

OVERHEAD DISTRIBUTION CIRCUIT INSPECTION CRITERIA



Note: The following examples are general representations, depending on the circumstances, the employee reserves the right to change the priority of the Corrective Maintenance item with Management's approval.

Refer to Distribution Overhead Circuit Inspection Program
Checklist CM-CE-P321-R0001 Rev: 05/08/17

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Arms (Alley/X-arm)

Broken Priority 20 CM

Visibly broken or detached Alley/Cross Arm that will lead to an imminent floating conductor.



Damaged Priority 30 CM

Visible Damaged Alley/Cross Arm that is likely to fail before next inspection
Deteriorated: tracking, severely splintered or twisted.



Arms - Braces

A-Arm Broken/Missing Priority 20 CM

One or more alley arm braces are broken, detached, or missing.

Examples with one alley arm brace:



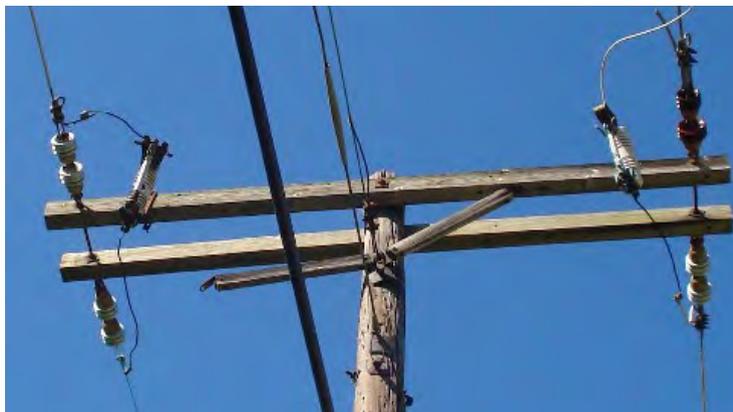
Example with two alley arm braces:



Arms - Braces

X-Arm Broken/Missing 1 Priority 40 CM

One cross-arm brace is broken, detached, or missing.



Arms - Braces

X-Arm Broken/Missing 2 or More Priority 20 CM

Two or more cross-arm braces are broken, detached, or missing.

Example with two x-arms



Example with three x-arms:



Arresters

Damaged# _____
Priority 30 CM

The ground wire is separated from the bottom, the isolator at the bottom has blown; the arrester has blown off the mounting bracket, the arrester has blown apart, the high-side lead is not attached, or in the case of a non-porcelain arrester, the housing is split.



Clearance

Check Primary Priority 20 CM

Energized surfaces of primary equipment or conductors with inadequate clearance from the ground, adjacent buildings, fire escapes, billboards, signs and other obstructions in accordance with Company Construction Standards; for 4kV or 12 kV primary only, priority 20 choice is for horizontal clearance 3 feet or less and vertical clearance from a building roof 8 feet or less; for 34kV primary only, priority 20 choice is for any possible clearance issues.

Refer to Construction Standard C7500 and ESP 5.3.7.2

Note: Rubbering-up is a temporary solution



Clearance

Check Primary

Priority 30 SR

For 4kV or 12kV primary only, priority 30 choice is for horizontal clearance greater than 3 feet but less than 7 feet—six inches from adjacent buildings, fire escapes, billboards, signs and other obstructions and is accessible to the public; examples include adjacent to windows, fire escapes, or other accessible parts of the building.

Refer to Construction Standard C7500 and ESP 5.3.7.2

Note: Rubbering-up is a temporary solution



Clearance

Check Primary Priority 40 SR

For 4kV or 12kV primary only, priority 40 choice is for horizontal clearance greater than 3 feet but less than 7 feet–six inches from adjacent buildings, billboards, signs and other obstructions and is **NOT** accessible to the public; examples include adjacent to buildings with **NO**: windows, fire escapes, or other accessible parts of the building. For 4kV or 12kV primary only, priority 40 choice is for vertical clearance from a building roof greater than 8 feet but less than the required clearance.

Refer to Construction Standard C7500 and ESP 5.3.7.2

Note: Rubbering-up is a temporary solution



Clearance

Check Secondary or Neutral Priority 20 CM

Secondary or Neutral facilities with inadequate clearance from the ground, adjacent buildings, fire escapes, billboards, signs and other obstructions in accordance with Company Construction Standards and are accessible to the public; examples include adjacent to buildings with windows, fire escapes, or other accessible parts of the building.

Refer to table on page 22 and Construction Standard C7500

Note: Rubbering-up is a temporary solution



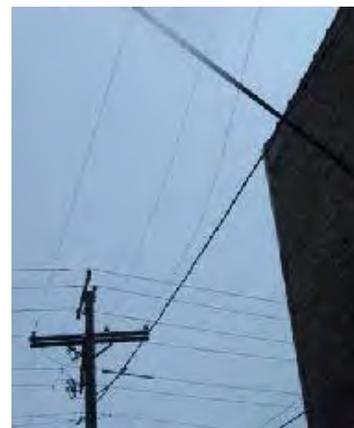
Clearance

Check Secondary or Neutral Priority 40 CM

Secondary or Neutral facilities with inadequate clearance from the ground, adjacent buildings, fire escapes, billboards, signs and other obstructions in accordance with Company Construction Standards and are **NOT** accessible to the public; examples include adjacent to buildings with **NO**: windows, fire escapes, or other accessible parts of the building.

Refer to table on page 22 and Construction Standard C7500

Note: Rubbering-up is a temporary solution



Clearance

Check Service

Priority 20 CM

Services with inadequate clearance from the ground, adjacent buildings, fire escapes, billboards, signs and other obstructions in accordance with Company Construction Standards and are accessible to the public; examples include adjacent to buildings with windows, fire escapes, or other accessible parts of the building.

Refer to table on page 22 and Construction Standard C7500

(Note: When the clearance issue derives from the customer's installation, the choice "Customer Work Required (20)" shall be picked; the same priority distinction applies as stated above.)

Note: Rubbering-up is a temporary solution



Clearance

Check Service

Priority 40 CM

Services with inadequate clearance from the ground, adjacent buildings, fire escapes, billboards, signs and other obstructions in accordance with Company Construction Standards and are **NOT** accessible to the public; examples include adjacent to buildings with **NO**: windows, fire escapes, or other accessible parts of the building.

Refer to table on page 22 and Construction Standard C7500

(Note: When the clearance issue derives from the customer's installation, the choice "Customer Work Required (40)" shall be picked; the same priority distinction applies as stated above.)

Note: Rubbering-up is only a temporary solution



Clearance

Customer Work Required Priority 20 CZ

Services with inadequate clearance from the ground, adjacent buildings, fire escapes, billboards, signs and other obstructions in accordance with Company Construction Standards and are accessible to the public; examples include adjacent to buildings with windows, fire escapes, or other accessible parts of the building, and where the customer is required to move their facilities (the weather-head or the deck, etc.) that is causing the clearance issue.

Refer to table on page 22, Construction Standard C7500 and ESP 5.3.7.2

Note: Rubbering-up is a temporary solution



Clearance

Customer Work Required Priority 40 CZ

Services with inadequate clearance from the ground, adjacent buildings, fire escapes, billboards, signs and other obstructions in accordance with Company Construction Standards and are **NOT** accessible to the public; examples include adjacent to buildings with **NO**: windows, fire escapes, or other accessible parts of the building, and where the customer is required to move their facilities (the weather-head or the deck, etc.) that is causing the clearance issue.

Refer to table on page 22, Construction Standard C7500 and ESP 5.3.7.2

Note: Rubbering-up is only a temporary solution



Clearance

Primary Check Wire Spacing Priority 30 SR

When the vertical clearance from a primary conductor is less than 24 inches from another primary conductor at mid-span. This typically occurs when an underbuilt line is installed too close to an overbuilt line. A priority may be escalated, with managements approval, if the distance is substantially less than 24 inches.

Note: This item should not be selected when slack spans are the known issue.



Clearance

Common Secondary/Neutral/Service Clearance Items (For comprehensive details refer to C7500)

| | Secondary Open Wire 0-750V | Secondary; Service Cable; Aerial Cable; or Neutral 0-750V |
|--|----------------------------------|--|
| Horizontal to building or sign | 5' - 6" | 5' - 0" |
| Horizontal to streetlight near conductor attachment | 5' - 0" | 3' - 0" |
| Horizontal to streetlight in span with 6lb/ft ² wind | 3' - 6" | 3' - 0" |
| Vertical to streetlight | 2' - 0" | 2' - 0" |
| Vertical to sign | 6' - 0" | 3' - 6" |
| Vertical to roof - NO pedestrian access | 10' - 6" | 3' - 6" |
| Vertical to roof with pedestrian access | 11' - 6" | 11' - 0" |
| Vertical to roof with truck access | 16' - 6" | 16' - 0" |
| Vertical crossing freeway/tollway | 20' - 0" | 20' - 0" |
| Vertical crossing roads/alleys/parking lots subject to trucks; Other land traversed by forest/farm vehicles; residential driveways | 18' - 0" * | 18' - 0" * |
| Vertical crossing spaces only accessible to pedestrians only | 12' - 6" ** | 12' - 0" ** |
| Vertical running along R.O.W. of rural roads where vehicles are unlikely to cross under | 14' - 6" | 14' - 0" |
| *** Vertical to water suitable for sailboats: | | |
| Less than 20 acres | 18' - 6" | 18' - 0" |
| Over 20 to 200 acres | 26' - 6" | 26' - 0" |
| Over 200 to 2000 acres | 32' - 6" | 32' - 0" |
| Over 2000 acres | 38' - 6" | 38' - 0" |
| Vertical to water NOT suitable for sailboats | 15' - 0" | 14' - 6" |
| **** Distance from edge of pool in any direction | 23' - 0" | 22' - 6" |
| **** Distance from diving platform or tower in any direction | 15' - 0" | 14' - 6" |
| Anchor Guy Wire | 6" | 6" |

* This clearance may be reduced for service drops (insulated open wire or tri/quadrplex services) to 12'-6" (< 300V to ground) & 12'-0" (< 150V to ground) and drip loops to 10'-6" (< 300V to ground) & 10'-0" (< 150V to ground)

** This clearance may be reduced for service drops (insulated open wire or tri/quadrplex services) and drip loops to 10'-6" (< 300V to ground) & 10'-0" (< 150V to ground)

*** Add 5 feet to all clearances for boat ramps and rigging areas

**** No supply conductor of any voltage (includes neutrals) should cross over a swimming pool. For the city of Chicago only, service drop conductors shall not be installed above swimming pools or surrounding area extending 10 feet horizontally from the pool edge or diving structures.

Conductors - Aerial Cable

Damaged Jacket/Bracket/Lashing Priority 30 CM

Aerial cable jacket damage: nicks and splits.



Aerial cable lashing damaged or broken. Aerial cable bracket at pole broken or damaged



Splice Leak (Lead Conductor) Priority 30 CM

Lead conductor splice or termination leaking.

Conductors - Neutral

>2 Splices/Span Per Phase

INFO

Identify spans that have greater than 2 splices within the span on bare wire. Example-1: if Static or Neutral has 3 splices, – identify that span as >2 Splices/Span. Example-2: if Static or Neutral has 2 splices, – do not identify that span as >2 Splices/Span.



Damaged

Priority 30 CM

Visibly damaged wire: broken strands, severely kinked conductors, burn marks on the conductor, or bird-caged strands.



Conductors - Neutral

Floating Priority 20 CM

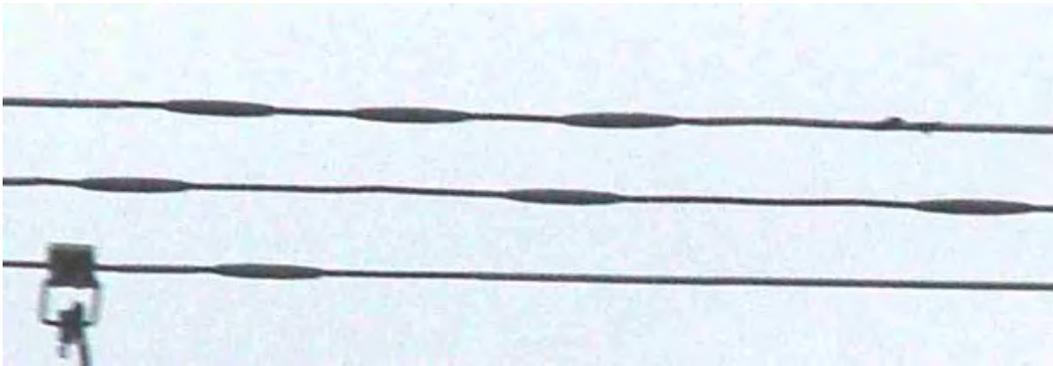
The static or neutral wire is **not** attached to the supporting structure at its normal point of attachment.



Conductors - Pri Open Wire

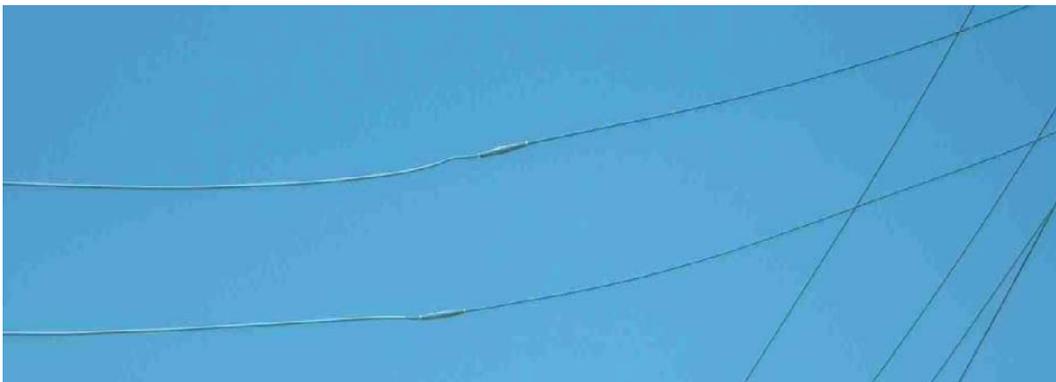
>2 Splices/Span Per Phase INFO

Identify spans that have greater than 2 splices on any phase within the span on bare wire. Example-1: if A phase has 4 splices, B phase has 2 splices and C phase has no splices – identify that span as >2 Splices/Span. Example-2: if A phase has 2 splices, B phase has 2 splices and C phase has no splices – do not identify that span as >2 Splices/Span.



Automatic Splice in Slack Span Priority 30 CM

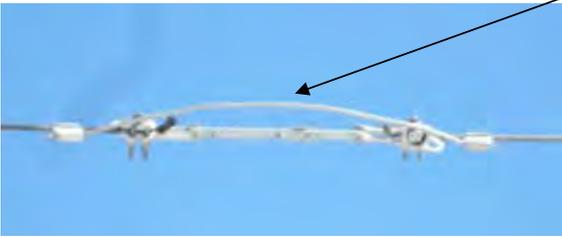
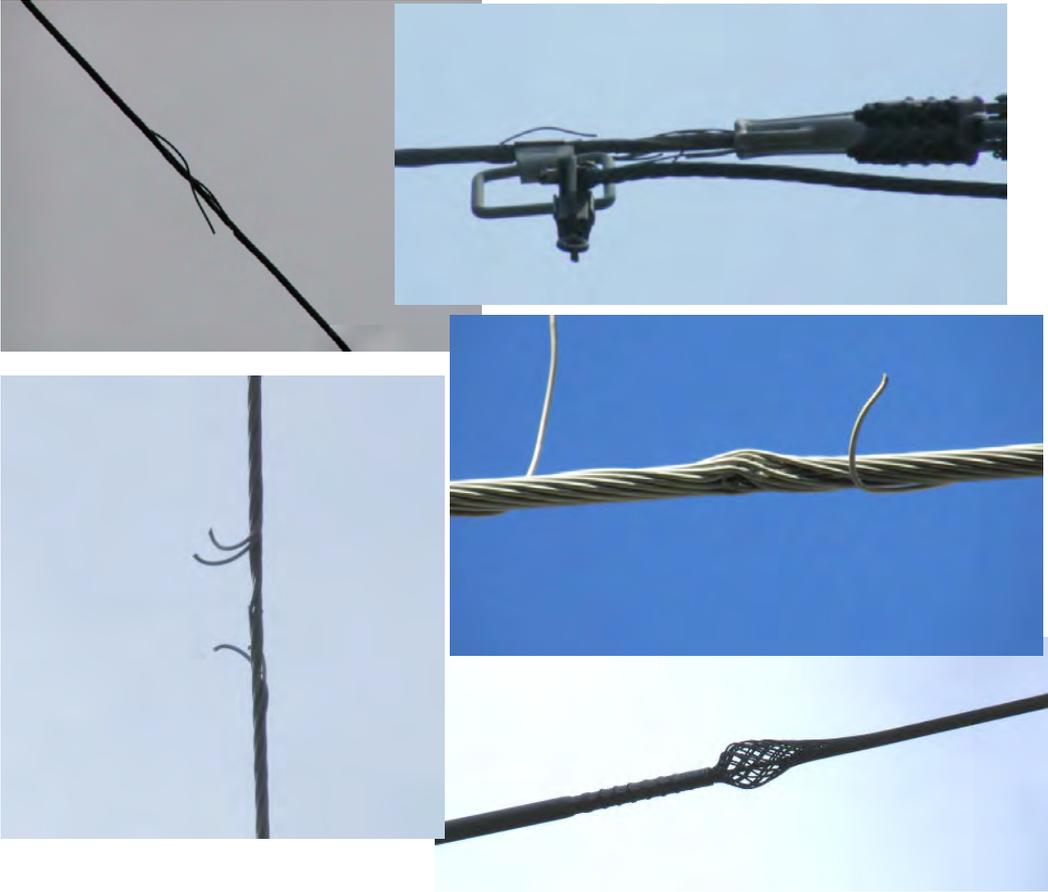
Automatic Splices in a slack span.



Conductors - Pri Open Wire

Damaged **Priority 30 CM**

Visibly damaged wire: broken strands, severely kinked conductors, burn marks / pitting on the conductor, or bird-caged strands.



Primary Jumpers that have insufficient conductor sizes should be coded as Damaged. Notes should be included in the comments stating the jumper wire is undersized when compared to the main conductor. (Example: 266 vs. 477)

Conductors - Pri Open Wire

Excessive Slack

Priority 30 CM

Excessive slack condition where the conductors are likely to come in contact with each other during high wind.

Note: Reduced tension spans will appear slack, but keep in mind the condition is excessive slack.

Reference Construction Standard C7138.



Look for splattering from previous contact and high movement during low winds

Conductors - Pri Open Wire

Floating

Priority 20 CM

The conductor is **not** attached to the supporting structure at its normal point of attachment.



Conductors - Secondary

Damaged

Priority 30 CM

Visibly damaged secondary wire: broken strands, severely kinked conductors, burn marks on the conductor, or bird-caged strands.



Floating

Priority 20 CM

The secondary conductor is not attached to the supporting structure at its normal point of attachment.



Conductors - Secondary

Lashing Damage Priority 40 CM

Damaged or broken lashing wire for secondary conductors.



Spreader Damage Priority 40 CM

Damage to the secondary spreader bracket.



Criss-Crossed on Open Wire P40 CM

Open wire secondary is criss-crossed

Conductors - Spacer Cable

Broken Bracket

Priority 30 CM

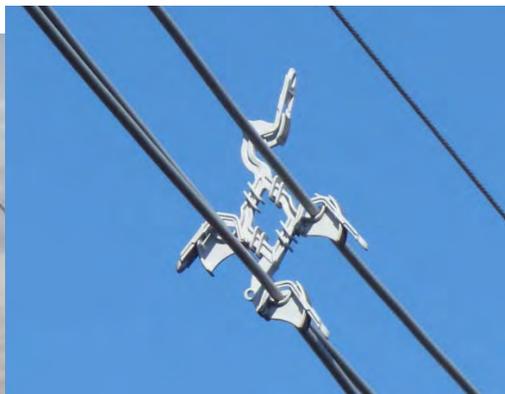
Spacer Cable Bracket at Pole is broken, damaged or detached.



Damaged

Priority 30 CM

Spacer Cable is damaged or severely sagging Messenger is damaged or broken. Insulator is broken.



Conductors - Spacer Cable

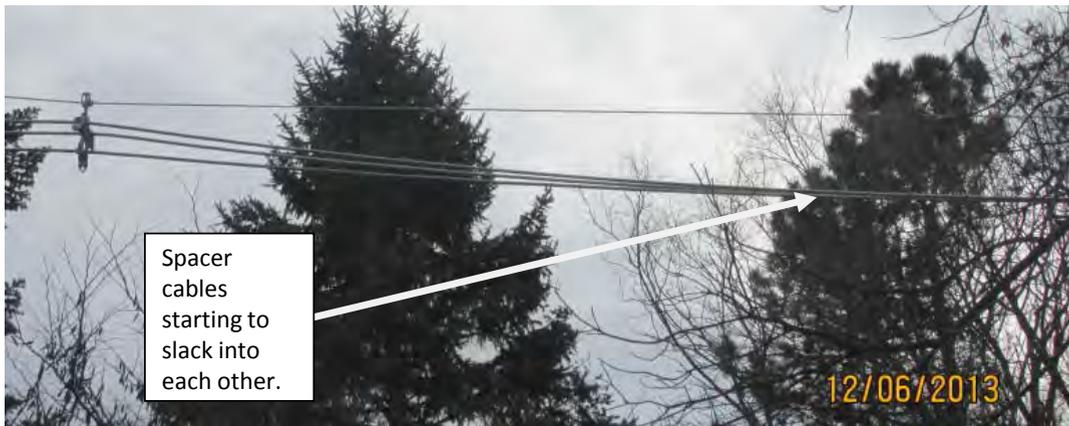
Spacer Broken/Missing Priority 30 CM

Spacer Cable Spreader broken or missing



Tangled Priority 30 CM

Spacer Cable tangled, wrapped or slacking into each other.



Conductors - Spacer Cable

Wildlife Protection Missing Priority 30 CM

Missing line duc on open wires. Line Ducs slid over, not tied to messenger.
Improper line ducs used such as guy markers



Connectors/Splices/Sleeves

Damaged

Priority 30 CM

Any primary connector or splice which shows visual signs of damage (such as burn marks, arcing, or corrosion).

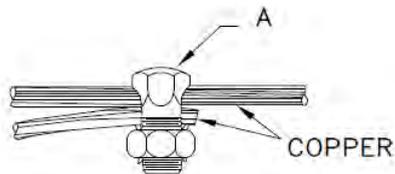


Connectors/Splices/Sleeves

Split Bolt Connector on Primary Run

INFO

Any Split-Bolt connected directly to the primary run. This includes primary jumpers.



Equipment (Trf/Reg/Recl/Cap)

Damaged/Defective

Priority 30 CM

Defect or damage to any overhead equipment including transformers, regulators, capacitors, reclosers, pole top switches, potheads or LTDs

Bushing Damage



Damage to a switch.



LTD Damaged



Equipment (Trf/Reg/Pot/Recl/Cap)

Leaking Priority 30 CM

A piece of equipment that shows signs of a leak, but is not actively leaking or dripping oil at the time of inspection.



For a piece of equipment that is actively leaking or dripping oil at the time of inspection, P10 Call In to the OCC and contact your Environmental Coordinator.



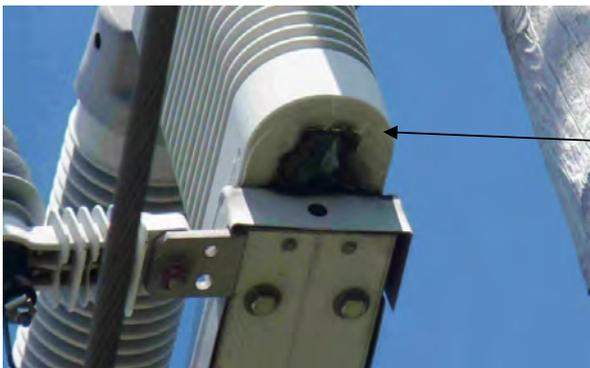
Equipment (Trf/Reg/Recl/Cap)

Tracking Voltage Sensor Priority 30 CM



34kV S&C Scadamate switches have voltage sensors installed. Identify any signs of tracking.

Note: A Voltage Sensor Grounding Kit (cat id# 1616513 – refer to C9922) may be used in lieu of replacing the voltage sensor.



Signs of Tracking

Equipment (Trf/Reg/Recl/Cap)

Unused INFO

A piece of equipment which is no longer connected to the system and is unused.



Fault Indicators

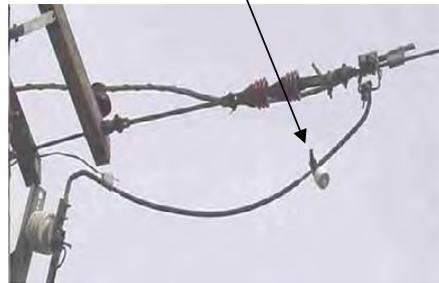
Improper Installation (P40 for 1%)

A fault indicator **not** installed in accordance with Construction Standard C5170.

Wrong location, these FIs will not see any line current



Wrong location, this FI is on a tap wire



Wrong type of fault indicator. **Not** installed in accordance with Construction Standard C5170. Example: A fault indicator to be used on the URD system installed on the overhead system.



Fault Indicators

Improper Installation (P40 for 1%)

A fault indicator installed in the correct location, but **not** facing ground.



Fault indicator clamped onto a section of wire that has covering.



Fault indicator that is too close to another fault indicator or too close to a connector or insulator. (Fault indicator is to be at least 24 inches away; see Construction Standard C5170)



Fault Indicators

Missing/Damaged INFO (P40 for 1%)

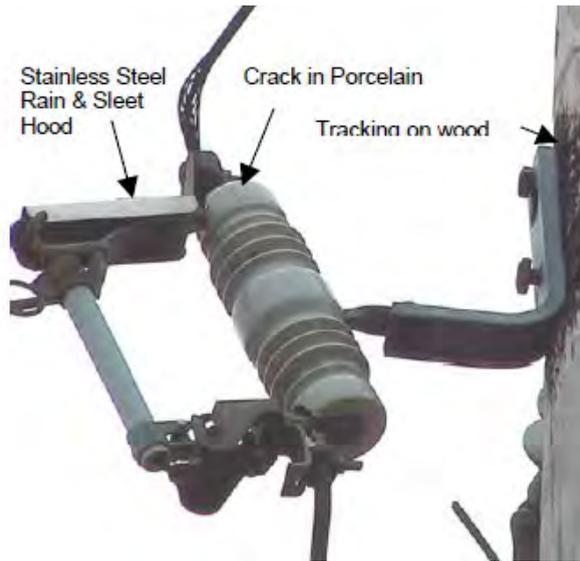
A fault indicator that is damaged or a location that had a fault indicator, but is now missing it. (This can usually be determined by the fact that 2 of the 3 phases still have fault indicators at that location).



Fuse/Cutouts

AB Chance w/SS Hood #____ INFO

Locations that have an AB Chance cutout regardless of condition; identify it no matter if it has a fuse-holder or a solid blade. Distinct feature of the AB Chance cutout is its Stainless Steel (SS) rain and sleet cover.



Note: If an OPEN SP WO Task exists to replace AB Chance Cutout, then there is no need to re-identify.

AB Chance

S&C

Cooper



Fuse/Cutouts

Blown at Cap Bank Priority 30 CM

Any fuse(s) on a capacitor bank that are blown.
(Cutout door is hanging open)



Fuse/Cutouts

Damaged Cutout

Priority 30 CM

Any damage to the fuse cutout such as chipped or cracked porcelain or a broken mounting. Any damage to the bracket integrity, alignment issues, or cable training issues.



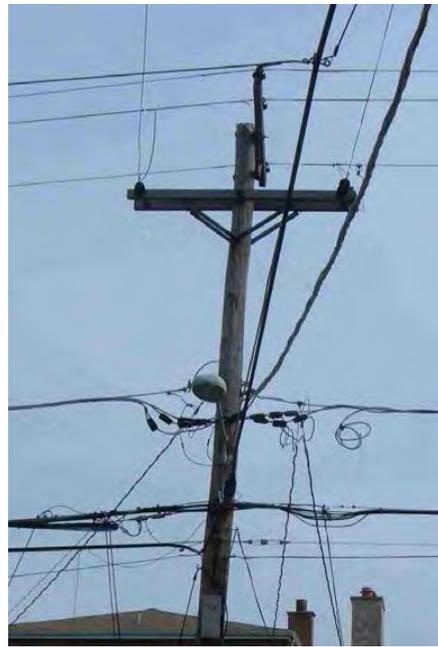
Cutout
mounted
on an
angle.

In addition, cutouts that are mounted in a manner that when the device is operated it will be impeded. Identify CM along with a notifying to your supervisor.

Fuse/Cutouts

Unfused Tap INFO

Any lateral tap off the mainline that does not have a fuse to isolate that lateral tap is to be noted.



Fuse/Cutouts

3:1 LV No Fuse or Disc

INFO

Any 3:1 Transformer bank where there is no fuse or solid blade disc on the Low Voltage side.

3:1 LV Solid Blade Disc

INFO

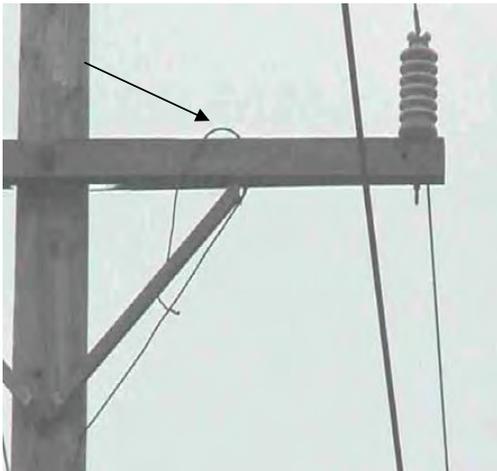
Any 3:1 Transformer bank where there is a solid blade disc on the Low Voltage side but does not have a fuse.



Grounding

Broken/Missing Down Ground (No Equipment) INFO (P40 for 1%)

Ground wire that is broken along its run from equipment (or neutral/static wire) to the ground rod. Includes ground leads that have been pulled away from pole but are still in one piece.



Broken/Missing - 8 or More (No Equipment) Priority 30 CM

Where 8 or more consecutive grounds are broken or missing, a Priority 30 CM shall be selected.

Grounding

Broken or Missing Equipment Ground Priority 40 CM

Ground wire that is broken or missing between the equipment and pole ground lead.



Grounding

Molding Damaged/Missing Priority 40 CM

Molding that is damaged or missing for the first 8 feet up the pole.



Grounding

Not Connected to System Neutral Priority 40 CM

Connection between the pole ground lead and system neutral is broken or missing.



Guy Wire/Anchors

Damaged/Broken/Missing

Priority 30 CM

A guy wire that is missing, broken or severed and is hanging from its attachment on the pole or lying on the ground.

NOTE: If guy is near primary and has no insulator or the insulator is less than 8 feet from the ground, report as a priority 10.



Guy Wires/Anchors

Insulator Needed/Improper Installation Priority 40 CM

Insulator is missing, broken or jumpered. Refer to Construction Standard C7130.



Insulator **not** installed in accordance with Construction Standard C7130.
Insulators which are grandfathered do not need to be identified

If guy wire was to break below insulator, when guy swings next to pole, the bottom of the insulator shall not be less than 8 feet above the ground.
NOTE: If communications is installed on pole, insulator must be installed below lowest supply conductor, but above the communications conductor.



Guy Wires/Anchors

Insulator GF (Grandfathered) No Need to Identify

Insulator is eight feet or higher off the ground and the date on the pole indicates the pole was installed prior to 2003.

NOTE: If communications is installed on pole, insulator must be installed below lowest supply conductor, but above the communications conductor.

Insulator is
8 feet or
higher off
the ground



Check
pole
for
date

Guy Wires/Anchors

Loose/Sagging/Slack Priority 40 CM

Guy wire is loose, sagging, or slack.



Highway & R.R. Crossings

Automatic Splice in Crossing Priority 30 CM

Identify any auto-splices in spans crossing Highways or Railroads.



Highway & R.R. Crossings

Grade B - Construction Needed

Priority 30 SR

Spans crossing railroads or limited access highways such as toll roads and interstates are to be designed to Grade 'B' construction; Note: pole lines that run parallel (alongside) railroads, toll roads, or interstates, do not require Grade 'B' construction, unless they cross over a circuit that crosses the railroad or limited access highway.

Grade B construction is identifiable by double-arm construction or single arm preassembled dead-end arm (Apitong wood); note: some form of dead-ending is required on each side of the crossing within a few spans of the actual crossing.

Reference ESP 5.3.2.7



Upper circuit needs to be built to Grade B construction.

Circuit running parallel to railroad does not need to be built to Grade B since it is under the circuit that crosses the railroad. Note: If the circuit running parallel is an over-build it requires Grade B construction.

Insulators/Deadends

Broken Priority 30 CM

Any pin/post-type or dead-end insulator (porcelain or non-porcelain), which is chipped, broken, cracked, melted, or visibly damaged in some way other than tracking. Also includes damage to any dead-end bail or connection

Example with pin/post insulator



Example with dead-end insulator



Insulators/Deadends

Tracking

Priority 30 CM

Any pin/post-type or dead-end insulator (porcelain or non-porcelain) that shows signs of tracking. Also includes tracking on any dead-end bail or connection

Example with pin/post insulator:



Example with dead-end insulator:



NOTE: When identifying Dexmar insulators, add to the comments that it is a Dexmar insulator and also indicate the quantity needing replacement.

Non-Oil Term

Damaged Non-lead Term Priority 30 CM

A non-lead cable termination that is melted, burned, or is visibly damaged in some other way.



Tag Damaged Lead Term Priority 20 CM

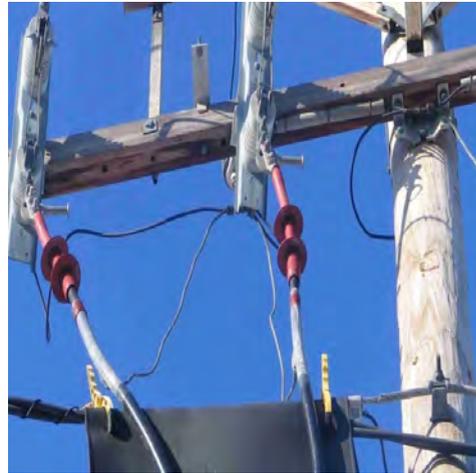
A lead cable termination that is melted, burned, or is visibly damaged in some other way. (Not a slipped sleeve). A corrective maintenance task for the repair is to be created once tagging is complete.



Non-Oil Term

Tag Lead Sleeve Slip Priority 20 CM

A lead cable termination that has the lead sleeve slipped. A corrective maintenance task for the repair is to be created once tagging is complete.



Pin

Arm Pin Damaged Priority 20 CM

Arm pins that are damaged or loose and will lead to an imminent floating conductor. Examples: Broken pin, severely bent pin.



Ridge Pin Damaged/Loose Priority 20 CM

Ridge pins or J-hooks that are damaged or loose and an imminent failure is likely; Examples: Broken pin, severely bent pin, nearly detached.



Pole

Damaged Priority 20 CM

Pole that is damaged and an imminent failure is likely.



Damaged Priority 30 CM

Pole that is damaged and is likely to fail before next inspection.



Pole

Excess Leaning Priority 30 CM

Pole that is exhibiting excessive lean.
(See measurement procedure)



Measurement Procedure:

1. Measure 4 ft up the face of the pole under the side of the lean & mark this spot.
2. Measure 4 ft horizontal on the ground line under the side of the lean & mark this spot.
3. Measure between the marks in the 1st two steps. If this is less than 5 ft, the pole is excessively leaning.

Pole

Pole Steps Less Than 8' Priority 20 CM

Pole steps that are less than eight feet (8') from the ground line.



Removed Pole Steps INFO

INFO ONLY – Inspector removed pole steps less than 8' from the ground

Staging INFO

INFO ONLY – Identify poles which have been staged for construction projects and abandoned (job has been cancelled, completed or deferred).

Pole

Split Pole Top (Imminent Failure Likely) Priority 20 CM

Pole Top that is severely damaged and an imminent failure is likely.

Cross-arm is likely to work
free from the pole top.



Split Pole Top (Other) Priority 30 CM

Pole Top that is damaged and is likely to fail before next inspection

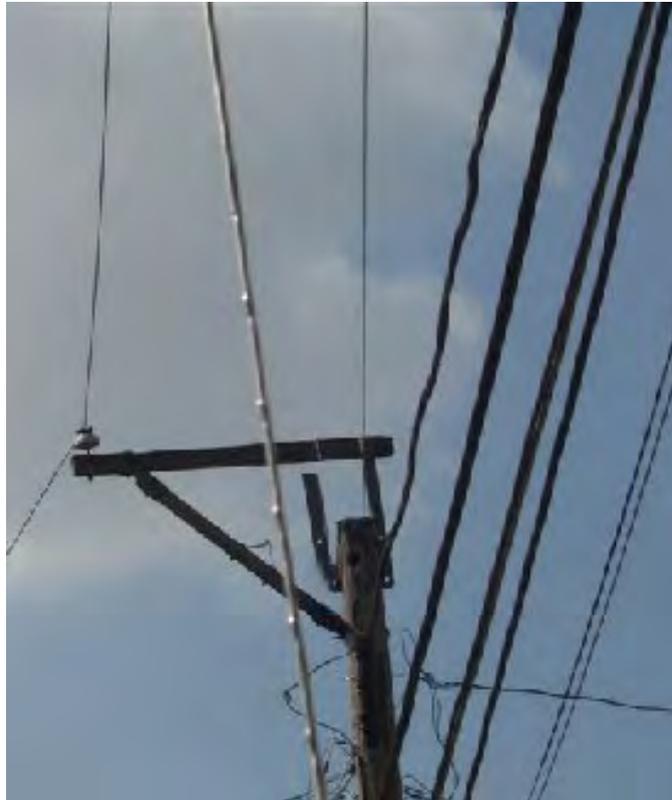


Note: If there are NO
attachments in the split
area, Then do NOT identify.

Pole Top Extension

Broken Priority 20 CM

Pole Top Extension that is broken and a failure is imminent.



Damaged/Leaning Priority 30 CM

Pole Top Extension that is damaged or leaning and is likely to fail before next inspection

Tie Wire

Broken Priority 20 CM

Tie wire is broken or loose, but condition is not a floating conductor.



U-Guard/Riser Shield

Ground/Bond

Priority 40 CM

A U-guard bond/ground that is missing or not connected properly per Construction Standard C8347.



U-Guard/Riser Shield

Primary Damaged/Missing

Priority 30 CM

A section of U-guard that is missing or damaged which leaves the primary conductors vulnerable to mechanical damage.



Secondary Damaged/Missing

Priority 40 CM

A section of U-guard that is missing or damaged which leaves the secondary conductors vulnerable to mechanical damage.



Vegetation

Primary (Contact)

Vegetation making direct contact with the primary conductors.



Vegetation

Primary (Dead Limb Over)

Dead branches over hanging the primary conductors.



Tree limbs that are near primary wires.

For 4kV and 12kV primaries, near is defined as vegetation that could lead to reliability issues if sustained winds blow the vegetation into the primary conductors causing contact.

For 34kV primaries, near is defined as 4 feet or less horizontally to the conductors and 2 feet or less vertically from the conductors.



Vegetation

Secondary (In Between Tri / Quadraplex Conductors)

Tree growth between triplex or quadraplex secondary conductors.



Secondary (Into Open Wire)

Tree growth between open secondary conductors.



Vegetation

Vine Growth

Vines growth on conductors or equipment.



Wildlife Protection

Missing/Damaged/Broken/Improperly Installed Priority 40 CM

Damaged, broken or missing wildlife protection, including avian diverters.
Wildlife protection is considered missing only **IF** previously installed.



(bird diverters typically spaced 30 feet apart)

Wildlife protection that is not properly installed.



Note 1: Missing Wildlife protection located on overhead transformer bushings should **NOT** be identified as part of a Cyclic Circuit Inspection (HIP inspections) as they are included as part of the Minimum Field Expectations Process (CM-CE-P339).

Note 2: During an All-In Inspection (e.g.1%) missing Wildlife Protection on overhead transformers should be identified only **IF** previously installed.