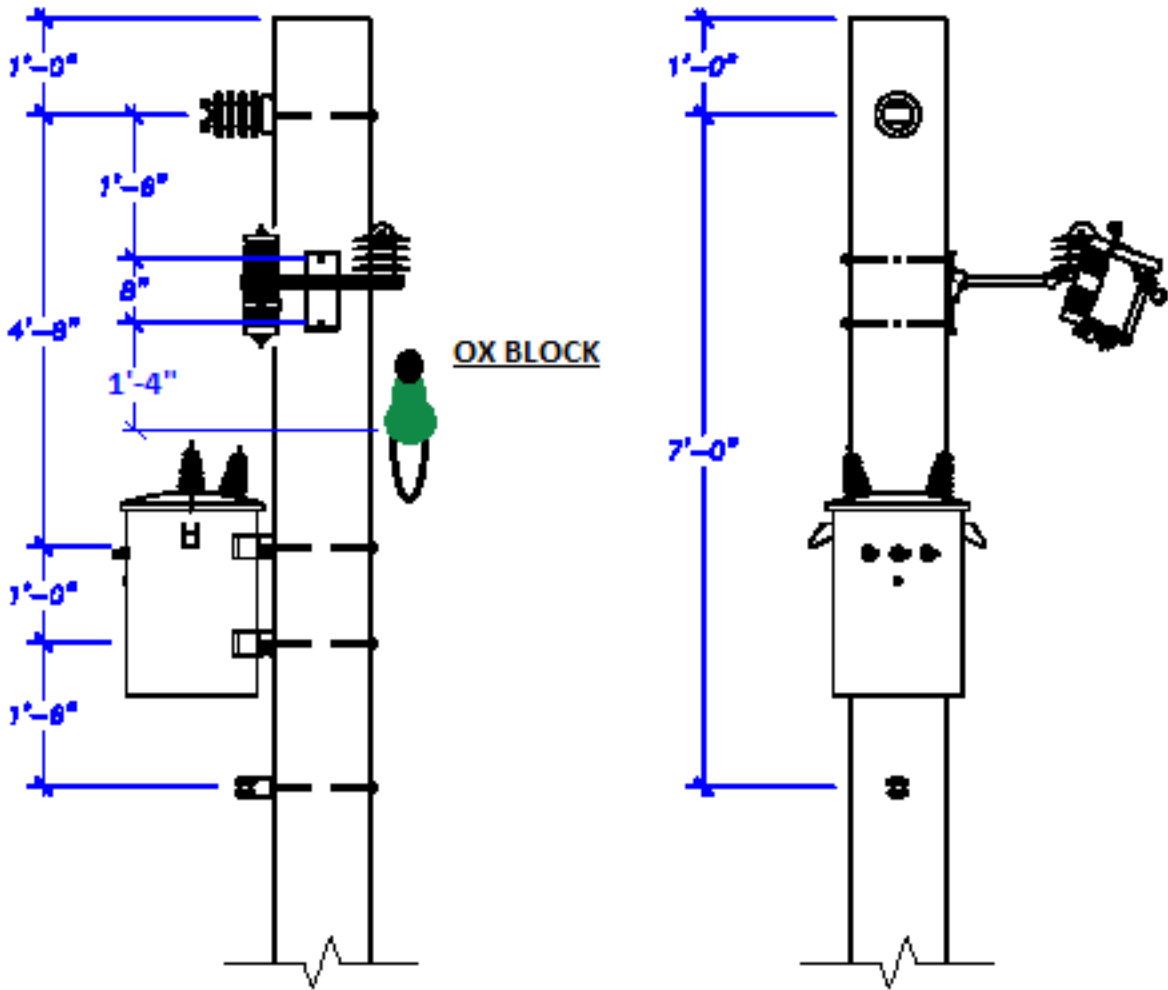
This year's lineman competition will be focusing on strict safety guidelines. All rules or safety infractions will be enforced as stated in the event specs. No leniency on the stated rules will be tolerated.

- **The OX Blocks** : A minimum of 2 clicks or one full wrap on the friction bar will be used. This ensures a timely but safe rescue for the fallen Lineman. This is simulating a rescue, **mannequins** hitting the ground with excessive force or **coming in contact with the pole**, will be a deduction and is at the discretion of the judge.
- **Mannequins** : Mannequins will be tied under the arms with 3 half hitches. **Any** part of the eye splice in the knot will be a deduction. **A 4-inch pipe** will be used to ensure tightness of the knot. If the pipe can slide in-between the mannequin and the knot it is a deduction. This to ensure the fallen lineman can be safely lowered to the ground.
- **Headache** : You must **loudly callout headache** when you drop out the split handline.
- **Insert** : **The Belt insert** must be **cut** during the rescue.
- **Stop Time** : Time will stop when mannequin is on the ground and the handline is slack.
- **Climbing** : **One gaff** must be in the pole at all times. **Belt** must be properly adjusted.
- **Rubber Gloves**: In this event **Rubber Gloves are required ground to ground.**
- **Extendo stick** : **Must use rubber gloves to operate, keeping stick off the ground and body while in contact with anything energized.**

Our goal is to have a safe and timely rescue for the fallen lineman. It does little good if you become a victim while doing a rescue. Please understand that all rules will be enforced to ensure safety.



Vertical Hurtman Rescue





2-35kV Insulator Change Out on 8' Fiberglass Arm

Mean Time: 8 minutes

Drop Dead: 12 minutes

Chief Judge: Nick Short, *Lakeland Electric*

Event Summary:

In this event the two phase conductors (#2 AAAC) are considered dead and grounded. The existing 8 ft. fiberglass arm has a damaged insulators on both ends and must be changed out. A complete set of all necessary hardware will be available on the ground at each event pole. The material may be rigged during set up time. The apprentice will take a hand line up the pole. A nose bag with the insulators and tie wires must be attached to the hand line. The apprentice must raise the new hardware in the bag by himself. The apprentice must lower the old hardware in the bag safely to the ground. The apprentice must notify judge before railroading block and dropping out the handline. Time will stop when apprentice returns to the ground and has made up the handline.

Event Specifics:

1. See General Rules.
2. Apprentice will be allowed a 5-minute setup time before starting the event.
3. Time starts at the judge's signal.
4. The new insulator will already be rigged.
5. Conductor can be floated.
6. Conductors are secured on the 35kV porcelain insulator with #2 AAAC wrap lock ties. (A screwdriver may be used to remove wrap lock tie, no knives or pliers.)
7. After new insulator is installed, the conductor must be re-secured with wrap-lock tie. (A screwdriver may be used to install wrap lock ties, no knives or pliers.)
8. Grommet must be changed, there is no penalty if old grommet is dropped as long as headache is called.
9. All work on the ground must be done with gaff guards on (if a gaff guard falls of it will be a 2 point deduction) if you choose to not take your tools off.

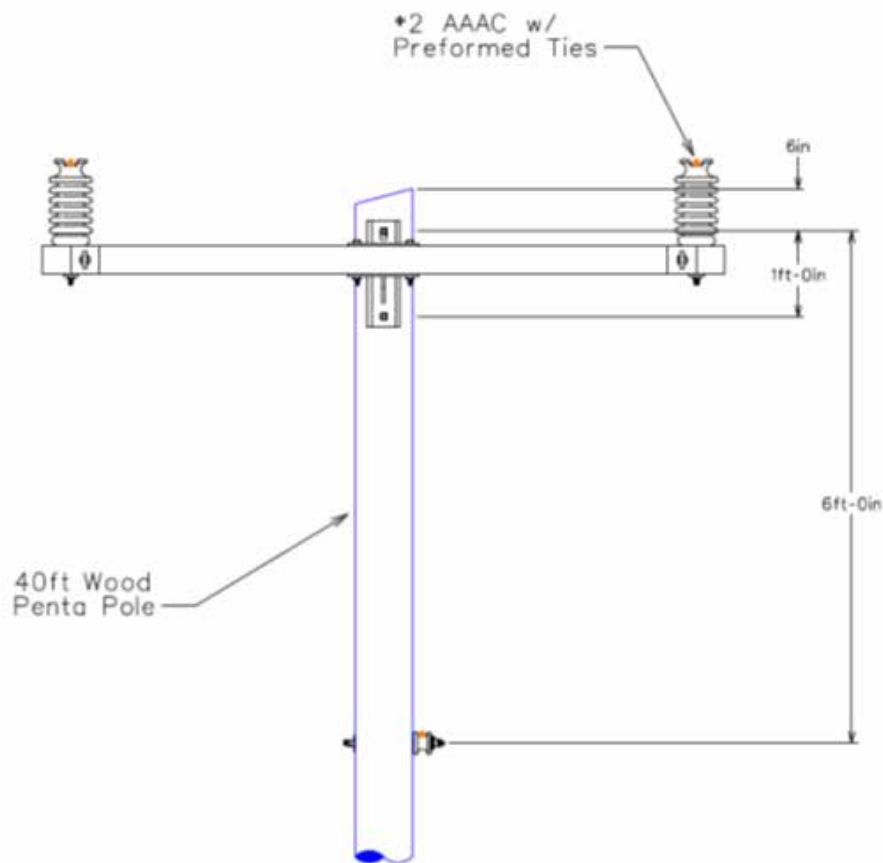
Apprentices will provide their own:

- Handline
- Nose bag
- Climbing tools



2-35kV Insulator Change Out on 8' Fiberglass Arm

NONE	NON-STANDARD 8-FT FG DE CROSSARM 2-35kV POST INSULATORS	ASSEMBLY
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3-PH, 8-ft FG DE Crossarm, 35kV Post Insulators

Drafted By: BRS	10/30/18	OVERHEAD DISTRIBUTION	
Revision By: Hrc			
Approved By:		SECTION	
Manager of Engineering			



A.G.S. Installation

Mean Time: 12 minutes

Drop Dead: 15 minutes

Chief Judge: Maurice Bacon, *Fort Pierce Utilities Authority*

Event Summary:

The Apprentice will remove 394.5 AAC conductor from traveler and properly install "Armor Grip Suspension" (AGS) and secure to a 46kV insulator at the top of a 40' wood pole.

Event Specifics:

1. The Apprentice is permitted to ask any questions and put on his/her tools during the 5 minute set up time.
2. The Apprentice will adhere to the General Rules as outlined in the packet.
3. A new AGS unit and rod will be located at each station; A new rod will be used for each competitor
4. The time will start when the Apprentice first ascends the pole.
5. The Apprentice must carry a hand line with them in order to pull up the materials needed to secure the wire.
6. The materials must come up and down in a bag.
7. The Apprentice will remove the conductor, install the AGS and secure the assembly in the insulator.
8. If a rod is bent during application so that it cannot be properly installed, the rod shall be left out and 2 points will be deducted. Rods must be centered with less than ¼" deviation of any strand toward the end out on the line.
9. Time will stop when the Apprentice is satisfied that the conductor has been properly installed and informs the judge he/she is finished.
10. The Apprentice will disassemble the parts and place them back in the bag and lower it to the ground. The Apprentice must railroad the hand line and make it up once he/she has reached the ground.
11. The old armor rods must be discarded and replaced with new ones before leaving the event area. The Judge will have new rods to give to the Apprentice.
12. Though the time has stopped the Apprentice will still be judged during the time of putting the event back in order for the next competitor.

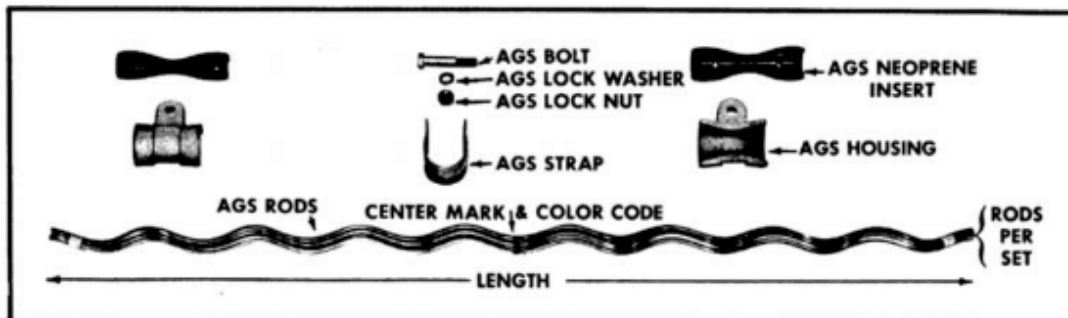


A.G.S. Installation

APPLICATION PROCEDURE & SAFETY CONSIDERATIONS **PREFORMED LINE PRODUCTS** **ARMOR-GRIP. Suspension**

NOVEMBER 1996

Completely read and understand this procedure before applying product. Special attention should be given to the Safety Considerations located on the last page. We advise the reader to review those considerations now, and then again during the general review of this procedure.



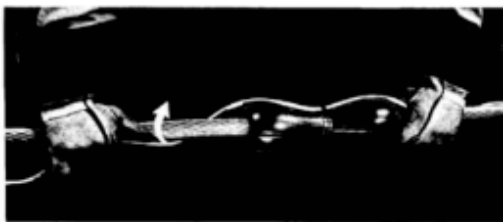
1. ARMOR-GRIP Suspension nomenclature.



2. Plumb insulator string and mark conductor at center of sheave. Use felt marking pen or lumber crayon; do not scratch conductor. Lift the conductor beyond the ends of the rods to allow enough clearance for the application.

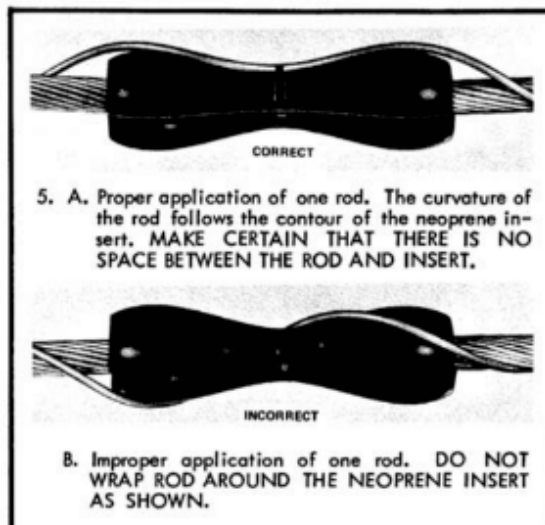


3. Align center marks of AGS Neoprene Inserts with center mark on conductor and tape in place with a thin layer of tape.



4. Center the AGS Rod on the insert. Apply sufficient length of rod (approximately two wraps) so that it will stay on the conductor.

DO NOT DISTORT RODS.



6. Apply all remaining rods evenly around neoprene insert. **MAKE SURE THAT NO RODS ARE CROSSED.** Each AGS Rod can be applied completely, or all rods can be applied partially as shown above. Make sure that all rod ends are snapped into place.



Hurtman Rescue

Mean Time: 4 minutes

Drop Dead: 6 minutes

Chief Judge: Kevin Griffin, *Clay Electric Cooperative*

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.

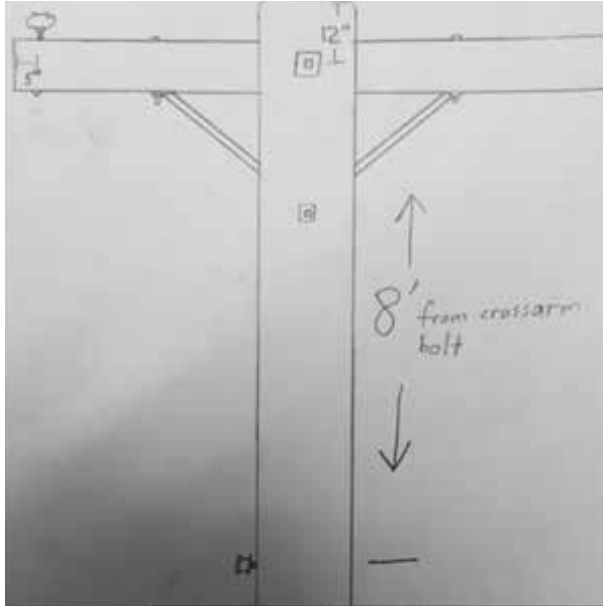
Note: The lineman's belt, hooks and rubber gloves in bag will be lying on the ground at arm's length from the pole. (You may tool up bare handed).

Event Specifics:

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 same side of the pole where the hand line will be hung. Note: The "OX Block" will be utilized with a minimum of two full wraps or three 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 and must be **completely stopped** within 5 feet of the ground then laid gently on the trap. If the mannequin is not completely stopped there will be a 2 point deduction.
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.



Hurtman Rescue





Mystery Event

Mean Time: ? minutes

Drop Dead: ? minutes

Chief Judge: Chris Henry, *Ocala Electric Utility*

Event Summary:

Event summary and specifics will be presented to all competitors after registration on March 1.

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Single Phase Dead End Transfer

Mean Time: 8 minutes

Drop Dead: 10 minutes

Chief Judge: Leonard Holton, JEA

Event Summary:

The Apprentice will be required to transfer a single phase #2 AL primary and #2 neutral dead-end from an existing pole onto a new pole set 4' to the side. Both primary and neutral conductors will be moved to the new pole. This event will be considered dead and not grounded.

Event Specifics:

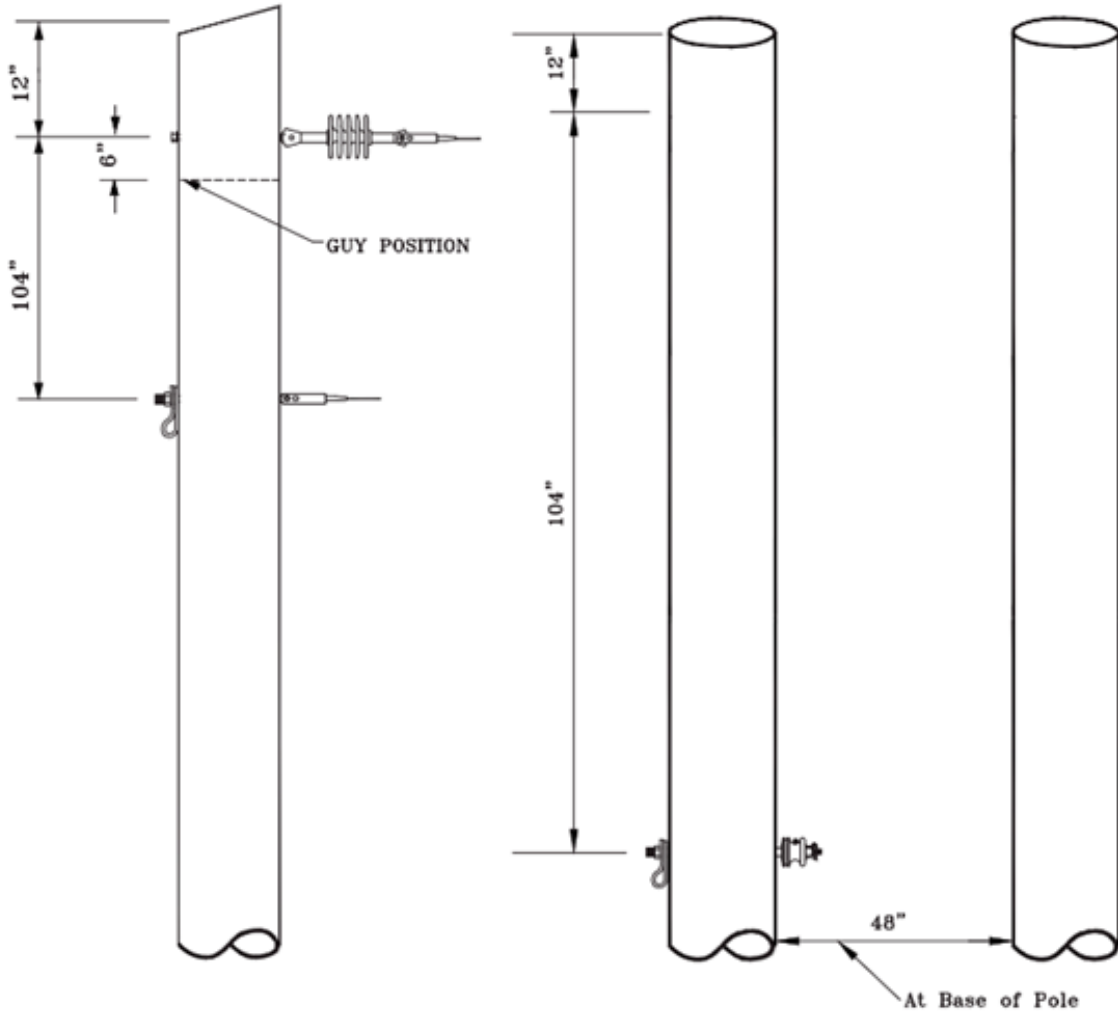
1. Apprentice will have 5 minutes to setup and ask questions.
2. Class 2 Rubber gloves must be worn ground to ground.
3. The apprentice must carry a handline to pull up a grunt sack with rigging and new primary dead-end insulator and shoes. The bag may be secured on the pole while work is being performed.
4. The new pole will have a down guy and an eye bolt in the primary and neutral position.
5. The apprentice will install the primary dead-end insulators and neutral shoe on the new pole. The pins must be installed with the cotter keys facing inwards toward the opposite pole.
6. Approved type of rigging that will be allowed is a minimum of 2 points of control on the conductor at all times when not pinned in its permanent position. Grips must be spring loaded.
7. The primary and neutral conductor shall be removed from the existing dead end shoe and re-secured into the new dead end shoe on the new pole.
8. When the transfer of both conductors has been completed, the primary insulator and neutral shoe must be removed from the eye bolts of the old pole and sent to the ground with rigging.
9. Time will stop when the apprentice is on the ground and fall arrest is detached from the pole.
10. Material must be left out at the base of the pole with the pins properly installed in the dead-end shoe prior to leaving the event. Points will be deducted if any material is missing or taken from the event area.

Minimum List of Tools for Event:

- Handline
- Grunt Sack
- Slack blocks or hoists and grip
- 9/16" wrench



Single Phase Dead End Transfer





Written Test

Mean Time: 30 minutes

Drop Dead: 36 minutes

Chief Judge: David Sparks, Gainesville Regional Utilities

Event Specifics:

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 15th 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;
8. A perfect field score of 500 will be the only way for the bonus points to exceed 500
9. Competitors with less than a perfect 500 field score can only be brought up the 500 mark.
10. Ties at 500 will then go back to time for breaking ties.

Example – A competitor with a 498 field score can only be brought up to 500 even if he makes the top grade. If a competitor scores 500 he can receive the 3 bonus points, 2 or 1 bonus above 500.

The top Three 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.

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.

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