Pacific Gas and Electric Company®

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April 25, 2022

Mr. Koko Tomassian
Program Manager, Compliance Assurance Division
Office of Energy Infrastructure Safety
715 P Street, 20th Floor
Sacramento, CA 95814

Reference: Energy Safety Record ID: NOD_MJ4_PGE_20211207_01
Notice of Defect: Government Code § 15475.2 and the California Code of Regulations, Title 14, Section 29302(b)(1)

Dear Mr. Tomassian:

This letter is in response to the March 11, 2022, Office of Energy Infrastructure Safety (Energy Safety) Notice of Defect (NOD) from an inspection occurring on December 7, 2021, of grid topology improvements and system hardening work in Santa Cruz, Santa Cruz County. The NOD alleges two (2) types of defects which include vegetation contacting the guy wire above the insulator and excessive splicing in a single span.

Energy Safety based its compliance assessment on the following statute and code sections:

California Government Code Section 15475.2, "Notice of Defect or Violation" states in part:

"The office may issue a notice of defect or violation to direct the regulated entity to correct any defect or noncompliance with the approved wildfire mitigation plan or failure to comply with any laws, regulations, or guidelines within the authority of the office."

California Code of Regulations, Title 14, Section 29302(b)(1), "Investigations, Notices of Defect and Violation, and Referral to the Commission" states in part:

"The Director may designate a compliance officer to consider the findings of any investigation. The compliance officer may issue any of the following:
…

(1) Notice of defect, identifying a deficiency, error, or condition increasing the risk of ignition posed by electrical lines and equipment requiring correction."

The NOD alleges the following:

1. Defect 1: Poles numbered 120784771, 120795203, 120786270, 120786268, and 120832674 had vegetation contacting guy wire above the insulator. Guy wires can become energized and pose an increased ignition risk if in contact with vegetation. Energy Safety considers this defect to be in the Minor risk category (see table below).

2. Defect 2: The structure numbered 121024191 had excessive splicing in a single span. Splices are used to connect two strands of conductor. Multiple splices on a single phase of a span indicate that the conductor has required repair multiple times. Therefore, a span with an excessive number of splices is an indicator of increased the risk of conductor failure and ignition. Energy Safety considers this defect to be in the Minor risk category (see table below).

Risk Category	Violation and Defect Correction Timeline
Severe	• Immediate resolution
Moderate	• 2 months (in HFTD Tier 3) • 6 months (in HFTD Tier 2) • 6 months (if relevant to worker safety; not in HFTD Tier 3)
Minor	• 12 months or resolution scheduled in WMP update

The Energy Safety letter directs us to advise of all corrective actions taken or planned to remedy the above identified defects and prevent recurrence within 30 days from the issuance date of the NOD, or by April 11, 2022. On April 8, 2022, Energy Safety issued a letter granting an extension to April 25, 2022, for us to provide our written response.

Response

Regarding Defect 1, pole 120784771, vegetation contacting guy wire above the insulator, we agree with the finding. On March 23, 2022, we performed a field inspection and observed minimal new vegetation growth contacting the guy wire above the insulator. The vegetation was trimmed on the same day of the field visit; please see Attachment 1 for photos.

Regarding Defect 1, poles 120795203, 120786270, 120786268, and 120832674, vegetation contacting guy wire above the insulator, we performed a field inspection on March 23, 2022, and

found no vegetation contacting the guy wire above the insulator; please see Attachment 1 for photos. The vegetation contacting the guy wire identified in the NOD letter is below the guy insulator and therefore should not be considered a defect. We note this is consistent with our Overhead Inspection Job Aid TD-2305M-JA02; please see Attachment 2 for the job aid.

To prevent recurring defects of vegetation contacting guy wires above the insulator, we continue to perform scheduled General Order (GO) 165 overhead inspections to identify compelling abnormal conditions[1] on overhead facilities and address any findings as appropriate.

Regarding Defect 2, structure 121024191, excessive splicing in a single span, we do not agree with this finding. However, we have taken additional measures to validate if there are any existing safety concerns with the splicing on the subject span. Specifically, we performed a field inspection on April 20, 2022, to evaluate the span. We performed a visual inspection with binoculars as well as an infrared (IR) inspection using a calibrated handheld device. Temperature differentials between the splices and surrounding conductors is a sign that there may be integrity concerns of the equipment leading to an equipment failure. Accordingly, infrared imaging showed no temperature differential between the splices and the surrounding conductor. Additionally, cross arms and supporting structures are in serviceable condition with no signs of burning or loose hardware. The results of the field and IR inspections report no immediate safety concerns. Furthermore, using our latest Wildfire Distribution Risk Model, the specific location in question is in an area considered to be relatively much lower in wildfire risk (bottom 50% of PG&E's wildfire risk) as compared to other locations within our service territory.

The "California Power Line Fire Prevention Field Guide" recommends auditors notify utilities to inspect spans that are identified with three or more splices, but does not prohibit more than three splices, nor prescribe any specific remediation for these conditions. In addition, we note that splices have historically been widely used across the electrical system. However, to mitigate and manage risk associated with splices on our electric distribution facilities, we have the following guidance in place:

- We consider the number of splices on a span as one of the key attributes used to prioritize replacement of conductors. At this time, this section of line is not scheduled for conductor replacement that would include removal of splices.
- Our Standard 022487, Conductor Splices for Overhead Conductors and utility bulletin TD-9001B-009, Fire Rebuild Design Guidance for System Hardening, limit the use of splices on electric distribution spans for new construction/reconductoring projects specifically in Tier 2 and Tier 3 High Fire Threat Districts (HFTDs). No splices are allowed based on TD-9001B-009; please see Attachment 3 for the bulletin.

[1]*Per TD-2305M-JA02, "compelling abnormal conditions" refer to any electric distribution pole, equipment, component, conductors, vegetation, or third-party condition that cause a safety or fire ignition risk that may adversely impact public safety and/or service reliability in the next five (5) years.*

- Our Overhead Inspection Job Aid TD-2305M-JA02, requires the inspector to inventory the number of existing splices on the electric distribution system. Specifically, the job aid requests inspectors to document the total number of splices on all phases of a primary conductor and the highest number of splices in a single phase of a conductor.
- Specific to electric distribution spans with 3 or more splices, we note that Standard 022487 (see Attachment 4 for the standard), prescribes measures (if possible) to perform on the spot corrective work during emergency repairs to eliminate three or more splices, especially for down conductor situations. However, this requirement does not apply to adjacent spans or any other work outside the emergency repair activities.

Given the above, we do not believe that any of the defects identified here warrant referral to the California Public Utilities Commission.

Please contact me at (415) 420-0422 if you have any questions regarding this response.

Sincerely,

Lise Jordan,
Sr. Director, Regulatory Compliance, Electric Engineering, Planning, and Strategy

Cc: Melissa Semcer, Energy Safety
MaryBeth Farley, Energy Safety
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Anne Beech, PG&E
[redacted], PG&E
[redacted], PG&E
Electric Data Requests, PG&E

Pacific Gas and Electric Company®

Attachment 1

Reference: Energy Safety Record ID: NOD_MJ4_PGE_20211207_01
Notice of Defect: Government Code § 15475.2 and the California Code of Regulations, Title 14, Section 29302(b)(1)

Defect 1: Pole 120784771

Disposition: Agree with Defect Finding - Vegetation contacting the guy wire above the insulator.

Before:

Photo 1

Structure ID: 120784771

Photo 1: Picture of the Pole ID

Photo 2

Photo 2: Picture of the entire Pole

Photo 3

Photo 3: Picture of vegetation contacting the guy wire

After:

Photo 1

Photo 2

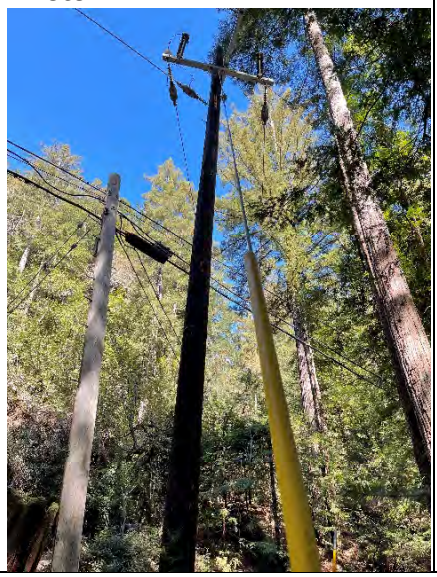


Photo 3

Defect 1: Pole 120795203

Disposition: Defect not Found - No vegetation found contacting the guy wire above the insulator during field verification.

Photo 1

Defect 1: Pole 120786270

Disposition: Defect not Found - No vegetation found contacting the guy wire above the insulator during field verification.

Photo 1

Photo 2

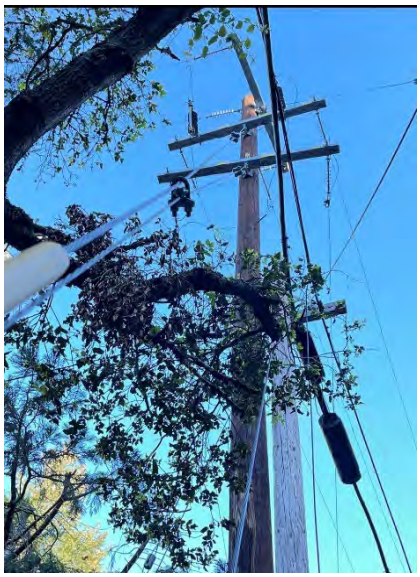
Defect 1: Pole 120786268

Disposition: Defect not Found - No vegetation found contacting the guy wire above the insulator during field verification.

Photo 1	Photo 2	Photo 3
		

Defect 1: Pole 120832674

Disposition: Defect not Found - No vegetation found contacting the guy wire above the insulator during field verification.

Photo 1	Photo 2
	

Job Aid: Overhead Inspection

Summary

This job aid is designed to assist Inspectors in assessing and prioritizing **compelling abnormal conditions** on overhead facilities during scheduled GO 165 Inspections.

It is meant to provide guidance on issues that Inspectors may encounter most frequently during an inspection and is not intended to be an all-inclusive listing of all abnormal conditions or corrective actions.

Field assessments are activities performed by Inspectors to identify Compelling Abnormal Conditions. arrest

Compelling Abnormal Condition is defined as being any electric distribution pole, equipment, component, conductors, vegetation or third party condition that cause a safety or fire ignition risk that may adversely impact public safety and/or service reliability in the next five (5) years.

Target Audience

Qualified Electrical Workers (QEW).

Before You Start

- Follow all applicable safety rules, procedures, and protocals.
- Wear appropriate personal protective equipment (PPE) for specific tasks and work area.

Table of Contents

Third Party Communication Antennas

1. Broken/Damaged Cellular Antenna

General Guidance: If the broken antenna is creating a non-emergency safety or reliability issue, create a third party notification.

If the antenna is causing an emergency safety or reliability issue, contact your supervisor for instructions. Do not leave the location until it is made safe.

Minor Work: No

Related Documents: 027911

2. Third Party Communication Antenna - Inadequate Clearance

General Guidance: Create a third party notification if a cellular antenna does not have adequate clearance from supply lines or equipment.

If the antenna is causing an emergency safety or reliability issue, contact your supervisor for instructions. Do not leave the location until it is made safe.

Minor Work: No

Related Documents: 027911, T&D Bulletin 2009-20

Climbing Space

1. Climbing Space - Obstructed

General Guidance: Evaluate pole to determine whether there is an obstruction caused by PG&E facilities or by third party facilities that is causing a compelling safety issue – based on the location of the pole and exposure to the worker - that needs to be addressed in 5 years.

Example: Equipment pole that cannot be accessed in a bucket truck.

Example: Pole in rear easement with secondary or service connection failures.

Example where the climbing space **is not** a compelling condition: Equipment pole that is accessible 100% of the time in a bucket

For PG&E obstructions: Create an EC notification.

For third party obstructions: Create a third party notification if they pose a significant safety hazard.

If a third party obstruction is causing an emergency safety or reliability issue, contact your supervisor for instructions.

Minor Work: No

EC Form: Yes, if not able to perform minor work

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 066210

COMMUNICATION IN CLIMBING SPACE	CLIMBING SPACE OBSTRUCTED
	
At this Location: Obstructed climbing space, access via bucket truck from street below. Also clearance issues between communications facilities and the PG&E down guys.	**At this Location:** Climbing space obstruction by communication facilities on pole with equipment. Communication messengers are too close. No bucket truck access.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third Party Notification: No	**Write Third Party Notification:** Yes
Write EC Form: No	**Write EC Form:** No

2. Climbing Space – Obstructed by Vegetation

General Guidance: For incidental vegetation in climbing space that can be moved when climbing, or quickly cleared prior to climbing, no action is required.

For major vegetation that cannot be quickly cleared or moved prior to climbing, evaluate the pole:

- Is there supply equipment on the pole that may need to be operated during emergency conditions?
- Should the obstruction be cleared for any other safety or reliability reason in the veg

If the answer is yes to any of these questions, the inspector will need to create an EC Notification to clear vegetation unless it can be addressed as minor work.

Minor Work: Yes

EC Form: Yes, if not able to perform minor work

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 066210

OBSTRUCTED CLIMBING SPACE

At this Location: Obstructed climbing space. Inspector cannot see enough of the pole to complete Inspection (heavy vegetation, cannot see through) No equipment on pole. The only reason to address is to complete the inspection.

Perform Minor Work: No

Write Third-Party Notification: No, only need clearing to perform inspection

Write EC Form: Yes

- FDA=OH Facility / Limited Access/Obstruct / Inspect (Primary)
- FDA=OH Facility / Limited Access/Obstruct / Remove
- Priority "B", 0-3 months depending upon exposure; must complete before CPUC due date for map

CLIMBING SPACE OBSTRUCTED

At this Location: Climbing space obstruction, able to perform inspection, no equipment on pole (able to see guys, able to see up the pole under tree)

Perform Minor Work: No

Write Third Party: No

Write EC: No, not compelling

POLE WITH VEGETATION

At this Location: 360° pole inspection not possible

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA= OH Facility / Limited Access/Obstruct / Inspect (Primary)
- FDA=OH Facility / Limited Access/Obstruct / Remove
- Priority "B", 0-3 months depending upon exposure; must complete before CPUC due date for map

IVY COVERED POLE

At this Location: 360° pole inspection not possible

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA= OH Facility / Limited Access/Obstruct / Inspect (Primary)
- FDA=OH Facility / Limited Access/Obstruct / Remove
- Priority "B", 0-3 months depending upon exposure; must complete before CPUC due date for map

Conductor

1. Conductor Broken/Damaged

General Guidance:

Visually check all conductors (primary/secondary/service), associated attachments and dead-ends for damage throughout the entire span. Examples: cracked or damaged insulation, arcing or burn marks, corrosion, broken strands, gun shot, deterioration, annealing, or bird caging.

Is service conductor cracked, exposing hotleg? Guidance: Evaluate service drops looking for cracked or damaged insulation exposing hotlegs. If insulation is cracked or damaged to the point where hotleg is exposed, this is an Emergency/Standby condition.

Does conductor have splices tied in or within 2’ of insulator preventing free movement of splice with conductor? Guidance: Create EC Notification to replace conductor in order to relocate splice.

Is hand or preform tie wire broken, damaged, burnt, loose, showing signs of wearing, missing, or missing armor rod? If yes, create EC notification to replace tie wire.

Is Vegetation entangled in open-wire secondary conductor? If yes, create EC notification to replace secondary conductor with covered conductor, and include vegetation trimming.

Visually check for excessively-corroded or damaged connectors and dead-end hardware (potential to drop conductor).

Visually check all conductors, connectors, and splices under existing bird protection; utilize binoculars if necessary.

Visually check all splices in a span. Create EC notification for splices that appear to be damaged, corroded or tied in too close to the insulator, preventing free movement of the splice with the conductor.

Does open wire secondary conductor have missing spreader brackets for spans >135’, or for spans that are longer, have spreader brackets every 135'? Guidance: Create EC Notification to have spreader brackets installed where bucket truck accessible; use line of sight and if available, foreman-cane or range-finder. If no access, create EC notification to remove vegetation and install spreaders.

Minor Work: Yes

- Repair damaged conductor as minor work if possible and if safe to do so.

EC Form: Yes, if not able to perform minor work

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Record Keeping Items:

Are there vibration dampers present this location? Yes/No

Primary Splices:

- What is the total number of splices on all phases of primary conductor (count only load side spans from pole)? [___] Enter number
- What is the highest number of splices in a single phase of conductor within 1 span of the pole? [___] Enter number
- Are splices installed on conductor that crosses over major roadways (highway, freeway, expressway, railroad tracks, or communication crossing)? Yes/No

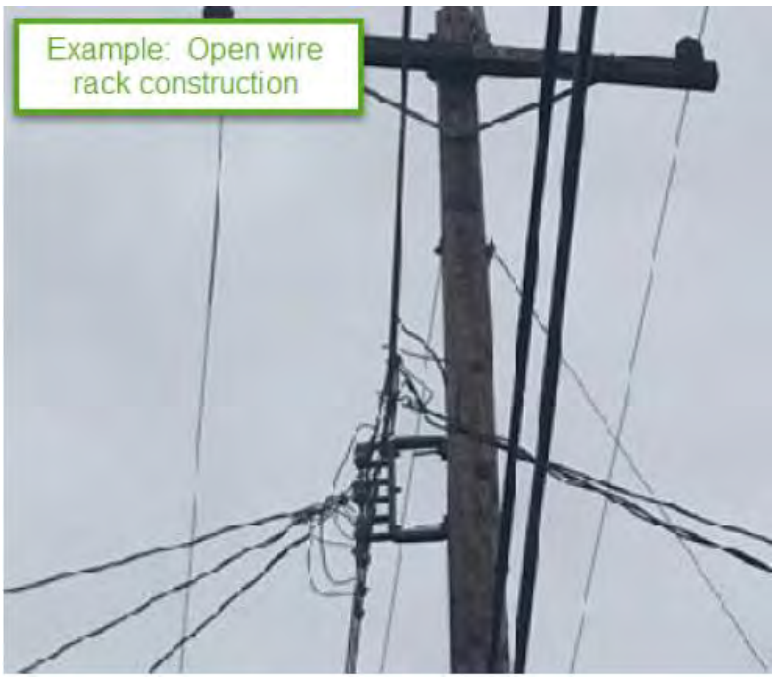
Are connectors installed at this location? Yes/No

- If yes, are the connectors installed on conductor that crosses over major roadways (highway, freeway, expressway, railroad tracks, communication crossing)? Yes/No

Visual examples of types of conductor damage referenced under conductor general guidance

Example: Bird-caged conductor

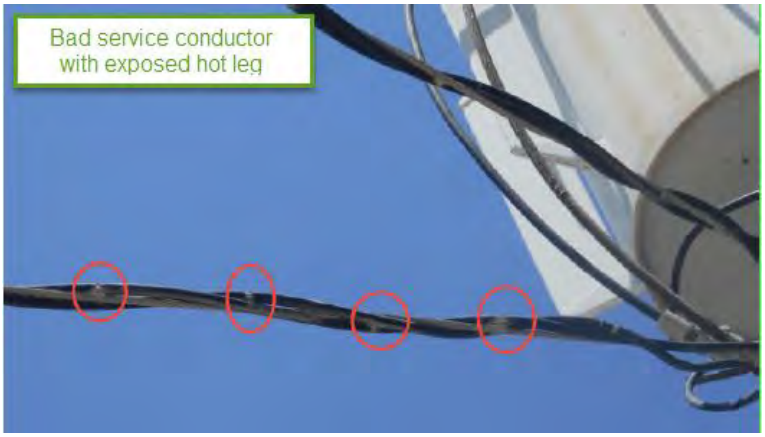
Example: Open wire rack construction



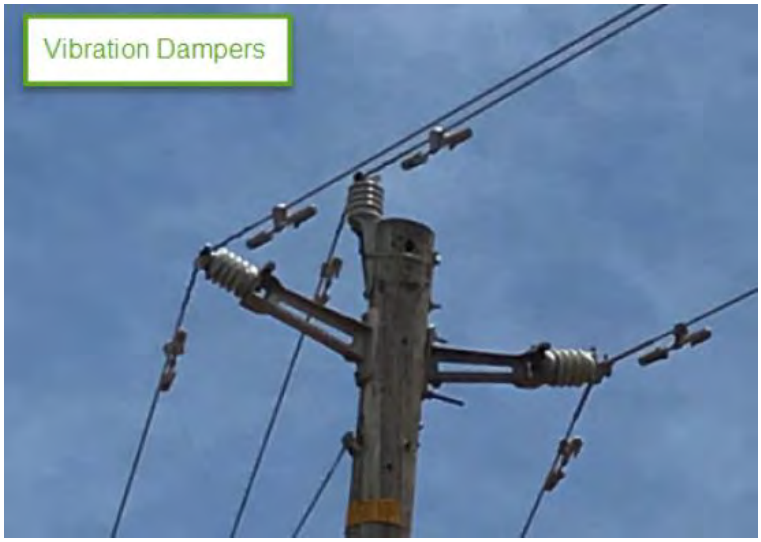
Example: Open wire on crossarm

Example: Gun-shot conductor

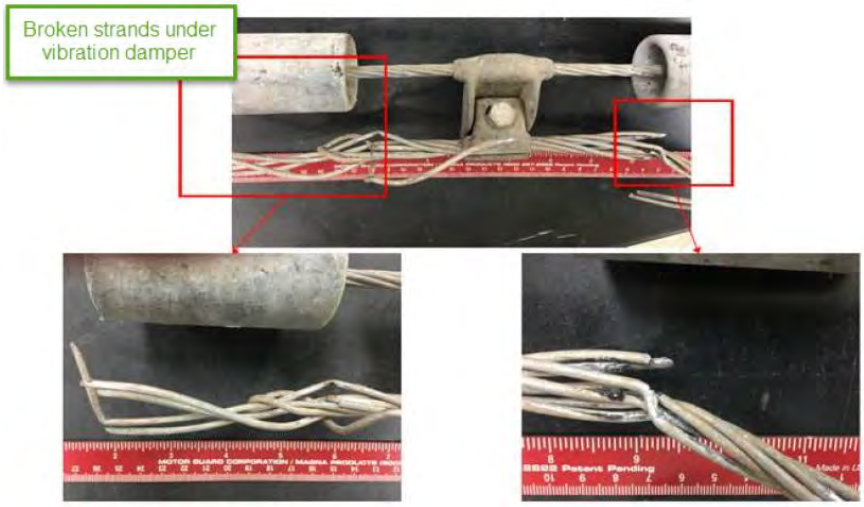
Example: Bad service conductor with exposed hotleg.



Example: Vibration Damper



Example: Broken strands under vibration damper



Example: Splice tied in to insulator

Example: Less than 2' from point of support

Example: Splice tied in to insulator

Example: Loose primary neutral ground:

Example of preform:

Example: Burnt conductor:

Example: Bird protection installed on conductor:

BROKEN SERVICE NEUTRAL	DAMAGED/CRACKED GREY SERVICE
	
At this Location: Broken service neutral	**At this Location:** Cracked grey service. Older grey services tend to crack and will appear to have rings around the insulation.
Perform Minor Work: Yes, if safe to do so. If you replace the service conductor, this is capital Minor Work. Fill out EC Form to account for this minor work; charge time to your Division standing order	**Perform Minor Work:** Yes, if safe to do so. If you replace the service conductor, this is capital Minor Work. Fill out EC Form to account for this minor work; charge time to your Division standing order
Write Third Party Notification: No	**Write Third Party Notification:** No
Write EC Form: Yes, if minor work is not possible, or to document completed capital minor work • FDA=Conductor / Broken/Damage / Repair or Replace • Priority "A", follow Emergency Process	**Write EC Form:** Yes, if minor work is not possible, or to document completed capital minor work • FDA=Conductor / Broken / Replace - *OR* • FDA=Conductor / Damaged / Replace - *OR* • FDA=Conductor / Burnt / Replace • Priority "A", emergency, due to exposed hotleg.

DAMAGED SECONDARY	EXPOSED SERVICE CONNECTOR
	
At this Location: Damaged strands	**At this Location:** Exposed conductors
Perform Minor Work: No	**Perform Minor Work:** Yes, if safe to do so.
Write Third Party Notification: No	**Third-Party Notification:** No
Write EC Form: Yes • FDA= Conductor / Damage / Repair • Priority "E", 3-12 months depending upon exposure	**Write EC Form**: Yes, if minor work is not possible • FDA= Conductor / Broken/Damage / Repair • Priority "E", 3-12 months depending upon exposure

CONDUCTOR TEARING APART	HARDWARE BROKEN
	
At this Location: Primary conductor damage (possibly shotgun)	**At this Location:** The #6 solid copper is broken causing strain on the conductor. Unsecured service.
Perform Minor Work: No	**Perform Minor Work:** Yes, if safe to do so
Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA= Conductor / Broken/Damage / Repair • Priority "B", 0-3 months depending upon exposure	**Write EC Form:** Yes, if minor work is not possible • FDA= Hardware/Framing / Broken/Damaged / Repair • Priority "E", 3-12 months depending upon exposure

OVERHEAD SERVICE STRAIN ABRASION

At this Location: Service strain abrasion, with possible burning at some sections. Damaged insulation.

Perform Minor Work: Yes, if safe to do so. If you replace the service conductor, this is capital Minor Work.

Fill out EC Form to account for this minor work; charge time to your Division standing order.

Write Third Party Notification: No

Write EC Form: Yes, if minor work is not possible, or to document completed capital minor work

- FDA=Conductor / Broken/Damaged/ Repair or Replace
- Priority "E", 3-12 months depending upon exposure, in comments add note about strain abrasion burnt conductor
- If abrasion has caused an exposed hotleg, assign Priority A, emergency, and stand-by.

OVERHEAD SERVICE STRAIN ABRASION

At this Location: Service strain abrasion, no slack remaining

Perform Minor Work: Yes, if safe to do so. If you replace the service conductor this is capital Minor Work.

Fill out EC Form to account for this minor work; charge time to your Division standing order.

Write Third Party Notification: No

Write EC Form: Yes, if minor work is not possible, or to document completed capital minor work

- FDA=Conductor / Broken/Damaged/ Repair or Replace
- Priority "E", 3-12 months depending upon exposure, in comments add note about strain abrasion burnt conductor
  If abrasion has caused an exposed hotleg, assign Priority A, emergency, and stand-by.

2. Connector Broken/Damaged

General Guidance:

Visually check all connectors for signs of damage, corrosion, or incorrect installation.

Are secondary connectors (mini wedge and Insulink) installed on primary conductor? If yes, write EC notification to replace connector.

Are connections made with dissimilar metals installed incorrectly? Guidance: Proper installation is Aluminum over Copper. If yes, write EC notification to replace connector.

Are tap clamps installed incorrectly? If yes, write EC notification to replace connector.
Guidance: Identify improperly installed tap clamps (aka chance clamps);e.g.:

- No tap guards installed on conductor smaller than 1/0 Al and/or smaller than #2 Cu
- Installed on tap lines (jumpers) feeding more than 2 transformer banks.
- Installed on armor rod (used for tying in conductor with hand ties; not an appropriate method of attaching tap clamps)
- Used on any other type of equipment (recloser, capacitor, regulator, risers, etc.) other than a transformer.

Reference: Chance Clamp is a brand name; this is also known as a hot-line clamp.

Is the connector excessively-corroded or damaged (potential to drop conductor)? If yes, write EC notification to replace connector.

Example: Incorrectly installed chance clamp

Example: Secondary connector installed in primary

Example: Insufficient clearance

3. Tie Wire Damaged

General Guidance:

Ensure splices are not located under tie wires. Repair damaged secondary tie wire as minor work if possible.

Visually inspect hand ties to identify wear prior to failure; utilize bucket truck, binoculars or camera to get a closer look - especially on older installations.

If damage to primary, create EC notification.

Minor Work: Yes, on secondary only

- Repair damage to secondary as minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes, only if not able to perform minor work on secondary or primary damaged/broken.

- FDA: Tie Wire/ Broken/Damaged / Repair or Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 021439, 057855

3. Floaters

General Guidance: Does primary or secondary conductor(s) float? A floater is when the conductor is not attached to the crossarm/pole. Floaters are **always** an Emergency/Standby condition. Create EC Notification using FDA Conductor / Floater / Repair.

Minor Work: No

Related Documents: 022088

FLOATER

At this Location: Floater, conductor is not contacting the arm. Rotten crossarm.

Perform Minor Work: No

Write Third Party Notification: No

Write EC Form: Yes

- FDA=Crossarm / Decayed/Rotten/ Replace
- Priority "A", follow Emergency Process

4. Broken or Unsecured Service Bob

General Guidance: Repair or Replace broken insulator, wires, pins, etc.

Minor Work: Yes

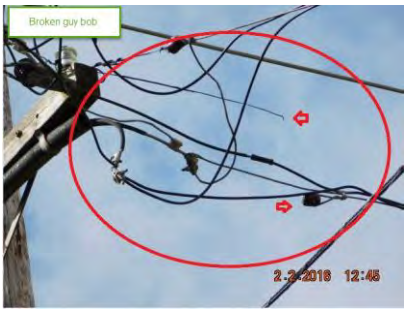
- Make repairs as minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes

- FDA: Hardware / Broken/Damaged / Repair or Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: None

Example: Broken service bob



5. Conductor Clearances (Refer to Clearance Job Aid)

6. Conductor: Uneven, Improper Sag or Diminished Clearance

General Guidance: Check for primary or secondary conductor with improper sag or diminished clearance midspan or uneven conductors, phases touching, or broken at dead end supported by jumper. Guidance: Any spans with uneven conductor - different tension, "bellies" (one is lower than the conductor next to it - when wind blows it may sway at different rates, etc.), then re-sag or install spreader brackets.

Look for damaged dead-end hardware that may cause uneven sag. Look for signs of annealing, excessive sag, splices or discoloration that can result in failed conductor.

Identify clearance requirements utilizing the Clearance Evaluation Job Aid.

Minor Work: Yes.

- Make repairs as minor work if possible and if safe to do so. Re-sag or install spreader brackets.
- IF not able to perform minor work, THEN create EC notification.

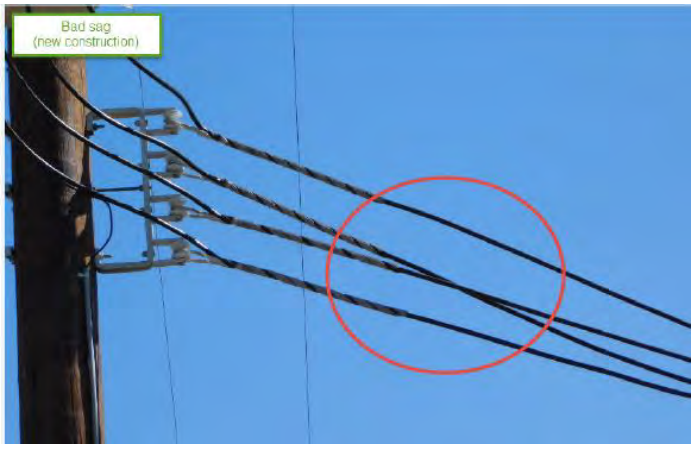
EC Form: Yes

- FDA: Conductor / Sag / Adjust
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: TD-7103P-09 pg16, appendix B, table 1

Example: Secondary sagging conductor

Example: Sagging conductor



Example: Sagging conductor

Cutouts / Fuses / Switches

1. Damaged Arcing Horns

General Guidance: Call Restoration Dispatch to get a T-Man dispatched to the location to create a COE (CE) notification. Consider installing a warning tag on the pole.

Example: Arcing horn with burnt tip

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 015225

2. Cutouts

General Guidance: Are cutouts broken, damaged, cracked, loose, or flashed? Yes/No, if yes, THEN create an EC Notification.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 056425

BROKEN DAMAGED CROSSARM MOUNTED CUTOUT	BROKEN INSULATOR ON AIR SWITCH
	
At this Location: Broken/Flashed cutout	**At this Location:** Broken insulator on air switch
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Cutout / Broken/Damaged / Replace • Priority "E", 3-12 months depending upon exposure • COE = No	**Write EC Form:** Yes • FDA=Cutout / Broken/Damaged / Replace • FDA Switch / Broken/Damaged / Replace • Priority "E", 3-12 months depending upon exposure • COE = Depending on voltage & Insulation value remaining if not operable

3. Jumpers

General Guidance: Are jumpers burnt or are there clearance issues? If yes, create EC notification.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Example: Jumper

4. Switch Handle/Control Box is not Locked

General Guidance: Ensure that boxes or enclosures located 8 feet or less above the ground are locked.

Minor Work: Yes

- Perform minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes, only if not able to perform minor work

- FDA: Switch / Broken / Repair or Hardware / Missing / Install
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 066195

Distribution Towers / Steel Lattice

General Guidance: Inspectors are required to inspect distribution towers / lattices for the following:

- Steel Covered by Earth
- Rust or Corrosion at Tower Footings
- Tower Footing Damaged
- Tower Member Loose
- Marking Hi-Sign Missing/Not Legible
- Guarding - Tower Not Guarded (Where Applicable)
- Guy Attachment, Turn Buckles, or Preformed Guys Loose
- Tower Rusty – Needs Paint

Minor Work: No

Related Documents: 022168, Utility Standard

Framing

1. Crossarm Broken/Deteriorated

General Guidance: Refer to TD-2305M-JA_07 “Crossarm Evaluation” Job Aid in this job aid.

2. Bridging Exists and Needs to be Repaired

General Guidance: Visual observation of broken / unattached bridge wire. Create EC notification.

Minor Work: No

Related Documents: 056845

BRIDGING

At this Location: Pole, burnt, pole failed

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form:
- FDA = Hardware/Framing / Broken/Damaged / Replace
- Priority ”E”, 3-12 months depending upon exposure

3. Underarm Bus Not Securely Attached

General Guidance:

It is a requirement to have at least two attachment points, secured to an underarm bus, one on each side.

It is a requirement to use the following corrosion resistant materials for attaching the underarm bus to the crossarm: straps, plumber's tape, lags, galvanized nails, staples, screws, bolts, zip ties, etc.

If an inspector finds an underarm bus secured with non-authorized material, such as duct tape, electrical tape, or rope, it must be secured by at least two additional approved attachment points.

When an inspector re-secures a bus, it must be brought up to construction standards; four attachment points using corrosion resistant materials.

Complete as minor work/re-secure the bus. IF it cannot be completed as minor work, then create EC notification if compelling and needs to be addressed within 5 years.

Minor Work: Yes

EC Form: Yes, only if not able to perform minor work

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 021924, Crossarm Evaluation TD-2305M-JA_07

UNDER-ARM BUS LOOSE AND DETERIORATED

Side View

Front View

At this Location: UAB deteriorated, partial repair with rope, secured with one strap.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Under-Arm Bus / Broken/Damaged / Repair
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

UNDER-ARM BUS LOOSE

At this Location: UAB Loose

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form:

- FDA=Under-Arm Bus / Broken/Damaged / Repair
  Priority "E", 3-12 months depending upon exposure

4. Wood Pin Burnt/Tracking or Broken

General Guidance:

Primary wood pins: If the primary wood pin is leaning or broken, or if there are signs of burning or tracking, create a 0-3 month Priority "B" EC Form.

Primary or Secondary wood pins: If wood pin is broken or "floating", create emergency EC to address immediately.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 015202, G12021, TD-2305M-JA_07 Crossarm Evaluation

PIN BROKEN	PIN BROKEN (FLOATER)
	
At this Location: Primary wood pin is broken, and the conductor is laying on the crossarm. Wood pin arm replace with Composite arm	**At this Location:** Secondary wood pin is broken, and the conductor is laying on the crossarm. Woodpin arm. Replace arm.
Perform Minor Work: No	**Perform Minor Work:** Yes, replace wooden pin with steel pin.
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Hardware/Framing / Broken/Damage / Replace • FDA= Crossarm/Broken Damaged/Replace • Priority "A", follow Emergency Process	**Write EC Form:** Yes • FDA= Conductor / Floating / Repair • FDA= Crossarm/Broken Damaged/Replace • Priority "A", follow Emergency Proces

PRIMARY WOOD PIN AT ANGLE	PRIMARY WOOD PIN SQUATTER
	
At this Location: Deteriorated primary wood pin at angle. All insulators need to be replaced. Replace the crossarm with a composite arm.	**At this Location:** Primary wood pin squatter. Replace Crossarm. No armor rod with hand-tie.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA= Crossarm/Broken Damaged/Replace • FDA=Hardware/Framing / /Broken/Damaged / Replace • Priority "B", 0-3 Months depending on exposure.	**Write EC Form:** Yes • FDA= Crossarm/Broken Damaged/Replace • FDA=Insulator / Primary Squatter/ Replace • Priority "E", 3-12 months depending upon exposure

Grounds / Ground Molding

1. Exposed Ground below 8'

General Guidance: Exposed grounds 8 feet or less from the ground must be covered. Inspectors must make every effort to cover the ground as minor work. If the exposed ground can be completed as minor work - preferred repair method is to use 1-1/2 inch plastic molding and not wood molding; if wood molding is used to make repair, use straps and not staples.

Consider a higher priority based on how much of the ground is exposed, and on the amount of public exposure. Inspector should "make safe" if cannot be addressed as minor work, based on location and exposure to the public.

The correct FDA is Ground/Exposed/Repair and not Molding Broken/damaged/ repair or replace.

Gaps in between molding segments should be covered if, in the inspector's judgment, they are large enough to allow human contact.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: Utility Bulletin TD-2990P-01

EXPOSED GROUND

At this Location: Exposed grounds near sidewalk

Perform Minor Work: Yes, at a minimum make safe

Write Third-Party Notification: No

Write EC Form: Only if not able to perform minor work

- FDA=Ground / Exposed / Repair
- Priority "A", emergency – due to public exposure at ground level.

REPAIR WITH 1.5" MOLDING

Before: Copper Wire sticking out from under the wood molding

After: 1.5 inch u-shaped molding installed over existing wood molding

At this Location: Wood molding with ground exposed

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Only if not able to perform minor work

REPAIR WITH 2" PLASTIC

At this Location: Condition acceptable after repair of exposed ground

REPAIR WITH WOOD MOLDING

At this Location: Condition acceptable after repair with wood molding

2. Exposed Ground above 8' to the Communication Level

General Guidance: If there are communication facilities on the pole, exposed grounds above 8 feet to the communication level must be covered. Cover the ground as minor work if possible. If not, create an EC Notification.

Gaps in between molding segments should be covered if, in the inspector's judgment, they are large enough to allow human contact.

If the pole is not a joint pole, no action required, because there is no exposure to the communication worker.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 021904, 036229

EXPOSED GROUND AT COMMUNICATION LEVEL	EXPOSED GROUND DUE TO TWISTED MOLDING
	
At this Location: Exposed ground at communications level. Wood molding broken in climbing space.	**At this Location:** Exposed ground in wood molding.
Perform Minor Work: Yes, if safe to do so.	**Perform Minor Work:** Yes, when safe to do so.
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Only if unable to perform minor work. • FDA=Ground / Exposed / Repair • At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)	**Write EC Form:** Only if unable to perform minor work. • FDA=Ground / Exposed / Repair • FDA=Molding / Broken/Damaged / Repair • At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

3. Ground Molding Unsecured/Loose

General Guidance: Ensure that the molding is in good condition and secured to the pole.

Look for unsecured and loose wood ground molding, unglued PVC ground molding joints, molding joints that have come apart exposing the ground wire, etc.

Gaps in between molding segments should be covered if, in the inspector's judgment, they are large enough to allow human contact.

When making repairs - must meet construction standards.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 02904

WOOD MOLDING NOT SECURE EXPOSING GROUND	PVC MOLDING NOT SECURE EXPOSING GROUND
	
At this Location: Wood molding not secure, allowing human contact.	**At this Location:** PVC molding not secure, due to failure of previous repairs, allowing human contact.
Perform Minor Work: Yes	**Perform Minor Work:** Yes
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Only if unable to perform minor work. • FDA=Ground / Exposed / Repair At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)	**Write EC Form:** Only if unable to perform minor work. • FDA=Ground / Exposed / Repair At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

PVC MOLDING SECURED	WOOD MOLDING SECURED
	
At this Location: PVC molding adequately secured with staples upon arrival. No action is required.	**At this Location:** Wood molding adequately secured with straps spacing 36 inches or less upon arrival. No action required.

4. Exposed Ground Rod

General Guidance: If the ground rod can be permanently covered as minor work, do so. If not, create EC notification.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: None

EXPOSED GROUND ROD	
	**At this Location:** Exposed ground rod **Perform Minor Work:** Yes **Write Third-Party Notification:** No **Write EC Form:** • FDA=Ground / Exposed / Repair At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

5. Broken Ground

General Guidance: Inspector identifies a broken ground; refer to bulletin **TD-2999B-023** for specific guidance about testing/replacing grounds

Minor Work: Yes

- Perform minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: Utility Bulletin TD-2990P-01; TD-2999B-023

Guys / Anchors

1. Down Guy Preform Buried

General Guidance:

Top of anchor head must be above grade. Expose anchor as minor work. Evaluate the unburied anchor guy pre-forms and visually inspect them.

Perform minor work to add extension or grade around anchor so the anchor head becomes visible,

If the pre-form cannot be unburied as minor work, create an EC notification.

Notes:

- If you cannot dig up the anchor, and create an EC with a photo of a buried anchor **only** - the Gatekeeper will **not know** if the anchor can be replaced or if an extension can be installed; you should make every effort to dig up the anchor to perform a complete assessment. If your photo is of a buried anchor only, the general rule of thumb is that the EC will be created to **replace** the anchor.
- If you **cannot** dig up the anchor, but you can see most of the pre-form - an extension can *usually* be added (only one extension can be installed)

Minor Work: Yes

- Perform minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022221

BURIED ANCHOR

Before: Vegetation covers anchor

After: Vegetation cleared from anchor

At this Location: Anchor below grade overgrown with vegetation. After minor work inspector decides if the anchor can be adjusted or needs replaced.

Perform Minor Work: Yes, remove the vegetation
Yes, expose anchor and evaluate condition/corrosion
Yes, preferred method is to adjust anchor by adding extension

Write Third-Party Notification: No

Write EC Form: If cannot be addressed as minor work

- FDA=Anchor / Soil/Eroded/Graded / Replace (if the anchor cannot be adjusted)
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

ANCHOR EXTENSION

Anchor extension

Close-up

At this Location: Inspector performed minor work, exposed anchor, evaluated anchor to be in good condition so that extension could be installed, then installed extension. (Back fill not shown)

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: No

ANCHOR COVERED BY CONCRETE

At this Location: Anchor covered by concrete

Perform Minor Work: **No**

Write Third-Party Notification: No

Write EC Form: Yes

FDA=Anchor /Soil/Eroded/Graded / Replace

At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

ANCHOR BURIED BY VEGETATION

Anchor buried by roots

Anchor buried by tree

At this Location: Anchor buried by ivy roots / tree

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Anchor / Soil/Eroded/Graded / Replace
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

2. Visible Portion of Anchor Rod has Significant Corrosion

General Guidance: IF the anchor rod is significantly corroded, THEN create EC notification.

Minor Work: No

EC Form: Yes, only if not able to perform minor work

- FDA: Anchor Corroded Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 025998

ANCHOR ROD WITH SIGNIFICANT CORROSION

Anchor above ground

Below

At this Location: Corroded Anchor

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Anchor / Corroded / Replace
- Priority "E", 3-12 months depending upon exposure

3. Guy Broken/Slack

General Guidance: Important: Before any work is performed on a down guy, inspect the guy insulator; if broken, check for presence of voltage. Guys must be taut (straight, no belly). Tighten the guy as minor work if possible. If not possible, create an EC Notification.

If tightening the guy would exacerbate any pre-existing conditions on a facility (e.g. increase the lean of an already leaning pole, deform an already deforming pole), create an EC Notification with comments describing the situation.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022178

GUY CLEARANCE	GUY DAMAGED REPAIR
	
At this Location: Acceptable solution through plastic barrier. GO 95 requires 3" of radial clearance. Plastic barriers can be installed if less than 3" of clearance.	**At this Location:** Guy tail extends beyond the preform **near sidewalk**, safety hazard. **Perform Minor Work:** Yes **Write Third-Party Notification:** No **Write EC Form:** Only if minor work cannot be performed. • FDA Guy / Broken/Damaged/ Repair • Priority "E", 3-12 months depending upon exposure

OVERGROWN GUY

At this Location: Extensive dead ivy covering half of length of guy.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Guy / Broken/Damaged / Replace
- Priority "E", 3-12 months depending upon exposure

TREE GROWING AROUND GUY

At this Location: Tree growing around guy

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Guy / Broken/Damaged / Replace
- Priority "E", 3-12 months depending upon exposure

SLACK GUY

At this Location: Loose guy on left side

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Yes, only if minor work is not possible

- FDA=Guy / Loose / Adjust
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

GUY GROUNDED BY VEGETATION

Guy grounded by vegetation

Guy grounded by vegetation

Guy overgrown by vegetation

At this Location: Guy grounded by vegetation, above the bob.

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Yes, only if minor work cannot be performed

- FDA=Guy / Overgrown / Trim
- Priority "E", 3-12 months depending upon exposure

IVY ON GUY AND PRIMARY

At this Location: Ivy on guy and on primary. Safety issues, possible energized guy and pole, transformer weeping – no oil on ground, evaluate per oil spill matrix.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Transformer / Leaks/Seeps/Weeps / Replace (primary)
- FDA=Guy / Overgrown / Trim
- Priority "B", 3 months or less depending upon exposure

TREE LIMB GROWING AROUND GUY

Guy through tree

Close-up

At this Location: Tree limb growing around guy, below the bob.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Guy / Strain/Abrasion / Remove
- Priority "E", 3-12 months depending upon exposure

4. Guy Insulator Broken/Missing

General Guidance: Guys in the cylinder of “proximity” to conductors less than 35kV:

- 8 ft. or less above or below the conductor level
- 6 ft. or less horizontally from the surface of the pole

Example: Broken guy insulator

Must be sectionalized and ungrounded. Ensure there is an intact guy insulator.

Minor Work: No

EC Form: Yes

- FDA: Guy / Broken/Damaged / Replace or Guy / Missing / Install
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022178

5. Down Guy Grounded above Guy Insulator (vegetation or other)

General Guidance: Ensure that all guys are not grounded above the guy insulator. Remove any foreign objects (e.g. vegetation) contacting and grounding the guy above the insulator as minor work. Clear so that new growth will not contact or ground the guy. (Rule of thumb is that growth per year is 1 foot, so trim back 5 feet.)

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022178

DOWN GUY GROUNDED ABOVE GUY INSULATOR	DOWN GUY GROUNDED ABOVE GUY INSULATOR CAUSING STRAIN AND ABRASION
	
At this Location: Vine growing up and across the guy insulator grounding the guy.	**At this Location:** Tree grounding the guy above the guy insulator causing strain and abrasion.
Perform Minor Work: Yes	**Perform Minor Work:** Yes, if minor work not possible
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes, only if minor work cannot be performed • FDA=Guy / Overgrown / Trim • Priority "E", 3-12 months depending upon exposure	**Write EC Form:** Yes, only if minor work cannot be performed • FDA=Guy / Strain/Abrasion / Remove • FDA=Guy / Overgrown / Trim • Priority "E", 3-12 months depending upon exposure

6. Down Guy Marker Missing/Damaged

General Guidance: For poles installed **after 1996,** Guy Markers are required on **all** down guys. The markers must be a minimum 8 ft. in length. For poles installed ***prior to 1996,*** guy markers are **only required** on poles which are exposed to traffic. **Inspector should confirm the age of the pole via the date nail to verify the requirement.**

Install a single guy marker on multiple guys which are clamped together. For guys that are not clamped together, but on the same anchor, consider separate guy markers on each guy if the separation is large.

Note: Installing yellow colored guy marker does not negate the need to install visibility strips on the markers. Install visibility strips around traffic areas, on state highways, near curbs, driveways, etc. See visibility strip entry for more details.

Note: Install a segment of guy marker above cattle guards to ensure a minimum 8 ft. of guarding.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 06542, 022178, 99-34

GUY MARKER MISSING	CATTLE GUARD LESS THAN 8 FT
	
At this Location: Guy marker missing	**At this Location:** Cattle guard is less than 8 feet in length
Perform Minor Work: Yes, install new guy marker	**Perform Minor Work:** Yes, lower cattle guard and add guy marker to meet 8 feet requirement.
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: No, perform minor work	**Write EC Form:** No, perform minor work

DOWN GUY: MARKER NOT REQUIRED

At this Location: Acceptable down guy attached to building, no marker required.

At this Location: Acceptable down guy in marsh, no marker required.

Idle Facilities

1. Identifying and Documenting Idle Facilities

PS&R inspectors continue to identify and document idle lines as they would for any other field condition found, per the requirements and procedures in the Electric Distribution Preventative Maintenance (EDPM) Manual.

If idle lines are documented on hard copies (paper) rather than with PS&R mobile devices, PS&R inspectors update the Daily Log as follows:

- Create a new numbered entry.
- Write "IF" in the "Notification Type" column
- Include any applicable notes in the "Note" column.
- Create one IF Notification (TD-2459S-F01) for each section of idle line.

  Example: If there is an idle line with five poles, only one IF Notification is required for the entire section of line. ***Do not create an IF Notification for each pole.***

At a **minimum**, attach the following two attachments to each IF Notification:

- Photo of the field condition
- Map with the idle area clearly identified

Do not initiate an IF Notification or an EC Notification when **attachments to poles** (cross-arms, miscellaneous hardware, brackets, insulators, etc.) do not pose a safety or reliability risk to an idle facility.

Continue to document safety or reliability issues that meet criteria for vegetation notifications.

NOTE: Vegetation management personnel **do not** patrol or maintain vegetation on de-energized tap lines.

Identify specific field conditions on Page 1 of the IF Notification. (The PS&R supervisor refers to these field conditions to prioritize the IF Notification.)

- The service planning due date (SPDD) on the IF Notification is specific to the investigation only and is the date that the investigation must be completed.
- For a list of field conditions and related QCR actions, refer to Table 1, "IF Field Conditions and Investigations Priorities," below.

NOTE: QCRs use IF Notifications to document potentially idle facilities. Customer service delivery (CSD) personnel use IF Notifications to investigate, classify, and document idle facility investigation results.

Table 1. IF Field Conditions and Investigation Priorities

Condition	Action	Investigation Priority
Safety Situation/Risk	• Mitigate hazard and make safe, which may include de-energizing. • Initiate an IF Notification for investigation. • Initiate an Electric Corrective (EC) Notification to document any other abnormal conditions to resolve.	**High** Submit to supervisor by end of day. Enter in SAP, and communicate to service planning personnel within 2 business days.
Idle transformers that do not have a blue sticker indicating a polychlorinated biphenyl (PCB) content of less that 5 parts per million (ppm) may be classified as High, Medium, or Low priority. Consider current field conditions, the transformer condition, and if the following sensitive locations are nearby: • Surface or ground waters • Sewers or sewage treatment systems • Private or public drinking water sources or distribution systems • Grazing lands • Vegetable gardens or agricultural areas • Daycare centers and schools	• If High priority, mitigate hazard and make safe, which may include de-energizing. • Initiate an IF Notification for investigation; priority is dependent upon field and equipment conditions. • Note the specific field conditions, transformer condition, and transform locations (see "Condition" column notes) in the Comments section.	**High – Medium-Low** To designate as High priority, consider the identified idle transformer locations, current condition of the transformer (see "Condition" column notes), and current condition of associated facilities (pole, crossarm, etc.)
Future work required to maintain existing idle facility (EC Notifications to repair/replace/relocate facilities).	• Initiate an IF Notification for investigation. • The IF priority depends on the due date of the EC.	**High – Medium-Low**
PG&E and Modesto Irrigation District (MID) service areas.	• Initiate an IF Notification for investigation.	**Medium**
Idle facilities in raptor concentration zones (RCZs) with suitable habitat to support threatened or endangered raptors.	• Initiate an IF Notification for investigation. • Initiate a Priority E, 3-month EC Notification to de-energize the facility.	**Medium – Low**
Oil-filled equipment considerations: • Surface or ground waters • Sewers or sewage treatment systems • Private or public drinking water sources or distribution systems • Grazing lands • Vegetable gardens or agricultural areas • Daycare centers and schools	• Initiate an IF Notification for investigation. • For idle transformers, note the absense or presence of a blue sticker on the IF Notification. • A blue sticker indicates a PCB content of less than 5 ppm.	**Medium**
Potential use for agricultural pumps or vacant buildings.	• Initiage an IF Notification for investigation.	**Low**
Entire primary tap is identificed as idle and is unfused. No future work is required to maintain the existing idle facility.	• Initiate an IF Nofication for investigation. • Initiate a Prioirty E, 3-month EC Notification to de-energize the line.	**Low**

Identify idle facilities in RCZs.

Determine whether there is any potential use for agricultural pumps and/or vacant buildings.

Classify facilities that are to remain in the field as follows:

- De-Energized – Temporary Out of Service (TOS):
- Potential agricultural pump – TOS-AG
- Vacant building use – TOS-V

Energized – Temporary Idle Facility (TIF):

- Potential agricultural pump – TIF-AG
- Vacant building use – TIF-V

The following Table 2 is a complete listing of TOS/TIF classifications.

Table 2. TOS/TIF Classifications

Temporary Out of Service (TOS) De-Energized Temporary Idle Facility (TIF) Energized		
Facilities with a future use are grouped into one of the following classifications:		
TOS-AG	Potential agricultural use	De-energized
TIF-AG	Potential agricultural use	Energized
TOS-V	Potential service to an existing vacant building	De-energized
TIF-V	Potential service to an existing vacant building	Energized
TOS-CAP	Potential PG&E use for capacity or reliability	De-energized
TIF-CAP	Potential PG&E use for capacity or reliability	Energized
TOS-F	Future customer use identified by service planning	De-energized
TIF-F	Future customer use identified by service planning	Energized
TOS-MLX	Current Main Line Extension Agreement	De-energized
TIF-MLX	Current Main Line Extension Agreement	Energized
TOS-SFA	Current Special Facilities Agreement	De-energized
TIF-SFA	Current Special Facilities Agreement	Energized

When pending maintenance is identified on idle facilities, write a minimum of two notifications:

- One IF Notification (TD-2459S-F01) for the entire idle line
- One EC Notification per location requiring maintenance

After identifying pending maintenance on idle facilities, ensure that the IF Notification has the Field Condition box, "Future work required to maintain existing idle facility," checked. See Figure 1 below.

- Enter the following note in the EC Notification comments section: "IDLE notification created."
- Enter a note in both IF Notification and EC Notification comments with corresponding notification numbers, when available.

Figure 1

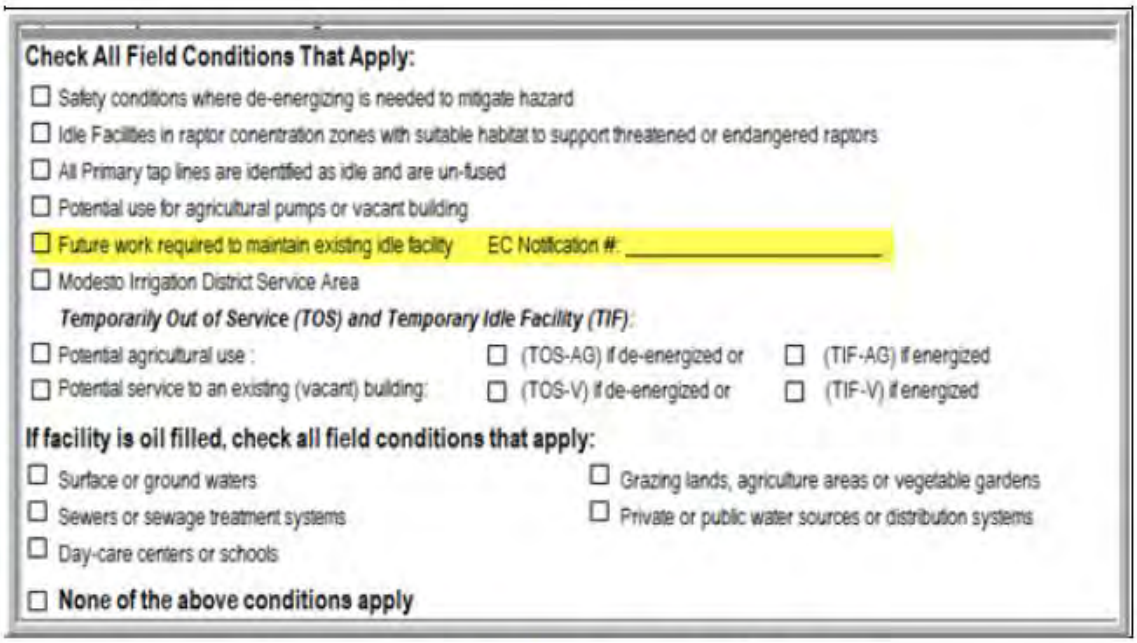


Figure 1. IF Notification – Future Work Required Field Condition and EC Notification Number

2. Energized Electric Line Facility No Longer Used to Serve Customer Load

General Guidance: It may be necessary to de-energize the idle facility:

If primary lines are energized, de-energize line sections by opening cut-outs. In raptor concentration zones (RCZs) or if the primary tap line is unfused, create a Priority E, 3-month Electric Corrective (EC) Notification to de-energize the jumpers.

> **NOTE**
>
> When idle transformers or sections of line de-energized by cut-outs are located in non-raptor areas, an EC Notification is **not** required to de-energize the jumpers.

Do not initiate an IF Notification or an EC Notification when attachments to poles (cross-arms, miscellaneous hardware, brackets, insulators, etc.) do not pose a safety or reliability risk to an idle facility. If it is not necessary to de-energize the idle facility, create a Priority “F” EC Notification.

Continue to document safety or reliability issues that meet criteria for vegetation notifications.

Minor Work: No

EC Form: Yes, to de-energize

- FDA: OH Facility Idle De-Energize
- Select the Priority “E”
- Select the 0-3 month Due Date

Idle Facility Form: Yes

Related Documents: TD-2459P-01

3. De-Energized Electric Line Facility Already Identified on a Pending EC Notification but Not Mapped

General Guidance: Create a map change request if the facility is not mapped as idle.

Minor Work: No

Map Correction: Yes

Related Documents: TD-2459P-01

Insulators

1. Arcing or Tracking on Insulators

General Guidance: If there is evidence of arcing or tracking on a primary insulator, call the construction supervisor, create Emergency EC notification, and follow emergency EC processes.

Note: Inspector should always consider replacing wood crossarm with composite crossarm.

Construction Note: Cannot mix insulator types, always replace full set of insulators.

Minor Work: No

EC Form: Yes, create an Emergency EC Notification

Related Documents: Utility S2405

2. Damaged Insulators

General Guidance Are Insulators chipped, cracked, corroded, contaminated, flashed, have signs of tracking, broken, or damaged? If yes, create EC notification.

Replace ALL insulators if one is chipped, cracked, contaminated, broken, or damaged.

Note for construction: If an insulator is damaged due to gunshot, replace with epoxy or polymer insulators.

Note for construction: Cannot mix insulator types, always replace full set of insulators.

Note: Inspector should always consider replacing wood crossarm with composite crossarm, based on condition of crossarm.

Minor Work: No

EC Form: Yes

- FDA: Insulator Broken Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022088, 068180 (composite crossarm), TD-2305M-JA_07 Crossarm Evaluation job aid

DAMAGED INSULATOR	INSULATOR LAYING ON ITS SIDE / PRIMARY ON THE ARM
	
At this Location: Damaged insulator with an insulator that I no longer approved. Replace all insulators and the arm	**At this Location:** Insulator lying on its side. Primary on the arm.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA= Crossarm / Decayed/Rotten / Replace • FDA=Insulator / Broken/ Damage / Replace • Priority "E", 3-12 months depending upon exposure	**Write EC Form:** Yes • FDA= Crossarm / Decayed/Rotten / Replace • Priority "A", follow Emergency Process

FLASHED INSULATOR ON TRANSFORMER

At this Location: Flashed insulator on transformer

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA= Transformer / Flashed / Replace
- Priority "E", 3-12 months depending upon exposure

BROKEN WOOD PIN ON PRIMARY

At this Location: Broken wood pin. Primary (High Voltage Sign). Conductor on arm. Replace all insulators and the crossarm with a composite arm.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA= Crossarm / Decayed/Rotten / Replace
  FDA=Insulator / Squatter-(Primary) / Replace
- Priority "A", follow Emergency Process, (Conductor contacting crossarm)

FLASHED INSULATOR POTHEAD

At this Location: Flashed pothead

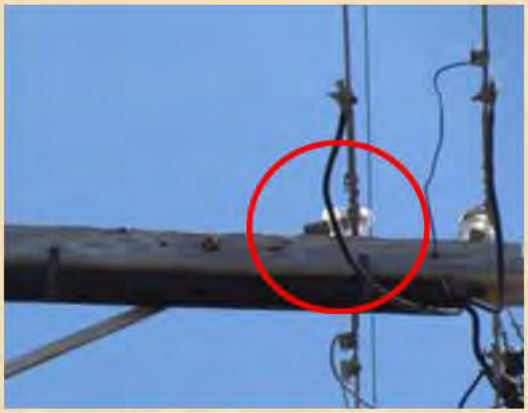
Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes or COE (pin or energized)

- FDA=Riser/Pothead / Flashed / Replace
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

BROKEN WOOD PIN ON SECONDARY



At this Location: Broken secondary wood pin. Conductor lying on the arm, tangent pole. (excluding urban wildfire areas, use risk priority matrix). Wood pin arm at end of life replace arm with composite arm

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Yes, if minor work not possible

- FDA= Crossarm / Decayed/Rotten / Replace
- FDA= Insulator / Squatter (Secondary) / Replace
- Priority "B", 0-3 months depending upon exposure

BROKEN SECONDARY INSULATOR

At this Location: Broken secondary insulator

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA= Crossarm / Decayed/Rotten / Replace
- FDA=Insulator / Broken/ Damage / Replace

FLASHED INSULATOR MYLAR BALLOON

At this Location: Flashed insulator by Mylar balloon

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Insulator / Flashed / Replace
- Priority "E", 3-12 months depending upon exposure

3. Squatters – Primary or Secondary

General Guidance: Are primary or secondary insulators squatting? If yes, create EC Notification.

Minor Work: No

EC Form: Yes

- FDA = Insulator / Primary Squatter / Replace - OR
- FDA = Insulator /Secondary Squatter / Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Note: Inspector should always consider replacing wood crossarm with composite crossarm.

Construction Note: If an insulator is damaged due to gunshot, replace with epoxy of polymer insulators.

Construction Note: Cannot mix insulator types, always replace full set of insulators.

Related Documents: 022088, Crossarm Evaluation TD-2305M-JA_07

PRIMARY SQUATTER

At this Location: 2 Primary Wood Pin Squatters; replace wood crossarm with composite crossarm.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA = Crossarm Decayed/Rotten / Replace
  FDA = Insulator / Primary Squatter / Replace
- At minimum – must write up as Priority "E", based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, or E)

SECONDARY SQUATTER AND DECAYED CROSSARM

At this Location: Secondary Squatter and decayed crossarm.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA= Crossarm / Decayed/Rotten / Replace
- Priority "E", 3-12 months depending upon exposure
- Note: When replacing insulators, do NOT mismatch insulators.

PRIMARY SQUATTER AND BROKEN HIGH VOLTAGE SIGN

At this Location: Primary squatter and broken high voltage sign

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

FDA = Insulator / Primary Squatter / Replace
FDA = High Sign / Broken / Replace

- Assign priority depending upon condition of asset/component, location, and public safety & exposure
- Note: Consider replacing wood crossarm with composite.

4. Flying Bells

General Guidance: Are flying bells broken or damage? If yes, create EC notification.

Note: If flying bells were installed to de-energize idle facilities, assess vegetation around idle conductor; create EC notification to trim, as vegetation management does not perform trimming on idle facilities.

Example: Flying bells installed

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Lightning / Surge Arrestors

1. Broken or Flashed

General Guidance: Are arrestors broken, damaged, flashed, or is the ground lead disconnect activated? If yes, Creat EC notification to replace lightining arrestor.

Example: Blown lightning arrestor

Example: Approved ABB-type surge arrestor

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 031822

Markings

1. High Voltage Sign Not Installed as Required

General Guidance: Inspectors are required to look for missing or broken high voltage signs during inspections. If inspectors find missing or broken signs, they should install new signs as minor work if they have the appropriate materials and equipment and can perform the work safely. If the inspector cannot install a sign as minor work, the inspector must create a Priority 'F' EC notification. Below is guidance on how to evaluate high voltage signage.

High Voltage Sign Requirements:

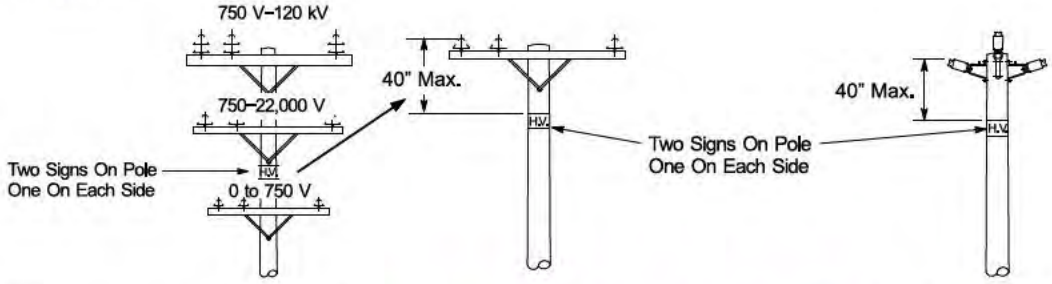
Poles that support line conductors or risers energized at more than 750 volts must be marked with high voltage signs. **IMPORTANT: If a pole is marked under any of the options below, it satisfies the high-voltage marking requirement** When installing new high voltage signs using one option, inspectors are not required to remove signs previously installed under different options.

Marking Options:

A. **Sign the Pole Below the Lowest 750V+ Line Conductor** (Preferred Method)

Marking requirements are satisfied under this option if:

1. There are two signs, attached to the surface of each side of the pole[1].
2. The top of each sign is no more than 40" below the lowest level line conductor that exceeds 750V.

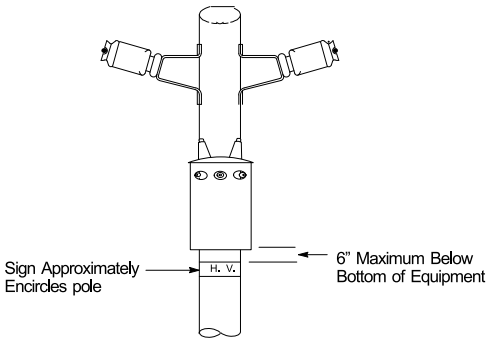


[1] **Exception:** If an inspector finds only one high-voltage sign within 40" below the lowest 750V or greater conductor, the inspector is not required to install a second sign.. However, when performing work at the lowest crossarm level, a second sign must be installed.

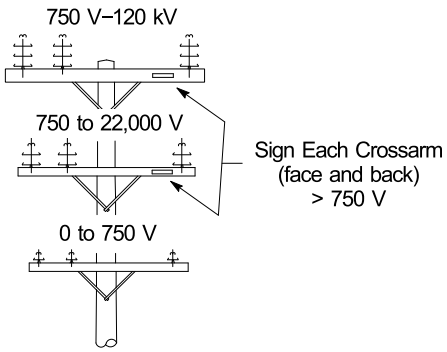
B. Sign the Pole Below Equipment
Marking requirements are satisfied under this option **if:**

1. There are two signs attached to the surface of each side of the pole[2].
2. The top of each sign is no more than 6'' below the equipment.
3. The signs are above all 0-750V supply and communication line conductors.

[2] **Exception:** If an inspector finds only one high-voltage sign installed within 6'' below the equipment, the inspector **is not required to install a second sign.** However, when performing work at the equipment level, a second sign must be installed.

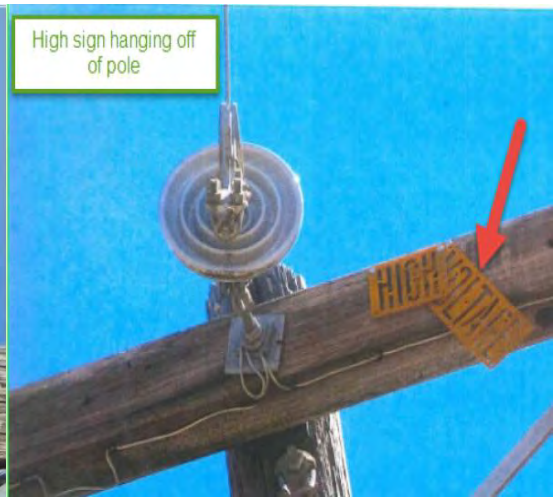


C. Sign Each Crossarm
Marking requirements are satisfied under this option **if:**
1. Each crossarm (line arm) supporting line conductors in excess of 750V are signed both front and back. Signs are not required on the inside faces of double arms.



The exceptions in Sections A and B do not apply when, in the judgment of the inspector, the two high voltage signs should be installed so that they may be visible from all sides of the pole. Typical examples are poles near water areas suitable for sailboats, near established boat ramps and associated rigging areas, adjacent to swimming pools, and in agricultural areas with moveable irrigation piping.

High Voltage Sign Examples



Minor Work: Yes

EC Form: Yes, if cannot be completed as minor work.

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022168

2. Operating Number Incorrect / Illegible/ Missing

General Guidance:

IF the operating number on the field equipment does **not** match the operating number printed on inspection map;

THEN (1) **contact the local Distribution Operation (DO)** to confirm the discrepancy and to get further instructions

(2) DO confirms the field equipment number is **correct;** then complete a **map correction**

(3) DO confirms the field equipment number is **not correct**; then **perform minor work to correct the operating numbers** on the field equipment

(4) DO **cannot confirm the operating number**; then get a PIN from DO and complete a **map correction** to get an operating number assigned

(5) DO confirms the field equipment number for equipment in the field that **does NOT** have a field equipment number installed; then **complete minor work to install the equipment number OR create an EC** to have M&C install the field equipment number

Note: Alpha characters may differ between divisions. Be sure to confirm the "number" with the local DO and PS&R Supervisor.

Operating number should be installed in the operating position; if missing, they should be installed on the operating position, not at the 6' level. Consider also adding the # at the 6' level for ease of identification for field EE's.

If operating number exists, is it legible (faded, etc.); if not legible replace them as minor work or create an EC notification.

If operating number is not installed in the field, but on the inspection map - call the DO to confirm the correct number before installing.

If confirmed that the field is wrong, correct as minor work or create an EC to have corrected.

If confirmed that the operating number is mapped but not installed in the field, install the operating number as minor work.

If operating number is not installed in the field, but on the inspection map and/or in GIS - call the team lead who will contact the DO to confirm the correct number before installing.

If confirmed that the number is mapped but not installed in the field, or the field is incorrect, correct as minor work if possible, or write EC notification.

Minor Work: Yes

Map Correction: Yes, if operating number needs to be corrected

EC Form: Yes, if you cannot perform minor work

- FDA: Marking / Broken/Damaged / Replace or Marking / Missing / Install
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 057352

FADED OPERATING NUMBER

Before: Faded operating number

Close-up

After: Minor work completed, operating number applied below operating position.

At this Location: Operating number is faded

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Marking / Broken/Damaged / Replace
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

3. Damaged or Missing Visibility Strips on Poles/Guy Markers

General Guidance: Reflective visibility strips shall be installed on wood, fiberglass, or steel poles, streetlight poles, and guy markers as follows:

A. On poles and guy markers installed on state highways.

B. On poles and guy markers located within 15 feet from the paved surface or 15 feet from the edge of the traveled, unpaved portion of city or county roads (streets) where not protected by curbs.

C. On poles and guy markers within 6 feet of an adjacent driveway, private roadway (street), turnaround, parking lot, or thoroughfare in rural district, capable of being traversed by vehicles, where these are not protected by curbs.

Notes:

Visibility strips are not required on poles or guy markers behind a curb, approximately 5-1/2” x 5-1/2” and 90 degrees to the surface.

Visibility strips should not be installed if there is no reasonable expectation of traffic. For example: Cross country poles, poles through waterways or wetlands, rear easements poles, poles behind guardrails, or poles on embankments that are well above or below the road.

Reminders:

- Do not install visibility strips on top of the old one. Inspectors must remove the old strip first.
- If the old strip is in good condition, but became loose, re-secure the strip to the structure.
- Do not install metal visibility strips over any vertical molding/riser.
- If any visibility strip work is required, bring the location up to the current visibility strip standard (all must be the same color – yellow)
- Install visibility strips on the side facing oncoming traffic when known.
- Do not install visibility strips within 1-1/2” of U-shaped molding
- If unable to install at time of inspection due to lack of material return and complete minor work if still in the area and can do so and document minor work or write up EC notification to correct.

Minor Work: Yes

EC Form: Yes, if cannot be completed as minor work.

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022168, GO 95 Rule 56.9 (1964, 1990, 1996 Change to Guy Marker)

ADHESIVE VISIBILITY STRIPS

At this Location: Acceptable application of plastic and adhesive visibility strips

CLEARANCE FROM GROUND

At this Location: Acceptable metal visibility strips attached 1 ½"from ground.

INADEQUATE VISIBILITY STRIPS

At this Location: Pole with vehicular exposure. Two small sections of yellow adhesive visibility strips.

Perform Minor Work:

Yes, apply 3 adhesive visibility strips on the pipe.

Yes, apply 3 adhesive visibility strips to the plastic molding.

Write Third-Party Notification: No

Write EC Form: No, perform minor work

VISIBILITY STRIPS PAINTED OVER NO LONGER REFLECTIVE

At this Location: Visibility strips painted brown (3rd visibility strip located above not shown in picture)

Perform Minor Work: Yes, remove old visibility strips and install new.

Write Third-Party Notification: No

Write EC Form: No, perform minor work

METAL OVER MOLDING

Before

After

At this Location: Metal visibility strips under wood molding and over wood molding with protruding edge.

Perform Minor Work: Yes, remove old metal visibility strips and apply new visibility strips; **visibility strips on after photo are fiber, not metal** (coded item)

Write Third-Party Notification: No

Write EC Form: No, perform minor work

OLD METHOD VISIBILITY STRIPS

At this Location: Aged visibility strips have lost reflectivity.

Perform Minor Work: Yes, replace with 3 yellow visibility strips

Write Third-Party Notification: No

Write EC Form: No, perform minor work

OLD AND NEW VISIBILITY STRIPS

At this Location: Yellow visibility strips mounted over old white visibility strips.

Perform Minor Work: Yes, remove old visibility strips

Write Third-Party Notification: No

Write EC Form: No, perform minor work

Oil-filled Equipment

1. Equipment Oil: Leaking/Weeping Stain

General Guidance: Refer to the EDPM Manual - Assessments and Notifications Section for additional information about addressing oil in the field.

IF you observe a **stain or leak**

THEN (1) Look for **exposure or contamination**

Refer to the PCB Spill/Leak Category Response Matrix in order to determine the appropriate action and priority.

PCB Spill/Leak Category Response Matrix
Overhead & Sub-surface Equipment

Indicator	PCB Equipment Manufactured Before July 1979		Non-PCB Equipment Manufactured July 1979 or later	
	EC Notification Priority	Standby at Site	EC Notification Priority	Standby at Site
Equipment has failed and insulating fluid has run off the surface of the equipment and is in contact with the soil, vegetation, or water.	A Replace	Yes	A Replace	Yes
Insulating fluid has run off the surface of the equipment and is in contact with the soil, vegetation, or water OR Insulating fluid is actively dripping.	A Replace	Yes	A Replace	Supervisor discusses with EFS to determine need to standby based on location and size of spill.
Insulating fluid is about to run off the surface of the equipment but has not made contact with the soil, vegetation, water, or structure.	A Replace	Yes	A Replace	Supervisor discusses with EFS to determine need to standby based on location and size of spill.

PCB Spill/Leak Category Response Matrix
Overhead & Sub-surface Equipment
(Continued)

Indicator	PCB Equipment Manufactured Before July 1979		Non-PCB Equipment Manufactured July 1979 or later	
	EC Notification Priority	Standby at Site	EC Notification Priority	Standby at Site
Insulating fluid is on the surface of the equipment and is **not** about to run off the surface and has **sheen** (Weeps or Seeps).	Supervisor discusses with EFS to determine EC notification category based on sensitivity of location and upcoming weather. IF no timely response from EFS within ½ hour, THEN assumed to be sensitive area.			
Sensitive Areas	A Replace	Not needed	B 3 month Recheck • Describe sheen in notification • Re-check in 3 months.	Not needed
Non-sensitive Areas	B 30 day Replace IF estimating cannot be completed in time to meet 30 day deadline, THEN replace with like.			
Residual stain is a mark on the equipment that appears dried. Examples: • Stain on side of overhead transformer • Stain on concrete	No further action needed	Not needed	No further action needed	Not needed

PCB Spill/Leak Category Response Matrix, continued

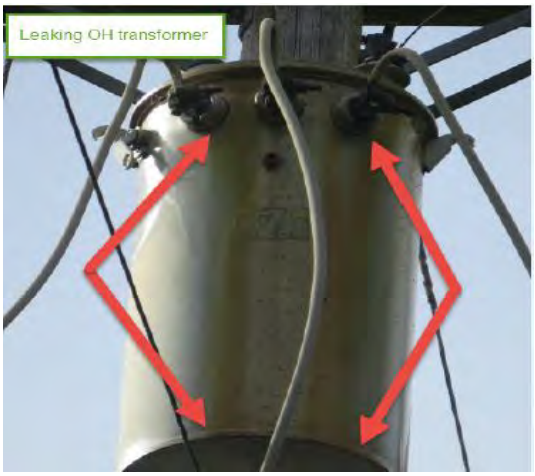
PCB Spill/Leak Category Response Matrix
Padmount Equipment

Indicator	PCB Equipment Manufactured Before July 1979 2		Non-PCB Equipment Manufactured July 1979 or later	
	EC Notification Priority	Standby at Site	EC Notification Priority	Standby at Site
Equipment has failed and insulating fluid has run off the surface of the equipment and is in contact with the soil, vegetation, or water.	A Replace	Yes	A Replace	Supervisor discusses with EFS to determine need to standby based on location and size of spill.
Insulating fluid is actively dripping either outside or inside the cabinet doors.	A Replace	Yes	A Contain & Clean Complete cleaning A, B, or E Replace	Supervisor discusses with EFS to determine need to standby based on location and size of spill.

Minor Work: No

Related Documents: TD-2320P-01 Attachment 4

Examples: Leaking OH Transformer



2. Corrosion

General Guidance: In many parts of PGE's service territory, facilities are exposed to conditions that both cause and accelerate corrosion of metal components.

During detailed inspections, examine facilities and assess their condition for corrosion. If corrosion is minor, repairs to the protective coatings that cover the metal surfaces on the equipment should be made. In addition, during the diagnostic testing for specific types of distribution line equipment, perform an examination for corrosion.

Minor Work: Yes

EC Form: Yes, if compelling

- Select the appropriate FDA
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: TD-2305M-JA_05 "Corrosion Evaluation Job Aid", G12020, TD-3322B-066-JA08

IF you observe corrosion:

THEN (1) Look for exposure

(2) Refer to the below table for to determine the corrosion rating and the required actions to perform. Visual examples follow:

Description	Symptoms	Required Actions
Integrity is breached	Hole(s) in metal (public exposure to high voltage, cover not securable, significant oil leak or spill, etc.)	EC notification Priority A – replace immediately or make safe and issue Priority B – replace/repair
Metal is damaged	Separation, layering, bubbling	EC notification Priority E – replace/repair Not to exceed 12 months
Moderate to heavy corrosion	No sign of metal degradation	Inspect at next interval Pad-mounted equipment – clean and paint
Little or no corrosion	Discolored paint, staining	No action required

OH CORROSION EXAMPLES

At this Location: Corrosion Weakening Integrity of Tank

Metal is separating into layers

Corrosion will breach tank

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form:

- FDA=Transformer Leaks/Seeps/Weeps Replace
- Priority "E", 3-12 months depending upon exposure

At this Location: Transformer with moderate/heavy corrosion

Metal structure still sound (rust staining from attachments)

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: No

At this Location: Bonding hardware corroded

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Transformer Leaks/Seeps/Weeps Replace

Priority "E", 3-12 months depending upon exposure

TRANSFORMER WITH STAINING, NO CORROSION	TRANSFORMER CASE WITH LITTLE OR NO CORROSION
	
At this Location: Transformer with dirt and salt spray staining, no metal damage	**At this Location:** Transformer with little to no corrosion, no metal damage
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: No	**Write EC Form:** No

3. Parallel Transformer

Is there an obvious paralleled transformer condition at this location? If yes, create EC notification to address parallel condition in the field.

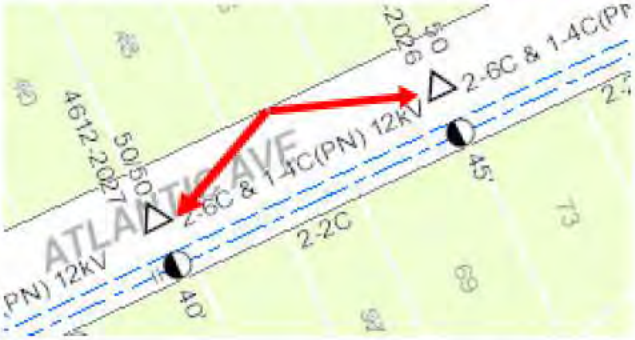
Minor Work: No

EC Form: Yes

- FDA = Transformer / Parallel / Replace
- Priority "B", 0-3 months

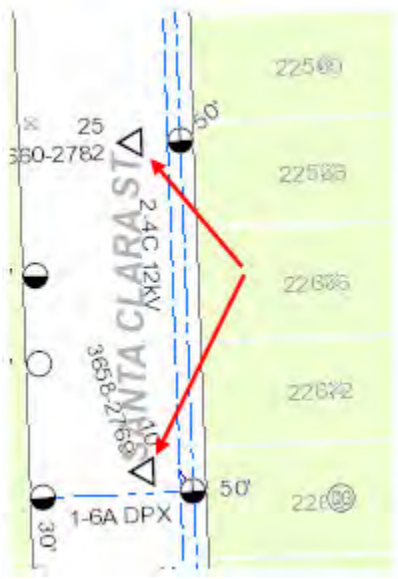
Related Documents: TD-2424B-001

Example: Banked transformers on separate poles should be indentifed as banked.



Example:

OH Paralelled Transformers



OH Transformers separated by bobs are ok

4. Transformer – Record keeping items

Does the transformer have a blue sticker? Yes/No

Is this a SP (self-protecting) transformer? Yes/No

Example: SP transformer

Poles

1. Solely-Owned Poles with Third-Party Attachments

General Guidance: Identify all solely owned pole with third-party attachments (based on how it is mapped). Write EC Notification for Pole / Overloaded / Test, for Estimating to confirm pole loading.

Determine if additional clearing is needed for access to pole; if so - create EC Notification.

Minor Work: Yes, create an EC Notification to clear vegetation unless it can be addressed as minor work

Related Documents: EDPM Pole Inspection, Utility S2325

2. Broken, Deterioriated, Deformed Poles

General Guidance: Observations in the field may include the following types of pole damage:

1. Broken
2. Split
3. Decayed / Rotten
4. Woodpecker damage
5. Vandalized
6. Any pole deformity
7. Any condition that may impair conductor clearance
8. Cracked poles: assess for potential failure
9. Significant reduced circumference

Is pole damaged, broken, burnt, deformed, corroded, gunshot, or showing signs of cracking, or decay that needs to be addressed in the next 5 years? If yes, create EC notification.

Does the pole have woodpecker damage that needs to addressed in the next 5 years? Refer to EDPM Manual for how to assess woodpecker damage. If yes – create EC notification to repair, assess, or replace pole.

Does pole have significant reduced circumference? Guidance: For example, animal, vehicle, vandalism, burnt, shell rot, that has caused a pole circumference reduction that could cause the pole to be overloaded or deformed needs to be written up on an EC Notification, FDA = Pole Overloaded Test. If circumference is significant and needs to be addressed in the next 5 years, create EC notification to replace pole.

An ‘N’ tag indicates previously identified damaged pole.

Minor Work: No

Related Documents: EDPM Pole Inspection, TD-2325S, 066209

Record Keeping Items:

Does the location have a buddy pole (i.e. cut & kick pole with un-transferred communications) Yes/No

Is there a support structure or stub present? Yes/No; If yes, select type of reinforcement (fiberglass wrap, mod pole, pole splint, pole top extension, steel truss, steel wrap, wood stub, other). **Related Document**: TD-2325P-06

Record Keeping Items – Examples:

Composite Pole

Composite Pole

Pole with steel stub

Pole with wood stub

Example: Pole top extension

Example: "California" pole top extension

POLE BROKEN AT THE COMMUNICATION LEVEL	POLE BROKEN AT MIDDLE SECTION
	
At this Location: Pole broken at the communication level in HFTD area. Complete Pole Inspection Test Report	**At this Location:** Broken pole. Complete Pole Inspection Test Report
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Pole / Broken/Damaged / Replace • Priority “A” address immediately	**Write EC Form:** Yes • FDA=Pole / Broken/Damaged / Replace • Priority ”B”, 0-3 months depending upon exposure

BROKEN POLE	POLE SPLIT AT COMMUNICATION LEVEL
	
At this Location: Broken pole. Complete the Pole Inspection Test Report. Pole supported in four directions.	**At this Location:** Pole split at communication level. Complete the Pole Inspection Test Report.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Pole / Broken/Damaged / Replace • Priority "B", 0-3 months depending upon exposure	**Write EC Form:** Yes • FDA=Pole / Broken/Damaged/ Replace • Priority "B", 0-3 months depending upon exposure

DAMAGE TO POLE FROM SPECIFIC EVENT	DECAY OF POLE OVER TIME
	
At this Location: Pole burnt If pole has reduced circumference. Write EC notification for estimating to confirm pole loading.	**At this Location:** Pole top decayed. Entire pole failed pole test. Complete the Pole Inspection Test Report.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes, Write EC notification for estimating to confirm pole loading. • FDA=Pole/Overloaded/Test • Priority "E", 3-12 months depending on exposure.	**Write EC Form:** Yes • FDA=Pole Decayed/Rotten/Replace • Priority "E", 3-12 months depending upon exposure

SAW CUT INTO POLE

At this Location: Vandalized pole. Chain saw cut into lower portion of pole. Half of pole circumference cut into.

Notify supervisor of possible vandalism. Supervisor will have to communicate to damage claims. Complete Poles Inspection Test Report.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Broken/Damaged/ Replace
- Priority “A” or ”B”, 0-3 months depending upon exposure

At this Location: Vandalized pole. Chain saw cut into lower portion of pole. More than half of pole circumference cut into.

Notify supervisor of possible vandalism. Supervisor will have to communicate to damage claims. Complete Poles Inspection Test Report.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Broken/Damaged / Replace
- Priority “A” or ”B”, 0-3 months depending upon exposure

POLE DAMAGED ON THE BOTTOM BUT OK

At this Location: Pole damaged by vehicle. Splint installed as temporary repair. Inspection shows adequate circumference/strength. Sharp ragged splinters. Curb is adequate protection – visibility strips not required.

If pole has reduced circumference write EC notification for estimating to confirm pole loading. If damage requires replacement, create an EC notification to replace the pole.

Perform Minor Work: Yes, Remove sharp edges, remove splint.

Write Third-Party Notification: No

Write EC Form: Yes.

- FDA= Pole / Overloaded / Test

If needs replaced:

- FDA=Pole / Broken/Damaged / Replace

DETERIORATION AROUND GROUND LINE

Before extraction

After extraction showing below ground deterioration

At this Location: Deteriorated condition found during normal inspection. Complete Pole Inspection Test Report. If pole has reduced circumference. Write EC notification for estimating to confirm pole loading.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Decayed/Rotten / Replace
- Priority "A", follow Emergency Process

Examples: Poles with woodpecker damage – assess using woodpecker assessment guidelines.

Woodpecker damage at top of pole

Woodpecker damage - multiple holes within ~2'

Woodpecker damage - medium cavity

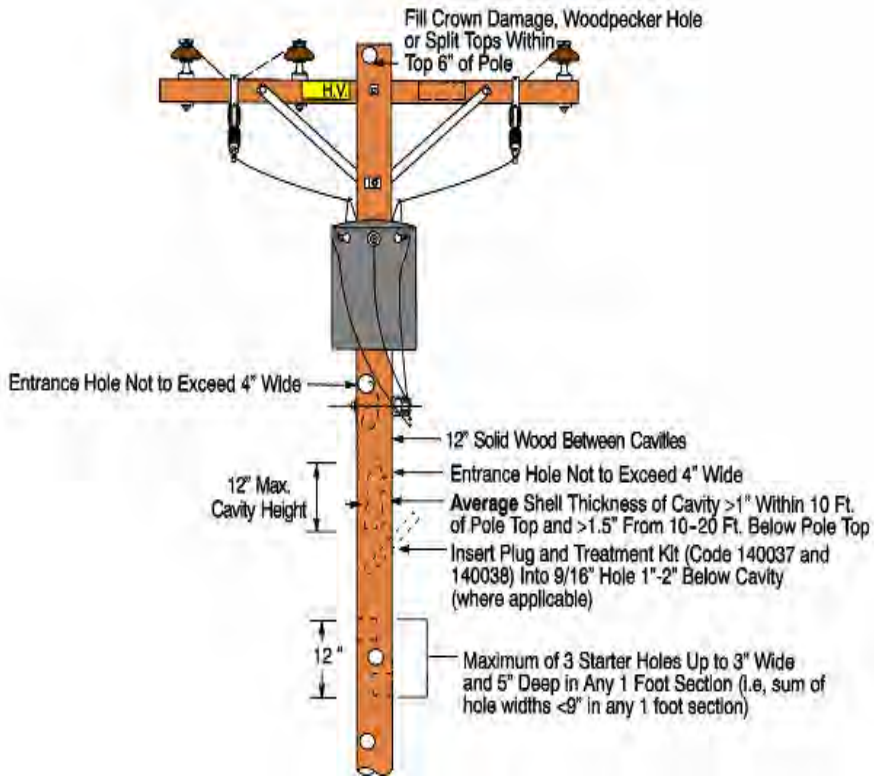
Woodpecker damage - large cavity

Examples: Significant reduced circumference

Signifcant reduced circumference (bear damage)

Signifcant reduced circumference (tractor damage)

Repair of Woodpecker-Damaged Pole Tops



Assessing woodpecker damage

- The QCR should note the approximate location, number, and size of woodpecker holes on the “Pole Inspection/Test Report” (Exhibit A, Part 3).
- Determine whether identified above-ground or pole-top damage is suitable for restoration. Poles are suitable for restoration and can remain in service if they meet the criteria listed below:
  - There is 1 vertical inch of solid wood directly below any throughbolt to support existing or proposed attachments.
  - Nesting cavities or other open pockets have an outside hole diameter that is less than 4 inches wide.
  - Internal cavities are estimated to be less than 12 inches high and 7 inches in diameter.
  - The average shell thickness of the cavity is greater than 1 inch within the top 10 feet of the pole, and greater than 1½ inches between 10 feet and 20 feet from the top. See Exhibit B, Part 1, for shell thickness between 20 feet of the pole top and the groundline.
  - There is more than 12 inches of sound wood vertically between nesting cavities.
  - There are three or fewer starter holes less than 3 inches wide, 3 inches high, and 5 inches deep within any 1-foot vertical section of the pole. The maximum sum of the diameters of the holes must be less than 9 inches wide in a 1-foot vertical section.
  - The pole-top crown damage or split tops extend downward less than 6 inches from the pole top.

3. Leaning Pole

General Guidance: Consider the following when evaluating a leaning pole:

- Is the pole leaning/out of plumb by more than 10% of its height above the ground?
- Is the leaning pole causing excessive conductor sag or reduced clearance issues that could result in contact, fire risk, or public safety?
- Does the lean appear as if it will become worse or affect safety or reliability in the next 5 years (considering environmental and configuration factors -soil, wind, pole attachments, equipment, guying)?

If the answer is **yes** to any of these questions, at minimum **create an EC Notification (Pole /Overloaded /Test) and fill out Pole Test Data Sheet**. All poles need to be load calculated prior to straightening. Estimating will create an EC to straighten (Pole/Lean/Adjust) or replace (Pole/Lean/Replace). If Inspector determines that pole needs to be replaced, create EC notification to replace pole.

Note: If the Inspector suspects that a third party attachment is causing the pole to lean, consider writing a Third Party Utility notification in addition to an EC Notification.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 023058, TD-2014S – Third Party Damage

LEANING POLE	LEANING SLACK SPAN
	
At this Location: Leaning pole greater than 10% out of plumb. Pole is stable. No equipment in rural area. Causing reduced clearance.	**At this Location:** Leaning pole more than 10% out of plumb. Pole test indicates that pole is solid below ground and can be straightened. Probability of equipment failure is moderate.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Pole / Leaning / Replace • Priority "E", 3-12 months depending upon exposure	**Write EC Form:** Yes • FDA=Pole / Leaning / Adjust • Priority "E", 3-12 months depending upon exposure

STUBBED POLE LEANING TOWARDS SCHOOL

At this Location: Stubbed pole leaning towards school, supported by down guy. Pole Bands are loose due to additional deterioration of the pole. Pole test data sheet indicates that pole no longer meets stubbing criteria causing reduced clearance issues

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Decay/Rotten / Replace
- Priority "E", 3-12 months depending upon exposure

POLE LEANING 3 POT TRANSFORMER IN BUCK POSITION

At this Location: Pole is leaning less than 10% out of plumb, leaning in direction of offset equipment. Pole inspection found pole stable.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: No

POLE LEANING NEAR RAILROAD TRACKS

At this Location: Severe lean being held up by the primary conductors. Low clearance over active railroad tracks. Pole located in a swamp area with standing water.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Decayed/Rotten/ Replace
- Priority "A", follow Emergency Process

4. Deformed Pole

General Guidance:

For deformed poles, write EC Notification for Pole / Overloaded / Test, for estimating to confirm pole loading.

If the deformity appears as if it will become worse or affect safety or reliability in the next 5 years (considering environmental and configuration factors - soil, wind, pole attachments, equipment, guying) - write EC notification to replace pole.

Common drivers for deformed poles: Improper/lack of guying, third party attachment.

Review clearances to verify no reduced clearance issues, all levels of clearance requirements that could result in contact, fire risk, or public safety.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: EDPM Pole Inspection

POLE BENT 4 FEET OUT OF LINE	INADEQUATE SUPPORT AT COMMUNICATIONS LEVEL
	
At this Location: Pole bent 4 feet out of line, less than 10% lean	**At this Location:** Two guys stabilizing communication level.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes, only when the inspector decides that further assessment is required. • FDA=Pole / Overloaded / Test • Priority "E", 3-12 months depending upon exposure	**Write EC Form:** Yes, only when the inspector decides that further assessment is required. • FDA=Pole / Overloaded / Test • Priority "E", 3-12 months depending upon exposure

OVER STRESSED POLE

At this Location: Pole is twisted, cracked, due to communication.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Overloaded / Replace Pole Test Data Sheet is Required
- Priority "E", 3-12 months depending upon exposure; add in field comments "overloaded by communications."

UNBALANCED LOAD AT TOP

At this Location: Deformed pole with bowed top in line with conductor.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Overloaded / Test Pole Test Data Sheet is Required

Priority "E", 3-12 months depending upon exposure.

5. Soil Excessively Eroded or Washed Away at Base of Pole

General Guidance: If the inspector notices that a large amount of soil was washed or eroded away at the base of a pole, consider writing an EC notification to investigate whether the pole still meets its designed set depth.

Minor Work: No

EC Form: Yes

- FDA = Pole / Overloaded / Test
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 015203, page 2, table 1

Example: Soil eroded at base of pole

6. Pole Steps

General Guidance: Remove any pole steps less than 8 feet 6 inches above the ground or any other accessible surface; this allows for grading, landscaping, etc.

Minor Work: Yes

EC Form: Yes, if cannot be completed as minor work.

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022616 page 2, section 5

7. Mud sill

General Guidance: Repair/replace deteriorated mud sill.

Minor Work: No

Related Documents: 030109

8. Transmission Poles

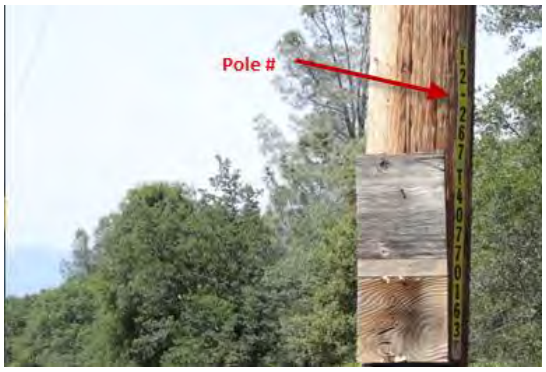
General Guidance: At minimum, when performing GO 165 patrols or inspections, Inspectors should perform a “patrol” of the transmission assets in the area being patrolled or inspected in order to identify any **obvious structural problems or hazards** that need to be addressed by the Transmission Organization. Review clearances to verify no reduced clearance issues, all levels of clearance requirements that could result in contact, fire risk, or public safety.

Examples of the types of issues that could be identified:

- Damaged or broken poles
- Broken or decayed crossarms
- Broken insulators
- Damaged tie wire
- Vegetation issues

If you identify an obvious structural problem or hazard in the field that is NOT an emergency:

- Assign a location # of your map
- *Document the location # on your P&I Daily Log
- Take a photo of the pole # on the pole; example:



- Take a **minimum** of one photo to document the issue at the location
- Refer to the Transmission key contact map to identify the **T-Line contact** for that area
- Contact the appropriate **Transmission Supervisor** (leave a VM if not available)
- In the comments section of your log entry, note the following:
  - The issue identified (i.e. bad pole, broken crossarm, etc.)
  - The transmission pole #
  - The date, name and phone number of the T-Line employee that you contacted
  - The digital photo number(s) associated with the location

When in doubt call your Supervisor or PG&E Lead

Minor Work: No

9. Transmission Pole with Distribution Underbuild

Is there a distribution riser on this pole? If yes, create EC notification to relocate riser.

EC Form: Yes

- FDA=Riser/Pothead / Installed in Error / Relocate
- Priority "E", 3-12 months depending upon exposure

Riser on steel transmission pole

Riser on steel transmission pole

Is there a distribution transformer serving an external customer installed on a steel pole without a common neutral present? If yes, create EC notification to relocate the transformer.

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 068177

Example: Distribution transformer on steel transmission pole without common neutral.

Riser Molding

1. Broken/Missing Riser Ground

General Guidance:

See ‘Ground / Ground Molding’ in this job Aid

Minor Work: None

Related Documents: 027742

2. U-Shape Riser Molding Broken/Damaged or Unsecured

General Guidance – Existing Molding:

Ensure bottom section of ground molding is flush against the pole

IF molding is NOT firmly attached to pole

THEN Perform Minor Work to secure molding to pole by attaching all lags ***OR*** Create EC Notification

Address any gaps identified via minor work or create an EC notification

General Guidance if Installing New Molding or Repairing Existing Molding:

Below 8 feet: Both sides of the molding must be secured to the pole at least every 18 inches

Above 8 feet: Both sides of the molding must be secured to the pole at least every 36 inches

Examples

Cracked riser boot	Broken riser
	

Minor Work: Yes

Related Documents: 021924

SmartMeter/SCADA Equipment/Other Equipment on Poles

1. Broken/Damaged SmartMeter Relay/Access Point/Data Collector Unit or SCADA Equipment

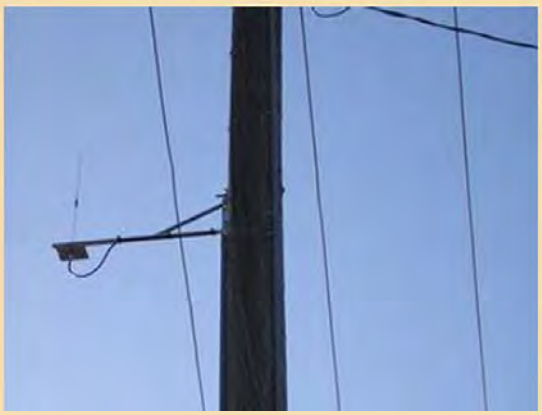
General Guidance: If, through visual inspection, an inspector sees broken or damaged SmartMeter antenna, DCU, or SCADA equipment, create EC notification. Be sure to check the SmartMeter box on the EC Form. If visible, note the operating number and/or serial number of the equipment.

Supervisors will contact SmartMeter Operations to notify them of the issue.

Minor Work: No

Related Documents: 072145, 072150, 068190, SMRT-9000WBT, 054421

EXAMPLES OF SMARTMETER ON POLE



Streetlights

1. Broken or Damaged Streetlight Pole

General Guidance: Test for out of plumb, then create EC notification.

Minor Work: No

Related Documents: TD-2309S, TD-2307M

MISSING STREET LIGHT	LEANING AGGREGATE POLE
	
At this Location: Cone indicates location of missing decorative street light and pole. Exposed wire is de-energized. Include picture of similar street light for replacement.	**At this Location:** Leaning aggregate pole more than 10% out of plumb. Pole is broken at base and not stable. Light still working.
Perform Minor Work: Yes, make safe.	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Streetlight / Missing / Install • Priority "B", 30 days for regular streetlights, add in field comment section if pole is missing. • Priority "E", 6 months for decorative streetlights, add in field comment section – describe if pole is missing.	**Write EC Form:** Yes • FDA=Pole / Broken/Damaged / Replace • Priority "B", 0-3 months depending upon exposure

2. Day Burner

General Guidance: Do not create an EC Notification for a day burner. Call a clerk to contact Restoration Dispatch to get a T-Man to respond. This is to ensure correct accounting for streetlight work (depending on the rate that the customer is one, etc.).

Minor Work: Yes; if you have the materials on your truck

Related Documents: Utility S2309

3. Missing Streetlight

General Guidance: If the inspector notices that a missing streetlight, first, make safe then create EC notification to install a missing streetlight.

Minor Work: No

Related Documents: Utility S2309

Trees

1. Trees within 4 Feet of a Primary Line

General Guidance: If you have any questions about the integrity of tree that could impact electric facilities, (causing damage to our facilities, dead or dying, causing conductor height issue, could fall into line etc.), write a Vegetation Notification to remove dead/dying tree.

Broken Limb on Conductor: Remove the limb as minor work with a hot stick if it is safe to do so.

Vegetation Touching Bare Conductor or Signs of Burning or Arcing: Create an emergency Priority “A” Vegetation Management Tag and call vegetation management for assistance. Wait at the location until relieved by Vegetation Management personnel.

Vegetation Not Touching Bare Conductor and No Signs of Burning or Arcing: Create a Vegetation Management notification.

Minor Work: Yes

Related Documents: None

2. Tree Attachments

General Guidance: If you have any questions about the integrity of the tree, (causing damage to our facilities, dead or dying, causing conductor height issue, etc.), create an EC Notification to install a clearance pole.

Minor Work: No

Related Documents: None

3. Trees Causing Strain or Abrasion to a Secondary Conductor or Service

General Guidance:

If vegetation is:

A. Causing damage to the conductor insulation due to friction (Note: scuffing and polishing is NOT damaged) or

B. Causing strain on the conductor that is adversely affecting other supply facilities.

Note: The inspector should clear the vegetation or move the conductor as minor work if possible. Inspectors should leave the trimmings at the location; use door hanger to notify customer.

If the inspector cannot clear the vegetation or move the conductor:

- For service drops: Create an EC notification
- For secondary conductor spans serving 2 or more customers: Write a Vegetation Management notification with priority based on severity.

Note: Vegetation Management considers secondary as conductor that feeds more than one physical address (per Rule 16); i.e. multiple “service” conductors feeding the **same customer/property are considered service**, not secondary; Inspector will need to **create an EC** in this scenario.

If the inspector sees a hazardous vegetation issue on communication facilities, create a third-party notification.

Minor Work: Yes

Related Documents: None

PHONE TREE CONDITION

At this Location: Tree putting strain on the pole, due to communication line

Perform Minor Work: No

Write Third-Party Notification: Yes

Write EC Form: No

SECONDARY HARD AGAINST TREE

SECONDARY OVERGROWN REDUCING CONDUCTOR CLEARANCES

At this Location: Secondary conductor resting on tree/vegetation

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Tree / Overgrown / Trim
- FDA= Conductor / Clearance / Adjust
- Priority "E", 3-12 months depending upon exposure

Wildlife Protection

1. Existing Migratory Bird Protection Damaged

General Guidance: Evaluate locations where animal mitigation has previously been installed to assess if it is sufficient, or is missing or broken. If not sufficient or needs repair, create EC notification to replace.

Note: If there is a nest at the location, write EC Notification to install animal mitigation if nest is already abandoned.

Example: Bird nest on transformer

Minor Work: No

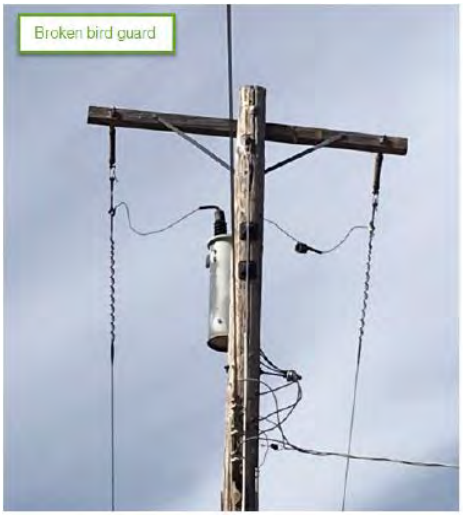
Related Documents: Utility S2321, 061149

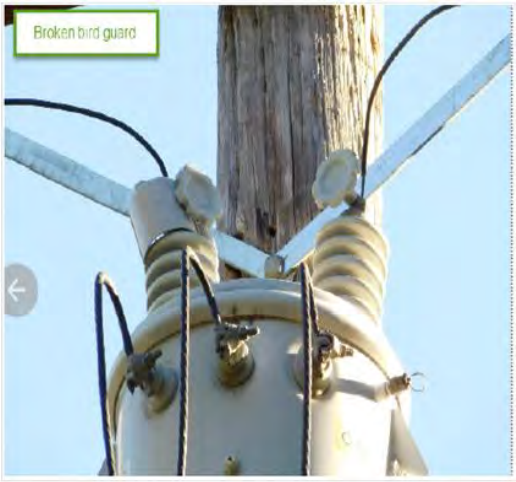
2. Existing Wildlife Protection Damaged

General Guidance: Inspector should create EC notification to repair/replace existing wildlife protection installed in the field (cow guards, etc.)

Note where there are signs of animal activity/nesting/debris. Write EC Notification to install animal mitigation if nest is already abandoned.

Examples: Broken bird guard





Minor Work: No

Related Documents: 061149

Clearance Evaluation Job Aid

TD-2305M-JA12
Publication Date: 3/2013 Rev: 1

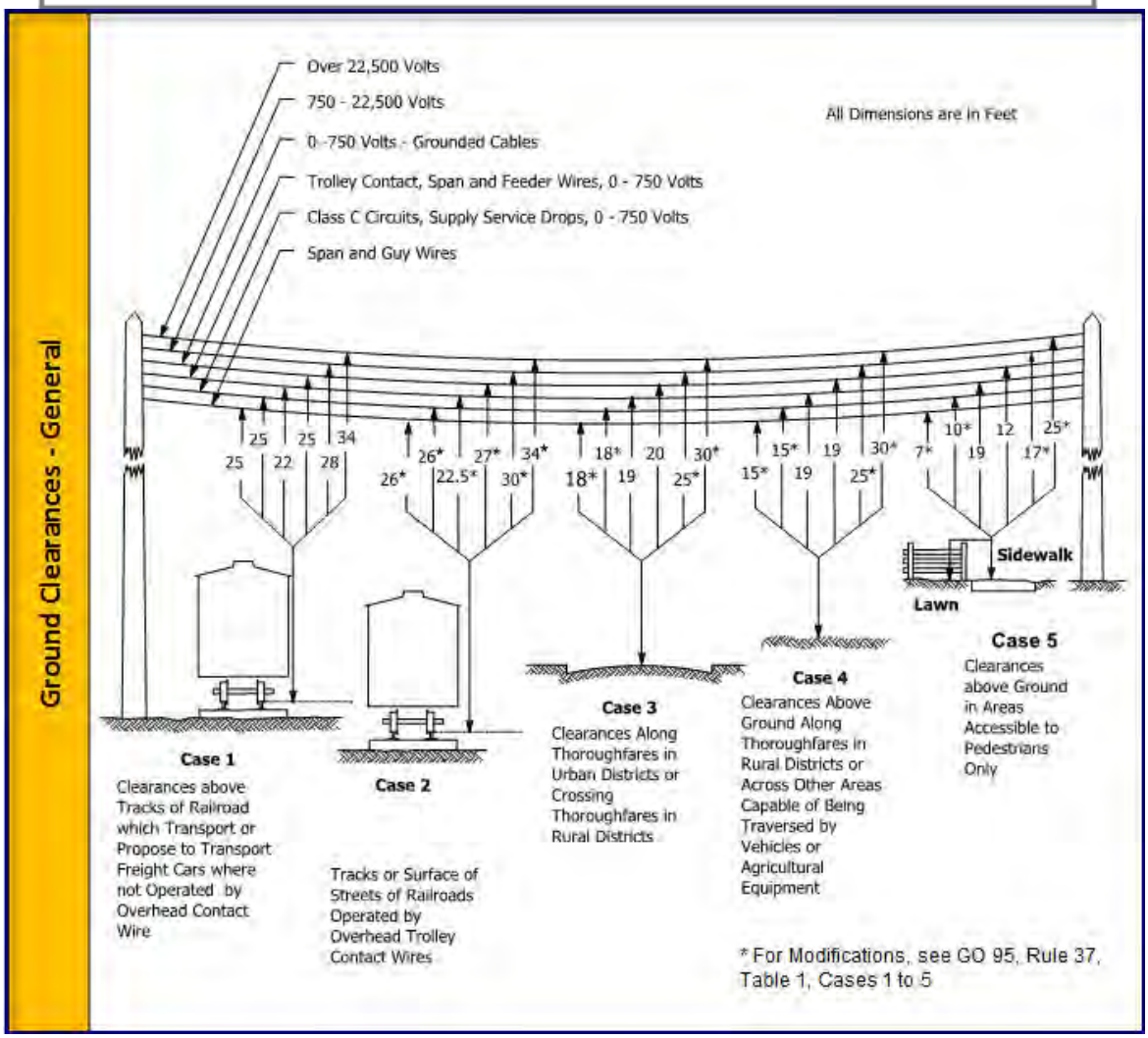
Overhead Clearance Evaluation

Guidance Document References:
TD-2305M – EDPM 2011 Manual
Engineering Document 022158 – Clearance Tables CPUC General Order 95

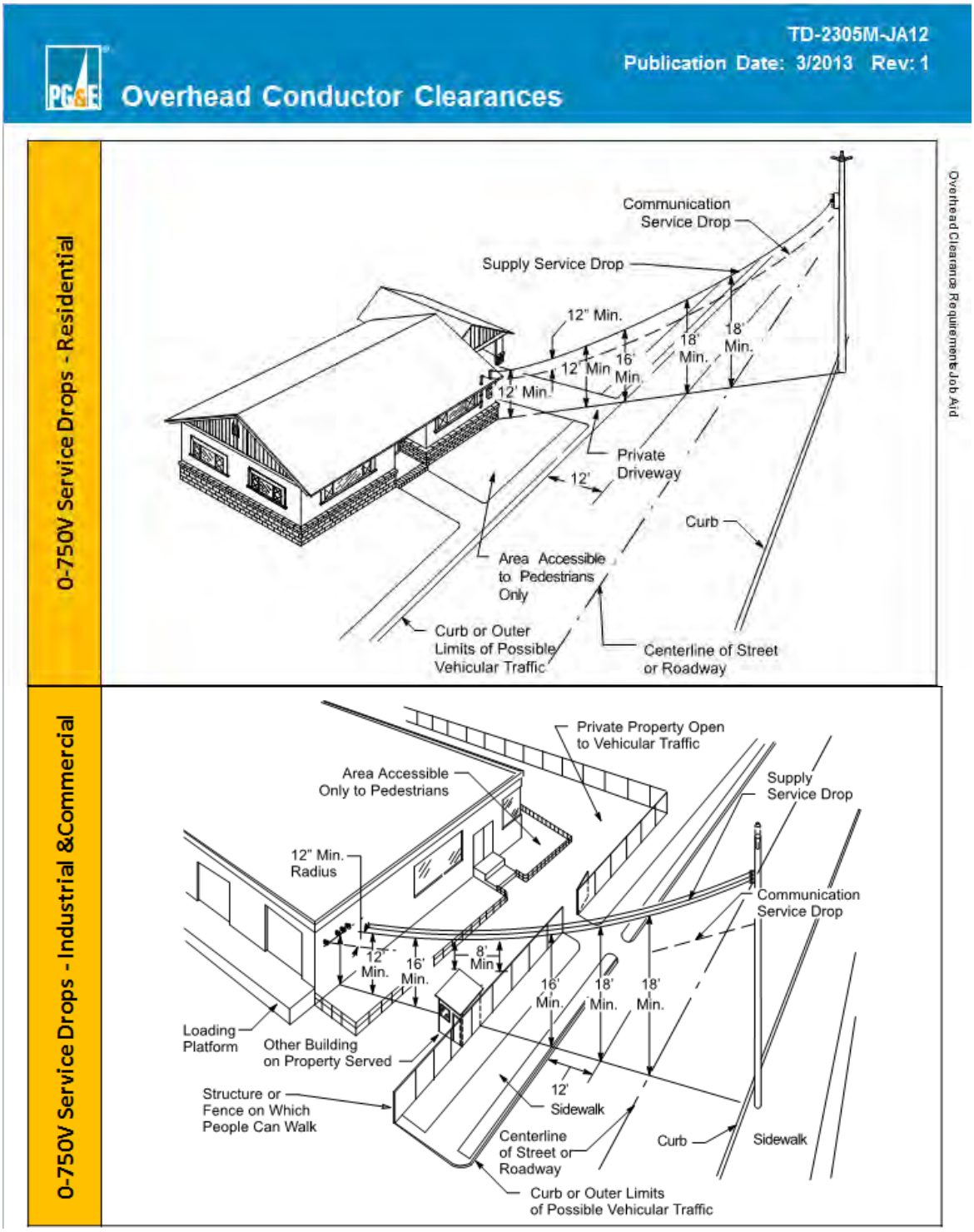
Level of Use:
- ❑ Information
- ✓ Reference
- ❑ Continuous

General Information

This job aid contains reference material to help compliance inspectors evaluate conductor clearance issues they visually identify in the field.



Page 1, Clearance Job Aid



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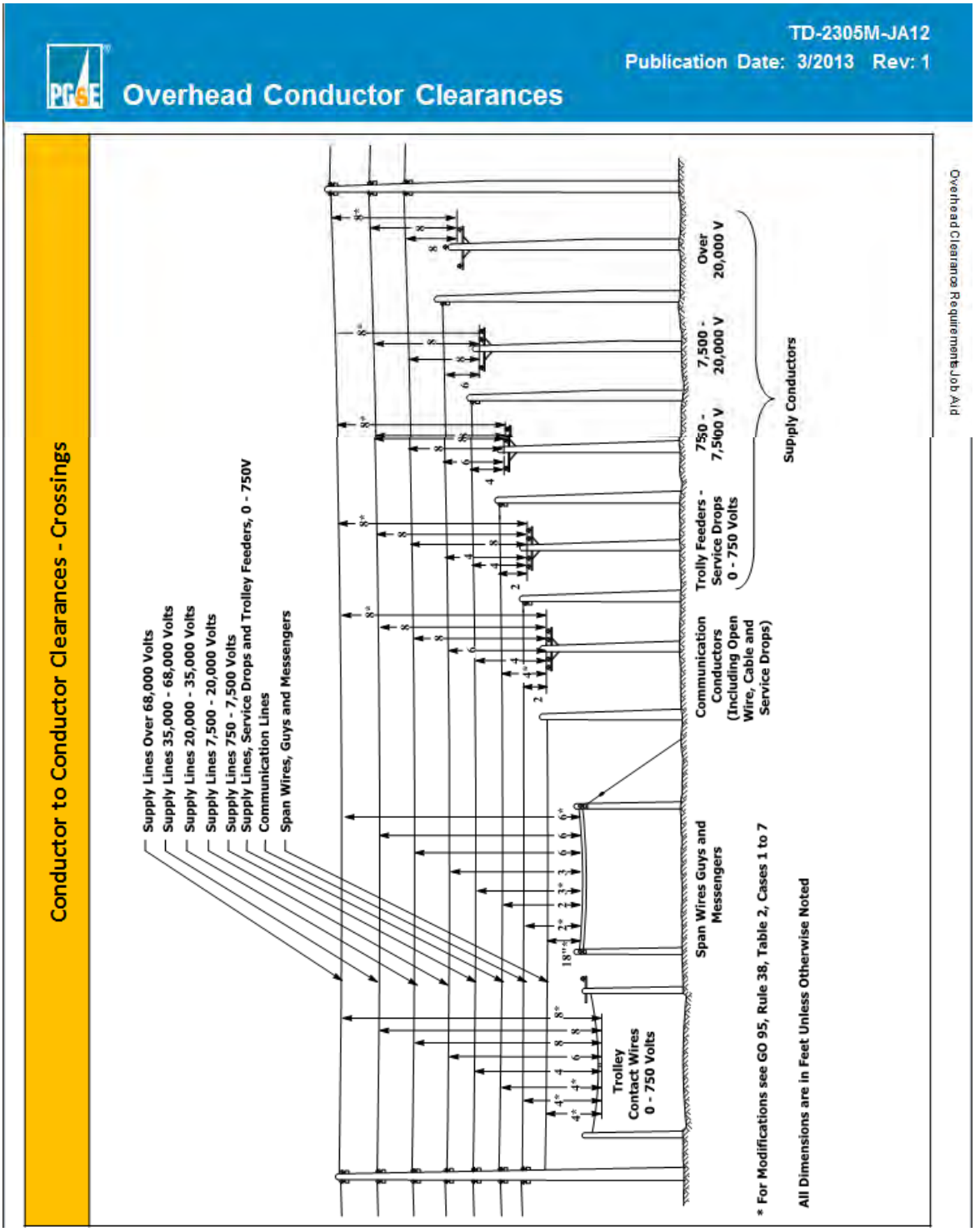
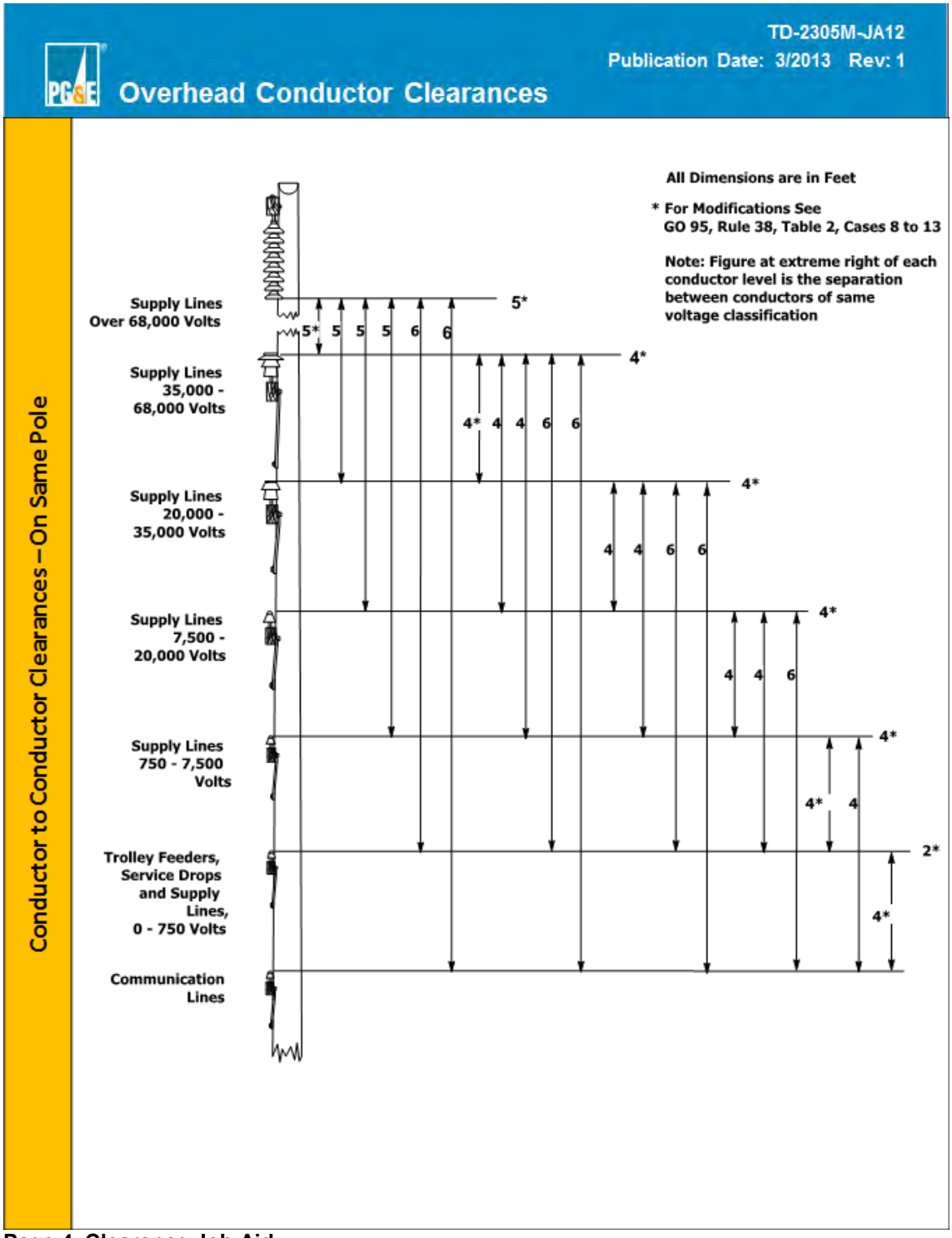


Page 3, Clearance Job Aid



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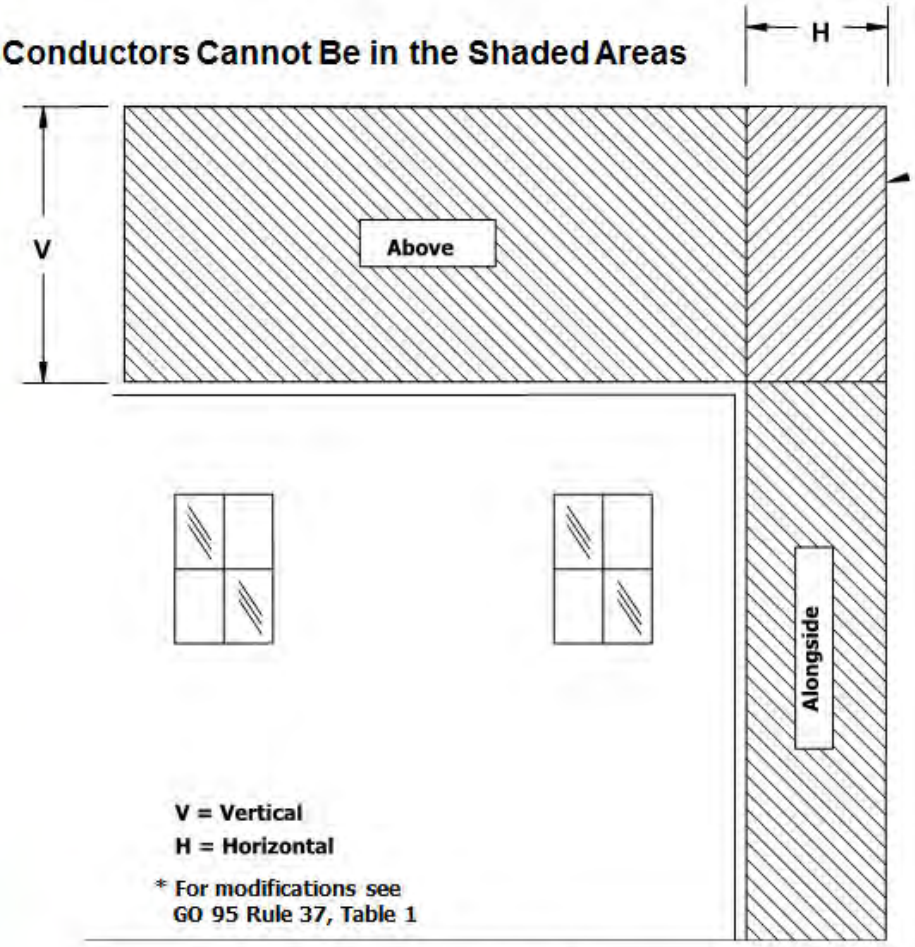
TD-2305M-JA12
Publication Date: 3/2013 Rev: 1

Overhead Conductor Clearances

Conductor to Building Clearances

Conductors Cannot Be in the Shaded Areas



V = Vertical
H = Horizontal

* For modifications see GO 95 Rule 37, Table 1

	Conductor Type					
	Guys	Service Drops (not Attached)	0-750 V Spans	750V-22.5kV	22.5 – 300kV	300-550kV
V (Walkable Surface)	8 ft. *	8 ft. *	8 ft.	12 ft.	12 ft.	20 ft. *
V (Non-Walkable Surfaces: Handrails, Chimneys, Patio Covers, etc.)	2 ft.	8 ft. *	8 ft. *	8 ft.	8 ft.	20 ft.
H		3 ft. *	3 ft. *	6 ft.	6 ft. *	15 ft. *

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TD-2305M-JA12
Publication Date: 3/2013 Rev: 1

Overhead Conductor Clearances

G.O. 95 Table 1 – Vertical Clearances

Case	Nature of Clearance	Wire or Conductor Concerned						
		A Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers	B Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts	C Trolley Contact, Feeder and Span Wires, 0 - 5,000 Volts	D Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8	E Supply Conductors and Supply Cables, 750 - 22,500 Volts	F Supply Conductors and Supply Cables, 22.5 - 300 kV	G Supply Conductors and Supply Cables, 300 - 550 kV
1	Crossing above tracks of railroads which transport or propose to transport freight cars (maximum height 15 feet, 6 inches) where not operated by overhead contact wires. (a) (b)(c)(d)	25 Feet	25 Feet	22.5 Feet	25 Feet	28 Feet	34 Feet	34 Feet (kk)
2	Crossing or paralleling above tracks of railroads operated by overhead trolleys. (b) (c) (d)	26 Feet (e)	26 Feet (e) (f) (g)	22.5 Feet (h) (i) (eee)	20 Feet (ii)	25 Feet (o) (ii)	30 Feet (o) (ii)	30 Feet (o) (ii) (kk)
3	Crossing or along thoroughfares in urban districts or crossing thoroughfares in rural districts. (c) (d)	18 Feet (j) (k) (ii)	18 Feet (j) (l) (m) (ii) (aa)	19 Feet (hh) (eee)	20 Feet (ii)	25 Feet (o) (ii)	30 Feet (o) (ii)	30 Feet (o) (ii) (kk)
4	Above ground along thoroughfares in rural districts or across other areas capable of being traversed by vehicles or agricultural equipment.	15 Feet (k)	15 Feet (m) (n) (p)	19 Feet (eee)	19 Feet	25 Feet (p)	30 Feet (p) (p)	30 Feet (o) (kk)
5	Above ground in areas accessible to pedestrians only	8 Feet	10 Feet (m) (q)	19 Feet (eee)	12 Feet	17 Feet	25 Feet (o)	25 Feet (o) (kk)
6	Vertical clearance above walkable surfaces on buildings, (except generating plants or substations) bridges or other structures which do not ordinarily support conductors, whether attached or unattached.	8 Feet (r)	8 Feet (r)	8 Feet	8 Feet	12 Feet	12 Feet	20 Feet (ll)
6a	Vertical clearance above non-walkable surfaces on buildings, (except generating plants or substations) bridges or other structures, which do not ordinarily support conductors, whether attached or unattached	2 Feet	8 Feet (yy)	8 Feet	8 Feet (zz)	8 Feet	8 Feet	20 Feet
7	Horizontal clearance of conductor at rest from buildings (except generating plants and substations), bridges or other structures (upon which men may work) where such conductor is not attached thereto (s) (t)	-	3 Feet (u)	3 Feet	3 Feet (uu) (vv)	6 Feet (v)	6 Feet (v)	15 Feet (v)

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TD-2305M-JA12
Publication Date: 3/2013 Rev: 1

Overhead Conductor Clearances

G.O. 95 Table 1 – Vertical Clearances (cont'd)

Case	Nature of Clearance	Wire or Conductor Concerned							
		A	B	C	D	E	F	G	
		Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers	Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts	Trolley Contact, Feeder and Span Wires, 0 - 5,000 Volts	Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8	Supply Conductors and Supply Cables, 750 - 22,500 Volts	Supply Conductors and Supply Cables, 22.5 - 300 kV	Supply Conductors and Supply Cables, 300 - 550 kV	
8	Distance of conductor from center line of pole, whether attached or unattached (w) (x) (y)	-	15 inches (s) (aa)	15 inches (aa) (bb) (cc)	15 inches (o) (aa)(dd)	15 or 18 inches(o) (dd) (ee) (ii)	18 inches (dd)(ee)	Not Applicable	
9	Distance of conductor from center line of pole, whether attached or unattached (w) (x) (y)	-	3 inches (aa)(ff)	3 inches (aa)(cc) (gg)	3 inches (aa) (dd)(gg)	3 inches (dd)(gg)(ii)	1/4 Pin Spacing Shown in Table 2 Case 15 (dd)	1/2 Pin Spacing Shown in Table 2 Case 15 (dd)	
10	Radial centerline clearance of conductor or cable (unattached) from non--dirtbable street lighting or traffic signal poles or standards, including mastarms, brackets and lighting fixtures, and from antennas that are not part of the overhead line system.	-	1 Foot (u) (rr) (ss)	15 inches (bb)(cc)	3 Feet (oo)	6 Feet (pp)	10 Feet (qq)	10 Feet (tt)	
11	Water areas not suitable for sailboating (tt) (uu) (ww) (xx)	15 Feet	15 Feet	-	15 Feet	17 Feet	25 Feet	25 Feet (kk)	
12	Water areas suitable for sailboating, surface area of:(tt) (vv) (ww) (xx)			-					
	(A) Less than 20 acres	18 Feet	18 Feet	-	18 Feet	20 Feet	27 Feet	27 Feet (kk)	
	(B) 20 to 200 acres	26 Feet	26 Feet	-	26 Feet	28 Feet	35 Feet	35 Feet (kk)	
	(C) Over 200 to 2,000 acres	32 Feet	32 Feet	-	32 Feet	34 Feet	41 Feet	41 Feet (kk)	
	(D) Over 2,000 acres	38 Feet	38 Feet	-	38 Feet	40 Feet	47 Feet	47 Feet (kk)	
13	Radial clearance of bare line conductors from tree branches or foliage (aaa) (ddd)	-	-	18 inches (bbb)	-	18 inches (bbb)	1/4 pin spacing shown in table 2, Case 15(bbb) (ccc)	1/2 pin spacing shown in table 2, Case 15	

Note: A letter next to a measurement indicates there may be an exception. Refer to G.O. 95 to research.

Page 7, Clearance Job Aid

TD-2305M-JA12
Publication Date: 3/2013 Rev: 1

Overhead Conductor Clearances

G.O. 95 Table 2 – Conductor to Conductor Clearances

Case No.	Nature of Clearance and Class and Voltage of Wire, Cable or Conductor Concerned	Other Wire, Cable or Conductor Concerned				Supply Conductors (Including Supply Cables)						
		A Span Wires, Guys and Messengers	B Trolley Contact Conductors 0 – 750 Volts	C Comm. Conductors (Including Open Wire, Cables and Service Drops)	D 0 – 750 Volts (Including Service Drops) and Trolley Feeders (a)	E 750 - 7,500 Volts	F 7,500 - 20,000 Volts	G 20,000 - 35,000 Volts	H 35,000 - 75,000 Volts	I 75,000 - 150,000 Volts	J 150,000 - 300,000 Volts	K (kk) 300,000 - 550,000 Volts
	Clearance between wires, cables and conductors not supported on the same poles, vertically at crossings in spans and radially where colinear or approaching crossings											
1	Span wires, guys and messengers (b)	18 (c)	48 (d , e)	24 (e)	24 (e)	36(f)	36	72	72	78	78 (gg)	138(hh)
2	Trolley contact conductors, 0 - 750 volts	48 (d , e)	-	48 (d)	48 (d , h)	48	72	96	96	96	96 (gg)	156(hh)
3	Communication conductors	24 (e)	48 (d)	24	48 (i)	48(dd)	72	96	96	96	96 (gg)	156 (hh)
4	Supply conductors, service drops and trolley feeders, 0 - 750 volts (qq)	24 (e)	48 (d , h)	48 (i)	24	48	48	96(oo)	96	96	96 (gg)	156 (hh)
5	Supply conductors, 750 - 7,500 volts (qq)	36 (f)	48	48 (dd)	48	48(h)	72	96(oo)	96	96	96 (gg)	156(hh)
6	Supply conductors, 7,500 - 20,000 volts (qq)	36	72	72	48	72	72	96(oo)	96	96	96 (gg)	156 (hh)
7	Supply conductors, more than 20,000 volts (qq)	72 (g)	96 (g)	96 (g)	96 (g , oo)	96 (g , oo)	96 (g , oo)	96 (g, oo)	96 (g)	96	96 (gg)	156 (hh)
	Vertical separation between conductors and/or cables, on separate crossarms or other supports at different levels (excepting on related line and buck arms) on the same pole and in adjoining midspans											
8	Communication Conductors and Service Drops	-	-	12 (j, rr)	48 (k , l , m , n , pp)	48(k)	72 (m, n)	72(m)	72	78	87 (gg)	147 (hh)
9	Supply Conductors Service Drops and Trolley Feeders, 0 - 750 Volts	-	-	48 (k , l , m , n , pp)	24 (h , k , m , o)	48(k, m ,p)	48 (k, m , p)	72 (m, nn)	72	78	87 (gg)	147 (hh)
10	Supply conductors, 750 – 7,500 volts	-	-	48 (k)	48 (k , m , p)	48 (m, o , r, ee)	48 (m, q)	48 (m , q)	48 (q)	60 (ff)	90 (gg)	150 (hh)

Note: A letter next to a measurement indicates there may be an exception. Refer to G.O. 95 to research.

Page 8, Clearance Job Aid

TD-2305M-JA12
Publication Date: 3/2013 Rev: 1

Overhead Conductor Clearances

G.O. 95 Table 2 – Conductor to Conductor Clearances (Cont'd)

Case No.	Nature of Clearance and Class and Voltage of Wire, Cable or Conductor Concerned	Other Wire, Cable or Conductor Concerned				Supply Conductors (Including Supply Cables)					
		A Span Wires, Guys and Messengers	B Trolley Contact Conductors 0 – 750 Volts	C Comm. Conductors (Including Open Wire, Cables and Service Drops)	D 0 – 750 Volts (Including Service Drops) and Trolley Feeders (a)	E 750 - 7,500 Volts	F 7,500 - 20,000 Volts	G 20,000 - 35,000 Volts	H 35,000 - 75,000 Volts	I 75,000 - 150,000 Volts	J 150,000 - 300,000 Volts	K (kk) 300,000 - 550,000 Volts
	Vertical clearance between conductors on related line arms and buck arms											
14	Line arms above or below related buck arms (s , t)	-	-	6	12 (u)	18 (u)	18 (u)	24	48	60 (ff)	90 (gg)	150 (hh)
	Horizontal separation of conductors on same crossarm											
15	Pin spacing of longitudinal conductors vertical conductors and service drops (v , w)	-	-	3 (x)	11½ (h , x)	11½(x)	17½(x)	24 (x)	48	60 (ff)	90 (gg)	150 (hh)
	Radial separation of conductors on same crossarm, pole or structure—incidental pole wiring											
16	Conductors, taps or lead wires of different circuits (v , y , s)	-	-	3 (x)	11½ (h , x)	11½(x)	17½(x)	24 (x)	48	60 (ff)	90 (gg)	150(hh)
16a	Uncovered, grounded, non-dielectric fiber optic cables on metallic structures, in transition (ss)	-	15	15	15	18	18	18	18	24	36	120
17	Conductors, taps or lead wires of the same circuit (v , s , aa)	-	-	3	3	6	6	12	24	60 (ff)	90 (gg)	150 (hh)
	Radial separation between guys and conductors											
18	Guys passing conductors supported on other poles, or guys approximately parallel to conductors supported on the same poles	-	-	3	11½	11½	17½	24	36	36 (ff)	78 (gg)	138(hh)

Note: A letter next to a measurement indicates there may be an exception. Refer to G.O. 95 to research.

Page 9, Clearance Job Aid

Crossarm Evaluation Job Aid

General Information:

Environmental conditions throughout the service territory expose support structures to a variety of conditions that can cause or accelerate deterioration of wood components. This section provides guidelines for assessing wood crossarms. Engineering requirements are identified in the Electric Wood Crossarm Assessment Utility guideline TD-2301P-01-JA01.

Guidance: During detailed inspections, examine wood crossarms and assess their condition: Is primary or secondary crossarm damaged, broken, burnt, decayed, rotten, loose, missing hardware or showing signs of bent bolts or brackets, gun shots, insect damage or woodpecker damage, or splitting that compromises the integrity of the crossarm? If yes, create EC notification to replace crossarm; always consider replacing wood crossarms with composite.

Additional Guidance:

Identify conditions such as crossarm configuration, number of phases, location (eg, urban, rural, forest, inaccessible, traffic, etc.), loading (eg, double/triple arms, dead ends, alley arms, proximity to trees, angles/conductor size, heavy loading, damaged wood pins, etc) and the likelihood of these conditions contributing to further deterioration or failure of the crossarm or attached components.

Often cross arms experience significant decay on the top of the arm without exhibiting clues that are visible from the ground[1]. For this reason, arms that exhibit two or more of the following characteristics are more likely to decay on the top and should be considered for a more detailed aerial/climbing inspection:

- Arms that appear to be greater then 50 years old[2](based on age of pole, presence of wood pins, brown/glass insulators, or other indicators).
- Arms mounted on poles where the pole top is showing signs of decay or crowning.
- Severely weathered arms or arms rounded or apparently decayed ends.
- Damaged wood pins or elongated pinholes.
- Active moss/vegetation growth.
- Presence of woodpecker holes (greater than one inch diameter) on the arm
- Arms in areas of higher rainfall/moisture and reduced sunlight such as those in many coast and mountain areas.
- Wood pins on arms located in agricultural areas or orchards contaminated by aerial spraying and dirt, which contributes to tracking and arm or pin deterioration.

[1] Examples of top and bottom views of crossarm conditions are shown in table 2

[2] Many, but not all, arms prior to 1955 were untreated.

Crossarm Evaluation Job aid – photo examples

Table 2 – Crossarm Grading Aid

BOTTOM VIEW	TOP VIEW
Evidence of decay near hole 	Evidence of Significant Decay 
Enlarged hole, minor moss/discoloration/splits near pin hole 	Enlarged hole, minor moss/discoloration/splits near pin hole 
Evidence of tracking/burning near brace and pin holes 	Evidence of burning near brace and pin holes 

BROKEN CROSSARM

Crossarm is completely broken/fractured

Emergency - make safe immediately

SPLIT CROSSARM

Primary Squatter (wood pin). Crossarm split within 2" of pinhole.

Replace in the next 3 months.

TOP OF CROSSARM DECAYED

Evidence of pole top decay and face of crossarm decay; may need additional assessment of crossarm.

Replace 3-12 months

DETERIORATED CROSSARM

Significant deterioration, both arms are broken/split. Evidence of previous temporary repair.

Replace 3-12 months

BROKEN SECONDARY CROSSARM

Secondary arm broken; split/fractured within 2" of bolt holes in heavy tree area.

Replace 3-12 months

Pacific Gas and Electric Company®

Utility Bulletin: TD-9001B-009
Publication Date: 11/15/2019 Rev: 2

Fire Rebuild Design Guidance for System Hardening

SUMMARY

This document describes the standard Overhead design requirements for all **new construction and reconstruction work in Tier 2 and Tier 3 Fire Areas, and Zone 1 (tree mortality) areas**. In many cases, the requirements listed are current standard requirements or special application requirements used in new construction.

The requirements outlined in this bulletin are not intended or required for maintenance and emergency work (unless the emergency is in follow-up to a fire event, requiring system rebuild).

The information in this bulletin is available for use immediately but will be **effective on 1/15/20**. Take reasonable steps to implement requirements as soon as practical. These requirements do not apply retroactively to rebuild work completed to date. In addition, some requirements may change in the future as we gather more information and receive feedback.

This bulletin supersedes bulletin TD-9001B-009 Rev 1.

Level of Use: Informational Use

AFFECTED DOCUMENT

See Reference Documents in Overhead and Underground tables below.

TARGET AUDIENCE

The target audience is Service Planning, Estimating, Capacity & Reliability Planning Engineering, and Electric M&C personnel and contractors associated with the fire rebuild areas.

WHAT YOU NEED TO KNOW

1. Overhead Design and Construction Requirements:

Requirement	Reference Document(s)	Intent
1.1. The following are the PG&E standard conductor sizes allowed in Tier 2 and Tier 3 areas: • 1/0 ACSR Tree wire[1] • 397 All Al Tree wire[1]	059690 059626	Current standard for new construction, reduces risk of wires down due to mechanical

[1] Refer to bulletins TD-059626B-005 for information on this conductor, including material code, ampacity, sag curve, and construction requirements

Fire Rebuild Design Guidance for System Hardening

Requirement	Reference Document(s)	Intent
• 715 All Al Tree wire[1] For corrosion/coastal areas use: • #2 CU Tree wire • 397 All Al Tree wire • 715 All Al Tree wire	076251 TD-059626B-005	failure/deterioration of wire which reduces risk of wildfire ignition caused by wires down faults
1.2. The required setting depth shall be adjusted using the table listing set depths by pole length provided in Attachment 2.	015203	The “Rule of Thumb” for High Fire Threat Design (HFTD) T2-T3 Setting Depth is: • **10%+3 ft** for all poles up to and including 65 feet • **10%+2.5 ft** for all poles = 70 feet • **10%+2 ft** for all poles longer than 70 feet
1.3. A pole loading calculation (PLC) must be performed using either PLS CADD or O-Calc Pro® software tools on each pole prior to construction. This applies to all PLCs, including those submitted by third parties. New direction regarding safety factors will be released with an update to O-Calc.		

Fire Rebuild Design Guidance for System Hardening

Requirement	Reference Document(s)	Intent
1.4. The PLC must be evaluated with a special load case designed for HFTD Tiers 2 & 3; 1.4.1. GO 95 minimum requirements for wind, ice/snow, and temperature are covered 1.4.2. "HFTD T2-T3 Peak Wind" load case: • Wind Speed Load Case is pre-selected from EDGIS wind gust speed layer Ensure the appropriate load case is selected where Construction Grade (A vs. B) is changing or when switching between existing and new poles. **The extreme wind loading requirement is not intended or required for emergency work, work only involving a single location or temporary construction in the affected fire areas. Local personnel may make exceptions to this based on local conditions, knowledge and history for site specific scenarios. Use the Variance Process for these exception requests.**	TD-9001B-010 TD-2951P-01	The intent of this requirement is to ensure poles are strong enough to withstand higher wind speeds. Tailored load cases (HFTD T2-T3 Peak Wind) will be deployed along with this bulletin that incorporate known wind speeds from local studies and fire safe design criteria. HFTD T2-T3 uses recent wind study data that measured wind gusts at 10 meters above ground level; these are the wind speeds shown in the Environment window in EDGIS WebViewer. Refer to the O-Calc job aid for instructions on how to evaluate HFTD T2-T3 peak wind in O-Calc Pro®.
1.5. Do not increase pole class by 1 class per TD-015203B-002, "High Wind Area Criteria for Distribution Wood Poles".	TD-015203B-002	The requirement to increase class size is no longer required, as the appropriate sizing is now accounted for with the load cases in 1.4.
1.6. Consider the use of fire rated composite poles in Tier 2 and Tier 3 areas, areas with extreme wind conditions and areas with woodpecker issues. These poles can also be used to meet other construction needs, including maintenance	TD-066202-B001	

Fire Rebuild Design Guidance for System Hardening

Requirement	Reference Document(s)	Intent
1.7. Build to standard Triangular Crossarm construction (Using PG&E approved bonded Composite Crossarm). Pole-top extensions are not allowed if it requires the current framing to be changed from triangular to flat.	066196	Raptor construction is not necessary with tree wire.
1.8. All insulators, including post and pin types, that support span wires and slack spans (excluding jumper supports) must have angle washers installed at the top and bottom of the composite arm. This construction applies to tangent, angle and slack span construction for wind loading reinforcement purposes.	068180 will be revised to reflect this requirement.	Field personnel must ensure changes are executed in the field.
1.9. Trees are not to be used as a means of attaching primary, secondary, or services. Trees are also not an approved means for anchoring or guying of any poles.	TD-2999B-044	
1.10. In heavily wooded areas, never use trees for guy support. Consider the increased vegetation clearance planned in HFTD Tiers 2 & 3 and determine if the newly available lead length is enough to support the pole.		

Fire Rebuild Design Guidance for System Hardening

Requirement	Reference Document(s)	Intent
1.11. Due to the wind speed, new un-guyed (e.g. tangent) poles may require larger class sizes than historically designed. Storm guys may be used as an option to offset the need for a larger pole class. Consider changing the route, using shorter span lengths, or increase the pole class and set depth as needed until the pole loading model shows a passing safety factor. The use of storm guys will require consultation with the Land Department to determine and/or obtain land rights (easements).		
1.12. Ensure clearances are met with the greater sags of tree wire. Sags for tree wire can be much greater than bare wire and set depths are deeper leaving less room for clearances.		Example: Bare 2 ACSR in heavy loading has a 10’ sag on a 400’ span. 1/0 ACSR TW has a 15’ sag for the same span. For a 45’ pole set 7.5’ deep the clearance for the 1/0 ACSR TW is only 22.5’
1.13. The prior 200-foot span requirement is now a recommendation.		Try to limit span lengths to 200’ or less when possible due to increased sags.
1.14. No new in-line splices to be installed. (This requirement does not apply to repairs as part of repair, restoration and emergency activities. However, all splices must be covered.)	TD-022487B-003	Current standard for new construction, reduces risk of wires down due to splice failure which reduces risk of wildfire ignition caused by wires down faults
1.15. Replace all open-wire secondary with ACSR aerial cable or AWAC aerial cable.	059690	Current standard for new construction improves reliability and reduces risk of wires down due to tree contact. This reduces risk of wildfire ignition caused by wires down faults.
1.16. Only transformers with FR3 insulating fluid are allowed in Tier 2 and Tier 3 fire areas		FR3 fluid standards were implemented in 2014 and latest DOE high efficiency standards were implemented in 2016.

Fire Rebuild Design Guidance for System Hardening

Requirement	Reference Document(s)	Intent
1.17. Ensure that all transformer locations are fully bird/animal guarded and include insulated jumpers	061149	Reduces risk of wildfire ignition caused by bird/animal contact with equipment
1.18. Ensure that all risers and equipment locations are fully bird/animal guarded and include insulated jumpers	061149	Reduces risk of wildfire ignition caused by bird/animal contact with equipment
1.19. Ensure that any Regulator installations are Closed-Delta with SCADA.	TD-015239B-003	Current standard for new construction, improves reliability by reducing restoration time
1.20. Install Cal Fire Exempt surge arrestors per 031822 (Check with Planning Engineer).	031822	Current standard for high fire areas, reduces risk of wildfire ignition caused by equipment operation
1.21. Install Cal Fire Exempt equipment only – no new, non-exempt equipment shall be installed; install ELF or Fault Tamer fuses for transformer protection and E-power fuses for lateral and riser protection (see Fuse decision tree). Install E fuses when fusing is required in fire areas. If coordination is not possible, installing an ELF fuse[2] at the discretion of the responsible distribution engineer is acceptable.	015225	Current standard for high fire areas, reduces risk of wildfire ignition caused by equipment operation

Fire Rebuild Design Guidance for System Hardening

Requirement	Reference Document(s)	Intent
1.22. Use PG&E approved Composite Tie Wires or Covered Tie Material Code 290299, use pressed connectors or Fired Wedge connectors. All skinned conductors (e.g. Dead ends, T Connections) must be covered with approved raptor covers or taped up (medium voltage fusion tape material code M390190). Do not make connections under conductor covers. Piercing hot line connectors are not allowed to be used.	015195 021349 028853	
Three-phase switching devices as required by the local planning engineer: 1.23. Use automated line equipment (i.e. switches, regulators, etc.).		
1.24. Add SCADA to the existing switching device or install new SCADA MSO switch for isolating from one tier to another (i.e. Tier 1 from Tier 2, Tier 2 from Tier 3, Tier 1 from Tier 3). If required for system protection, use a line recloser.		
1.25. Phase Balancing: stagger transformer and single-phase lateral tap line connections to balance phase loading. On 3-phase line sections DO NOT reconnect transformers solely to the two outside phases.		

[1] Refer to bulletin TD-059626B-005 for information on this conductor, including material code, ampacity, sag curve, and construction requirements

[2]A current limiting fuse may not coordinate with downstream protective devices.

2. How and When to Apply the New Requirements for Reconstruction:

2.1. All designs and estimates not started prior to 9/1/19 must comply with these requirements. This will include jobs which may require revisions taking place after the 9/1/19 date.

2.2. For reconstruction jobs involving 4 spans or more, all assets must be constructed to comply with the requirements in this bulletin.

2.3. When replacing a pole to the new standard where there is an existing transformer on the pole, also replace the transformer to the new standard. (Per note 1.16, only use transformers with FR3 insulating fluid.)

2.4. All services must be insulated, and service poles must be sized according to GO95 standards. (Per note 1.14, replace all open wire secondary when adjacent to a transformer.)

2.5. The requirements outlined in this bulletin are not intended or required for maintenance and emergency work. For emergency work, work within company policies to restore service safely, quickly.

2.6. The requirements outlined in this bulletin are not intended or required for Temporary construction, including interim construction work in Tier 2 and Tier 3 areas to support clean up and reconstruction of the fire affected areas where ultimately the permanent system will be rebuilt as underground system within the next 24 months.

2.7. If an existing slack span is being reconductored to the new covered tree wire, refer to TD-059626B-005 Table 8 for the maximum span length and stringing sag limits. When an existing span exceeds Table 8 and there is no room to guy for full tension or add poles to meet the Table 8 span length requirements, longer span lengths are permitted under reduced tension. If there are no clearance issues (i.e. tree, secondary and communication), a slightly larger sag may be permitted.

2.8. Reduced tension should only be called for when all other options have been exhausted. Reduced tension will require changing the required sag using the “sag to tension” feature in O-Calc. to calculate pole loading without guying. Basically, acting as a self-supported pole. For reduced tension the following is required: Frame with dead-ends instead of slack span preforms, specify the required reduced tension stringing sag derived from O-Calc on the construction drawing and document O-Calc as to why reduced tension is being used. If there are no clearance issues (i.e. tree, secondary and communication), a slightly larger sag may be permitted.

2.9. For calculating minimum requirements for customer cost, these are the new construction standards in the applicable areas and should be treated similar to any other application of our construction standards.

2.10. Coordinate with Joint Utilities team as needed.

Document Approver

Rudy Movafagh, Director, Standards and Work Methods

DOCUMENT CONTACT

[redacted], Supervisor, Electric Distribution Standards

[redacted], Principal Electric Process Engineer, Engineering Center of Excellence

[redacted], Manager, Engineering Center of Excellence

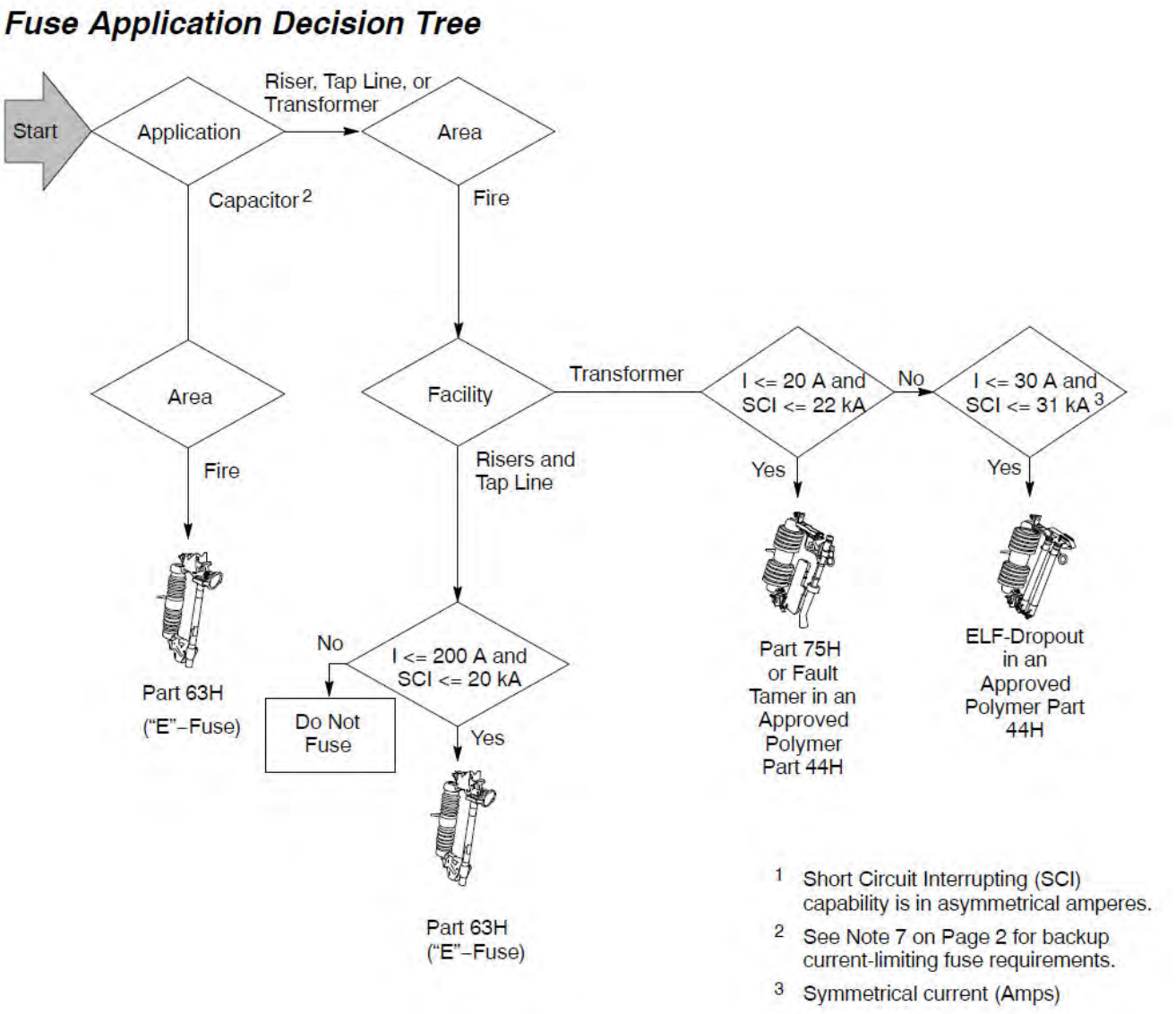
INCLUSION PLAN

Affected documents will be updated to include the design criteria in this bulletin.

Fire Rebuild Design Guidance for System Hardening

ATTACHMENT 1: Fuse Application Decision Tree

The following should be used in determining the appropriate fuse to be used in a Fire Area:



Note: Install Polymer Part 44H with ELF dropout door in the event coordinating with the appropriate E fuse is not possible

Fire Rebuild Design Guidance for System Hardening

ATTACHMENT 2: Setting Depths

Note: For poles set in rock use GO 95 minimum set depths. For poles set in rock, use GO 95 values as a minimum since the overturn strength of the soil (rock) will be sufficient. (See below Table 6 – GO 95, Rule 49.1)

Pole Setting Depths - Pole Strength vs. Overturn		
Length	Rule of Thumb	
	10% + 2	10% + 3
25		5.5
30		6
35		6.5
40		7
45		7.5
50		8
55		8.5
60		9
65		9.5
70	9.5*	
75	9.5	
80	10	
85	10.5	
90	11	
95	11.5	
100	12	
105	12.5	
110	13	
115	13.5	
120	14	
125	14.5	

Table 6 – GO 95, Rule 49.1 Minimum Pole Setting Depths	
Total length of pole (feet)	Depth in Rock (feet)
20	3
25	3
30	3
35	3 ½
40	3 ½
45	4
50	4
55	4 ½
60	4 ½
65	5
70	5
75	5 ½
80	6

*Note: 70-foot pole “Rule of Thumb” value is 10%+2.5 to maintain consistency of the overall table

Prepared by: [redacted]

CONDUCTOR SPLICES FOR OVERHEAD CONDUCTORS 022487

Asset Type: Electric Distribution and Transmission **Function:** Design and Construction

Issued by: [redacted] **Date:** 3/25/2022

Rev. #12: This document replaces PG& [redacted] Rev. #11. For a description of the changes, see Page 24.

Purpose and Scope

This document specifies materials for conductor splices on overhead conductors.

General Information

1. Generally connections on conductors, conductor splices or sleeves of any type must not be installed in Grade A crossing spans involving a railroad or crossing over major thoroughfares, freeway, expressway, or "controlled access highway." (Freeway, expressway, or "controlled access highway" are defined in the Caltrans Highway Design Manual). The CPUC, by its Resolution Number E–1011, permits splices on Grade A crossing spans involving supply and communication lines, providing mutual consent of all parties involved is obtained. Even when splices are permitted, they should be avoided whenever practical. The following companies and PG&E have executed mutual consent agreements:

   A. AT&T
   B. San Joaquin Telephone Company
   C. Verizon
   D. Western California Telephone Company
   E. Volcano Telephone Company
   F. Evans Telephone Company

2. Splices are not allowed in crossings over communication lines not attached to the same pole(s).
3. Splicing of Grey N–SD service drops and Grey Secondary Aerial cable is prohibited. Replace the service and secondary Aerial cable, do not repair.
4. Current carrying automatic splices for all types of transmission, distribution primary and secondary conductors are not allowed.
   A. Use compression splices instead of automatics splices.
   B. Full tension copper reducing automatics splices are no longer allowed. Use full tension copper reducer compression splices as substitutes.
5. Non–carrying or very low–carrying current automatic splices do not have the same reliability issue found with current carrying automatic splices. Therefore, they are continued to be allowed for the following:
   A. Dead–ends
   B. Guying, for both splices and automatic guy strand dead–ends
   C. AWAC splices and automatic dead–ends
6. To minimize the effects of possible conductor vibration, splices or sleeves must not be installed near conductor supports. The minimum distance from conductor support to splice or sleeve is as follows:

   A. New work/Reconductor

	Minimum Distance from Splice to Conductor Support
Distribution	Not Allowed
Transmission	50 feet

Conductor Splices for Overhead Conductors

General Information *(continue)*

B. Maintenance work

Maintain distances specified for new work where feasible. If these distances cannot be maintained, the following minimum distances shall be used providing the splice does not interfere with armor rod, tap guard, or vibration damper. Placement of vibration damper must follow Document 015073. No more than two spices are allowed per phase per span on all distribution maintenance work. Minimum distance between splices must be 50', measuring distance from the end of the splice. The practice of splicing service drops on pole replacement jobs is prohibited. The service drops shall be replaced. Splicing of services for repair purposes is only permitted for service drops with black insulation. Care should be taken to inspect the service drop being repaired to insure it is still in good condition and meets current standards.

	Minimum Distance from Splice to Conductor Support [1]
Distribution.....	2 feet
Transmission.....	10 feet

[1] The distance is measured from the conductor support to the nearest end of the splice.
See Figure 1, Figure 2, and Figure 3 (below) for distribution measurement distance.
See Document 028855 for more detailed information.

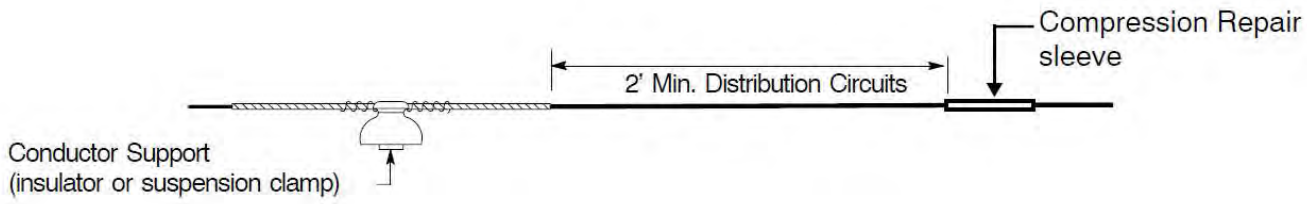


Figure 1
With armor rod

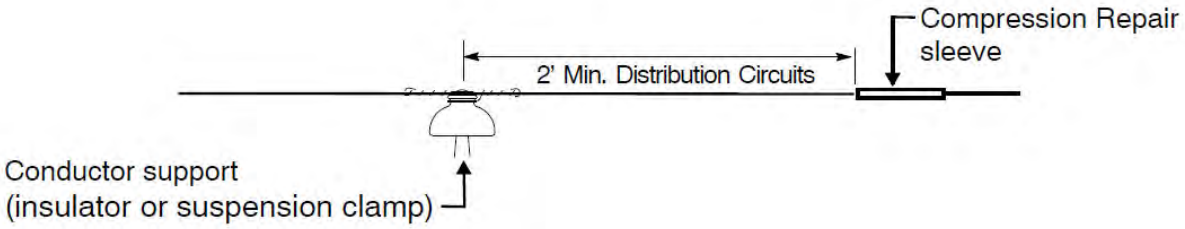


Figure 2
Without armor rod

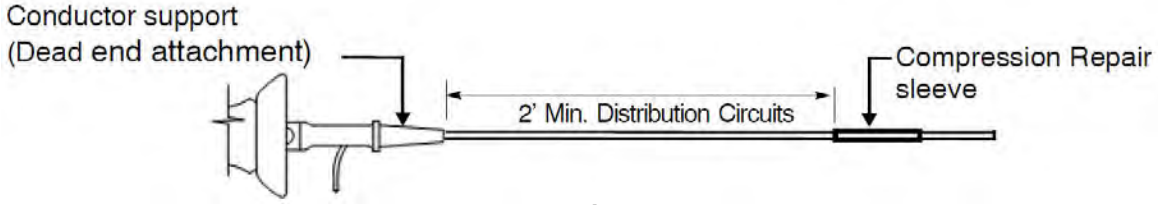


Figure 3

C. Emergency work
The priority is to restore customers.

The following requirement applies to distribution line only:

- Perform on the spot corrective action to eliminate three or more splices, especially for down conductor situations. Minimum distance between splices must be 50', measuring distance from the end of the splice.

- If it is not possible, perform the necessary temporary work to restore the outage and create an EC Notification Tag to make permanent repairs per the latest standards and requirements.

Attention: Based on studies performed by the Failure Analysis group, it is known and well–documented that having three or more splices have contributed to cable failures resulting in major public and employee safety hazards. To mitigate this risk, it is highly preferred to install no more than two splices per phase per span during emergency restoration work.

- If conductor have splices tied to in or within 2’ of an insulator attachment, create EC Notification Tag to relocate or eliminate the splice. See Figure 1and Figure 2 on Page 2 for minimum distance measurement.
- These requirements do not apply to adjacent spans or any other work outside the emergency repair activity.

General Information *(continue)*

The following requirements apply to transmission line only.

- Spans with splices must install vibration damper on both sides of the span. Vibration studies may deem vibration damper not needed.
- If location of splice interferes with proper placement of dampers, contact transmission line engineering.
  - Examples include but are not limited to: splice is at installation location of vibration damper, shunt splice interferes with installation location.
- Only one splice is allowed for all **new** construction per phase per span.
- One splice is allowed per phase per span for transmission line structure extensions.
- Two splices per phase per span are allowed. If splices are more than 200’ apart, contact transmission line engineering for vibration mitigation.
- No more than two splices per phase per span is permitted.
- All existing spans with more than two splices prior to August 08, 2019, are permitted until span is involved in construction project. Then, the span must adhere to the new requirement listed in this document.
- During emergency repair:
  - Two splices are allowed per phase per span for repairing sections of conductor. If splices are more than 200’ apart, create a notification tag for vibration mitigation.
  - Three splices are permitted for temporary emergency repair per phase per span. Create a notification tag for transmission maintenance to comply with maximum number of splices.
- Requirements for existing splices installed within 10’ and further than 2’ from attachment point:
  - Do not install splices within 10’ from attachment point
  - Take proper vibration mitigation actions
    - Visually inspect conductors supports and splice for any damage or deterioration.
      - Take appropriate actions to mitigate risk.
  - If vibration damper is required on both sides, place them per required distance per document 015073.
  - If vibration damper cannot be installed per document 015073, replace splice out 10’ or more.
  - If vibration damper are not required, per 015073, still install vibration dampers on other side of span per distance recommended in 015073.
  - Document inspection of conductor supports and splices with appropriate photographs to facilitate work verification review for notification closure.
- Requirements for existing splices installed within 2’ from attachment point:
  - Replace splice to 10’ or greater from the attachment point.

7. Many compression sleeves approved for purchase, shown on Table 7 on Page 11, Table 12 on Page 17, and Table 13 on Page 18, are pre-filled at the factory with the manufacturer’s recommended oxide inhibitor and capped.

Conductor Splices for Overhead Conductors

General Information *(continue)*

8. Follow the steps below for Conductor Preparation and Sleeve Pressing:
   A. Compression splices require more attention to detail in order to make proper splices.
   B. Use a correctly sized sleeve that matches the conductor.
   C. Use a clean and dry wire brush for the conductor metal. Use separate brushes for copper brushing and aluminum brushing.
   D. Wire brush all conductor strands shiny before pressing.
   E. Do not remove factory installed inhibitor in the sleeve.
   F. Use an adequate amount of the proper inhibitor.
   G. Fully insert the conductor into the sleeve.
   H. Use the proper die and compression tool.
   I. Press one side of a sleeve at a time.
   J. Make the proper number of crimps on each end of the sleeve.
   K. Begin pressing in the middle of the sleeve and work towards the end. Use spacing marks when present.
   L. For round dies, rotating the tool 180 degrees between compressions will reduce the “banana” effect. (Hex dies do not need rotation.)
   M. For aluminum conductors, immediately apply inhibitor after wire brushing, as oxidation occurs very quickly.

For further conductor splices installation procedures refer to utility procedure “Installing Overhead Conductor Splices” TD–2907P–01

Definitions

New Construction – Any new conductor installation or modification to a line asset that was not in the original design or installation.

Maintenance Repair – Planned construction to original design/installation; adding conductor for a taller pole/ relocating pole.

Emergency Repair – Unplanned repairs to reliably restore service.

Attachment point – Location where conductor is secured or clamped.

AFL – Aka Alcoa manufacturer. Alcoa naming has been replaced with AFL throughout this document.

Conductor Splices for Overhead Conductors

Table 1 Index of Splicing Materials

Type of Conductor	Compression Sleeve or Splice					
	Nicopress		Burndy		AFL (aka AFL)	
	Conductor Range	Tables	Conductor Range	Table	Conductor Range	Table
Copper	#10 – 250,000	Table 2 Table 4 Table 5	#8 – 250,000	Table 2	–	–
Copperweld	#8 – 4A	Table 3	–	–	–	–
B. B. [1] Iron	#9	Table 3	–	–	–	–
Aluminum	#6 – 2,300,000-61	Table 6 Table 7 Table 13	#6 – 715,500	Table 5 Table 7 Table 13	3/0 – 2,300,000	Table 6 Table 7 Table 8 Table 13
ACSR	#6 – 397.500	Table 9 Table 11 Table 12	#4 – 4/0	Table 9	4/0 – 1,272,000	Table 11 Table 12
ACSS	–	–	–	–	477,000-1,113,000	Table 15 Table 16

[1] B.B. stands for best grade galvanized steel wire per ASTM A111.

Table 1 Index of Splicing Materials (continued)

Type of Conductor	Compression Sleeve or Splice			
	Homac		Hubble/Fargo Compression	
	Conductor Range	Table	Conductor Range	Table
Copper	#8 – 4/0	Table 2	–	–
Copperweld	–	–	–	–
B. B. Iron	–	–	–	–
Aluminum	336,400 – 2,300,000	Table 11 Table 13	1/0 – 397,500	Table 5 Table 6
ACSR	266,800 – 954,000	Table 11 Table 12	#4 – 4/0	–
ACSS	477,000 – 1,113,000	Table 14 Table 15 Table 16	–	–

Conductor Splices for Overhead Conductors

References	Location	Document
Connectors for Aluminum Conductors on Distribution Lines	OH: Conductors	028852
Single Conductor Insulator String Hardware for Overhead Transmission Lines for 60 kV – 115 kV	ELS	056414
Insulator Strings for 477 kcmil 24/7 Strands ACSS Overhead Single Conductor 44–115 kV Transmission Lines	ELS	354219
Conductors for Overhead Lines	OH:Conductors	059626
Installing Overhead Conductor Splices	TIL	TD–2907P–01

1. Hydraulic and Mechanical Presses
   The presses and dies listed in this document are representative of those in use at PG&E. Although some presses are types which are no longer purchased, they have been included since they are satisfactory for use with the applicable conductor sizes.
   The AFL (aka Alcoa) 12A and Burndy Y35 hydraulic tools are identical tools. AFL dies for the AFL 12A tool may be used in the Burndy Y35 tool, and Burndy dies for the Burndy Y35 tool may be used in the AFL 12A tool.

Conductor Splices for Overhead Conductors

Splices for Copper Conductors

Table 2 Full Tension Splicing Sleeves for Copper Conductors – Compression Type (sleeve data) for Distribution Circuits

Copper	Sleeve Data										
Size AWG or kcmil	Conductor Diameter (inches)	Sleeve Code	Manufacturer Catalog Number, Die, Number of Compressions (#)[1] on each end								
			Burndy Y35 or AFL 12A (Homac UT–15 or Burndy Y46 with adapter) [2]			Homac			Nicopress		
			Part No.	Die [2]	#	Part No.	Die [2]	#	Part No.	Die [2]	#
10 Sol.	0.101	305305	–	–	–	–	–	–	1-102J	W161	2
9 Sol.	0.114	305306	–	–	–	–	–	–	1-114-J	W161	2
8 Sol. [4]	0.128	305438	–	–	–	–	–	–	R1-128J	W161	1
8 Sol.	0.128	305178	YDS8WG1	W161	1	J2C1	W161	2	1-128J	W161	1
6 Sol.	0.162	305177	YDS6W	W161	2	J2C3	W161	2	1-162J	W161	2
4 Sol.	0.204	305179	YDS4W	W162	4	L2C4	W162	4	1-204M	W162	4
4-7 Str.	0.232	305182	YDS4C	W162	4	L2C5	W162	4	1-204/7M	W162	4
2 Sol	0.257	305334	YDS2W	W163	6	Q2C7	W163	5	1–258–X	W163	5
2-7 Str.	0.292	305236	YDS2C	W163	6	Q2C7	W163	5	1-258/7X	W163	5
1 Sol	0.289	305513	YDS1W	U164	4	–	–	–	1–289–X	U163	2
1–7 Str	0.328	305665	YDS1C	U164	3	–	–	–	1–289/7–E8	U164	3
1/0 Sol.	0.324	301629	YDS75	U165	6	–	–	–	1–289/7–E8	U164	3
1/0–7 Str.	0.368	305527	YDS 25	U165	6	UCC9	U165	5	1–325/7–F6	U165	7
2/0–7 Str.	0.414	305528	YDS 26	U166	6	2723	U166	6	1–365/7–G3	U166	7
3/0–7 Str.	0.464	305529	YDS 27	U167	7	2726	U167	6	1–410/7–G9	U167	7
4/0–7 Str.	0.522	305543	YDS 28	U168	9	2729	U168	8	1–460/7–H5	U168	8
250–19 Str.	0.574	305666	YDS 29	U169	9	–	–	–	1–250,000–J2	U169	7

1 # = Required number of compressions on each end of the splice
2 Adapter, Homac Catalog Number 15500 must be installed in Homac UT–15 head when using Burndy Y35 dies. Adapter Burndy Catalog Number PUADP–1 must be used with Burndy Y46.
3 If a die has multiple index numbers marked on it. i.e., U–166–206–459–263, that die can be used where any of these index numbers are called for.
4 For use when replacing existing twisted-sleeve splices in telephone circuits.

Table 3 Miscellaneous Sleeves for Use With Nicopress Tools for Distribution Circuits

Copper Conductor		Sleeve Data			Tool and Die Data	
Size AWG or kcmil	Diameter (inches)	Manufacturer and Catalog Number		Code	Die	Number of Compressions (each side)
		Nicopress	Reliable			
8 Cw. [1]	0.129	1-128M	8-M-1	305303	U162	1
6A Cw. Cu [2]	0.230	1-6A-X	6A-X-1	305302	U163	3
4A Cw. Cu [2]	0.290	1-4A-X	4A-X-1	305235	U163	3
9 BB. Iron [3]	0.148	2-148J	8L-J-1	305304	U161	1

1 Cw. = Copperweld.
2 Cw. Cu = Copperweld-Copper.
3 BB = Best best grade wire.

Conductor Splices for Overhead Conductors

Splices for Copper Conductors (continued)

Table 4 Non–Tension Copper Sleeves, Burndy for 1/0 to 250 kcmil Copper for Distribution Circuits

Copper Conductor		Non-Tension Jumper Sleeve Data	
Size AWG or kcmil	Diameter (inches)	Burndy Catalog Number	Code
1/0-7 Str.	0.368	YCS25	305693
2/0-7 Str.	0.414	YCS26	305694
3/0-7 Str.	0.464	YCS27	305695
4/0-7 Str.	0.522	YCS28	305696
250-19 Str.	0.574	YCS29	305697

Table 5 Full Tension Compression Reducer Splices for Copper Conductors for Distribution Circuits

Copper Conductor		Approved Manufacturer, Manufacturer Catalog Number, Die, Number of Compressions on each end of the Splice			Material code
Size AWG or kcmil		Nicopress			
Large End	Small End	Part Number	Die	# [1]	
4 Sol.	6 Sol.	#1–204 X 162–M	U162	1	301618
4 Str.	6 Sol.	#1–204/7 X 162–M	U162	1	301619
4 Str.	4 Sol.	#1–204/7 X 204–M	U162	1	305364
2 Sol.	4 Sol.	#1–258 X 204–X	U163	2	301620
2 Str., 1 Sol.	4 Str.	#1–258/7 X 204/7–X	U163	2	301621
2 Str., 1 Sol.	2 Sol.	#1–258/7 X 258–X	U163	2	305692
1 Str., 1/0 Sol.	4 Sol.	#1–258/3 X 204–X	U163	2	301622
1 Str., 1/0 Sol.	2 Str., 1 Sol.	#1–258/3 258/7–X	U163	2	301623
1/0 Str.	2 Str., 1 Sol.	#1–325/7 X 258/7–F6	U165	7	301624
1/0 Str.	1 Str., 1/0 Sol.	#1–325/7 X 289/7–F6	U165	7	301625
2/0 Str.	1/0 Str., 2/0 Sol.	#1–365/7 X 325/7–F6	U165	7	301626
4/0 Str.	3/0 Str., 4 /0 Sol.	# 1–460/7 X 410/7–H5	U168	8	301627
250 Str.	4/0 Str.	# 1–250K X 460/7–J2	U169	7	301628

[1] Required number of compressions on each end of the splice

Conductor Splices for Overhead Conductors

Splices for Aluminum Conductors – Full-Tension

1. The Fargo Splices shown on this sheet were formerly manufactured by Alcan using the same catalog numbers.
2. The AFL splices shown on the tables below were formerly manufacturer under the name of AFL.
3. It is preferred to use hydraulic presses instead of hand tools. If you must use any of the approved Nicopress hand tool listed in this documented on the Nicopress sleeves, make sure that the Nicopress 41MJ, 51XJ, 51 Orange, and 51 Plum tools tool groove and the groove marked on the sleeve are identical.

Table 6 Full–Tension Splicing Sleeves for Aluminum Conductors – Compression–Type for Distribution Circuits

Full Tension Splicing Sleeves for Aluminum Conductors (AAC) - Compression Type (sleeve data)																			
Aluminum	Sleeve Data																		
Size AWG or kcmil	Conductor Diameter (inches)	Code	Manufacturer Catalog Number, Die, Number of Compressions (#)[1] on each end																
			Burndy[4]			Blackburn			Hubbell			Nicopress					AFL[5]		
			Part No.	Die	#	Part No.	Die	#	Part No.	Die	#	Part No.	Groove	#	Die	#	Part No.	Die	#
#6 Solid	0.162	305464	YDS6WA	W161	2	-	-	-	-	-	-	AL-6 Sol.-J	J	3	W161	2	-	-	-
#4 - 7 Str.	0.232	305672	YDS4CA	W162	4	AC4BB	W162	4	-	-	-	AL-4 Str.-M	M	4	W162	5	-	-	-
#2 - 7 Str.	0.292	305466	YDS2CA	W163	6	AC2TB	W163	6	-	-	-	AL-2 Str.-X	X	5	W163	5	-	-	-
1/0 - 7 Str.	0.368	305705	YDS25AT	W243	6	AC10TB	W243	6	FTA10	W243	OL[2]	AL-1/0 Str.-G33	-	-	W245	6	-	-	-
2/0 - 7 Str.	0.414	305196	YDS26AT	W245	8	AC205	W245	8	FTA20	W245	OL[2]	AL-2/0 Str.-G33	-	-	W245	8	-	-	-
3/0 - 7 Str.	0.464	305884	YDS27AT	U247	4	AC30	U247	4	-	-	-	AL-3/0-STR-H54	-	-	U247	5	–		
4/0 - 7 Str.	0.522	305365	YDS 28AT	U249	6	AC40	U249	6	FTA40	U249	OL[2]	AL-4/0-STR-H54	-	-	U249	6	–		
266.8 - 7 Str.	0.586	305883	YDS291AT	U251	7	AC266	U251	7	-	-	-	AL-266.8-75A	-	-	U251	12	–		
336.4 - 19 Str.	0.666	305366	YDS301AT	U321	8	AC336	U321	8	FTA337	U321	OL[2]	AL-336.4-76A	-	-	U321	12	–		
397.5 - 19 Str.	0.724	305523	YDS311AT	U468	10	AC397	U468	8	FTA397	U468	OL[2]	AL-397.5-77A	-	-	U468	12	–		
715.5 - 37 Str.	0.973	301284	YDS39ATAA[3]	P724	OL[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1 # = Required number of compressions on each end of the splice

2 OL = Overlap crimps by 1/4 die bite.

3 Existing stock of YDS39A can be used with L724 die and 60 ton press only. The YDS39ATAA splice requires a 15–ton hydraulic press and it must be pressed with the hex die P724.

4 When pressing the Burndy splice it is very important to overlap the crimps by 1/4 of the die bite. All of the length marked for crimps must be pressed. There should be at least 18–20 crimps per side.

5 The AFL splice is installed using a hex die and a 60–ton hydraulic press. Only use AFL dies with AFL splices. Use Sleeve data in Table 7 on Page 11 for AFL Material codes.

Splices for Aluminum Conductors – Full-Tension (continued)

Table 7 Full–Tension Splicing Sleeves for Aluminum Conductors – Compression–Type (sleeve data) for Transmission Circuits

Aluminum Conductor		Sleeve Data		
Size AWG or kcmil	Diameter (inches)	Code	Manufacturer	Catalog Number
3/0 – 7 Str.	0.464	180422	AFL	7074.484P
4/0 – 7 Str.	0.522	180423	AFL	7075.547P
			Burndy	YDS 28AT
266.8 – 7 Str.	0.586	180424	AFL	7075.609P
336.4 – 19 Str.	0.666	180425	Fargo	20740PC
			AFL	7076.688P
366.4 – 397.5 Str.	0.666/0.724	180426	AFL	7076.688/750P
397.5 – 19 Str.	0.724	180427	Fargo	20788PC
			AFL	7076.750P
			Burndy	YDS311AT
715.5 – 37 Str.	0.974	305658	Fargo	20102PC
			AFL	7027.106P
			Burndy	YTS39A
954 – 37 Str.	1.124	305646	Fargo	20119PC
			AFL	7030.122P
1,113 – 61 Str.	1.217	305673	Fargo	20127PC
			AFL	7034.128P
1,431 – 61 Str.	1.379	305971	AFL	7036.144P
			Fargo	20145PC
2,300 – 61 Str.	1.750	306321	AFL	7044.181P
			Fargo	20181PC

Conductor Splices for Overhead Conductors

Splices for Aluminum Conductors – Full-Tension (continued)

Table 8 Full-Tension Splicing Sleeves for Aluminum Conductors – Compression-Type (tool and die data)

Aluminum Conductor	Tool and Die Data						
	Nicopress 635 Hydraulic Press	AFL 12A, 12HA & Burndy Y35 Hydraulic Tool	AFL 60A Hydraulic Press	AFL B Press	AFL 100A Hydraulic Press	Homac UT-15 Head with #15500 Adapter [1]	Burndy Y46 [2] Hydraulic Press
Size AWG or kcmil	Nicopress Dies	AFL Dies	AFL Dies	AFL Dies	AFL Dies	AFL Dies	AFL Dies
3/0 – 7 Str.	74AS	B74AH	6074H	74A	–	B74AH	B74AH
4/0 – 7 Str.	75AS	B75AH	6075AH	75A	–	B75AH	B75AH
	–	–	L249 [3]	–	–	U249 [3]	U249 [3]
	See Footnote [4]		–	–	–	–	–
266.8 – 7 Str.	75AS	B75AH	6075AH	75A	–	B75AH	B75AH
336.4 – 19 Str.	76AS	B76AH	6076AH	76A	–	B76AH	B76AH
	76AS	B76AH	6076AH	76A	–	B76AH	B76AH
366.4 – 397.5 Str.	–	B76AH	6076AH	–	–	–	B76AH
397.5 – 19 Str. [5]	76AS	B76AH	6076AH	76A	–	B76AH	B76AH
	76AS	B76AH	6076AH	76A	–	B76AH	B76AH
	–	B76AH	6076AH	–	–	B76AH	B76AH
715.5 – 37 Str.	–	–	6027AH	–	–	–	–
	–	–	6027AH	–	–	–	–
	–	–	6027AH	–	–	–	–
	–	–	L724 [3]	–	–	–	–
954 – 37 Str.	–	–	6030AH	–	–	–	–
	–	–	6030AH	–	–	–	–
1,113 – 61 Str.	–	–	6034AH	–	–	–	–
	–	–	6034AH	–	–	–	–
1,431 – 61 Str.	–	–	6036AH	–	10036AH	–	–
	–	–	6036AH	–	10036AH	–	–
2,300 – 61 Str.	–	–	–	–	10044AH	–	–
	–	–	–	–	10044AH	–	–

1 Adapter, Homac Catalog Number 15500, must be installed in Homac UT-15 head when using AFL 12A dies with 3/0 to 397.5 kcmil conductors.

2 Requires the PUADP-1 adapter.

3 These are Burndy dies and must be used with Burndy full-tension sleeves. Use only AFL dies with AFL connectors. This is necessary to ensure that splices meet the required strength rating of the conductor.

4 Burndy Press MD6-8 with Burndy Die W 249 may be used with this sleeve.

5 For Burndy, use Burndy U655 or AFL B76AH die.

Conductor Splices for Overhead Conductors

Splices for ACSR Conductors – Full-Tension

Table 9 Full–Tension Splicing Sleeves for Aluminum Conductors (ACSR) – Compression–Type (sleeve data) for Distribution Circuits

ACSR Conductor	Sleeve Data													
Size AWG or kcmil	Con-ductor Diame-ter (inches)	Code	Manufacturer Catalog Number, Die, Number of Compressions (#)[1] on each end											
			Burndy			Blackburn			Hubbell			Nicopress		
			Part No.	Die	# [1]	Part No.	Die	# [1]	Part No.	Die	# [1]	Part No.	Die	# [1]
#6 – 6/1	0.198	305707	–	–	–	–	–	–	–	–	–	661–M	W162	4
#4 – 6/1	0.250	301529	YDS4RLY	WBG [3,4,5]	10	RC45	W243	12	FTR4	WBG	OL [2]	467–Orange	W164 [5]	20
#4 – 7/1	0.257	301529	YDS4RLY	WBG [3,4,5]	12	RC45	W243	12	FTR4	WBG	OL [2]	467–Orange	W164 [5]	20
#2 – 6/1	0.316	301528	YDS2RLY	WBG [3,4,5]	10	RC2BB	W245	14	FTR2	W243	OL [2]	267–Plum	W–BG [5]	12
#2 – 7/1	0.325	301528	YDS2RLY	WBG [3,4,5]	10	RC2BB	W245	14	FTR2	W243	OL [2]	267–Plum	W–BG [5]	12
1/0 – 6/1	0.398	305704	YDS25RL	U167	14	RC10	U167	8	FTR10	U167	OL [2]	1061–Plum	U245	9
4/0 – 6/1	0.563	301469	YDS28RL	U654	OL [2]	RC40	U654	OL [2]	FTR10	U654	OL [2]	4061–76A	U654	14

1 # = Required number of compressions on each end of the splice.

2 OL = Overlap crimps by 1/4 die bite.

3 The use of UBG, U243 and W687 dies are acceptable options for these splices. ONLY use W687 die with in–line presses. When using W687 die, rotating of tool is not necessary.

4 Factory installed tape on pressure relief holes must be in place when conductors are installed. Removal of the tape prior to insertion of the conductor will force the joint compound to push out the hole rather than coat the conductor.

Note:
The following notes apply to the #4 ACSR (301529) and #2 ACSR (301528)splices shown in this table manufactered by Burndy and Nicopress.

5 Unlike other splices, these splices must be installed by crimping from the end of the splice toward the center of the splice.

Conductor Splices for Overhead Conductors

Splices for ACSR Conductors – Full-Tension (continued)

Table 10 Full-Tension Splicing Sleeves for ACSR Conductors – Compression-Type (sleeve data) for Transmission Circuits

ACSR Conductor		Sleeve Data			
Size AWG or kcmil	Diameter (inches)	Code		Catalog Number	Catalog Number
4/0 – 6/1	0.563	305456	AFL	8075.609	–
		305377		–	4075.228
266.8 – 26/7	0.642	305560		8076.688	–
		305682		–	4076.246
336.4 – 30/7	0.741	305678		8020.781	–
		305683		–	4010.332
336.4 – 30/7 to 397.5 – 26/7	0.741	306324		[2]	–
	0.783	306325		–	[3]
397.5 – 26/7	0.783	305679		8020.844	–
		305684		–	4010.302
795. – 54/7	1.093	305680		8030.116	–
		305685		–	4012.386
954 – 54/7	1.196	305847		8030.125	–
		305686		–	4014.422
1,272 – 45/7	1.345	305973		CJ153 [1]	–

[1] Catalog number for complete assembly.
[2] No. 8020.844SP ID 336.4M30/7 and 397.5M26/7 for aluminum sleeve.
[3] No. 4010.332/302 for steel sleeve.

Splices for ACSR Conductors – Full-Tension (continued)

Table 11 Full-Tension Splicing Sleeves for ACSR Conductors – Compression-Type (tool and die data)

ACSR Conductor	Tool and Die Data			
	Nicopress 635 Hydraulic Press		AFL 12A, 12HA, Burndy Y35 (Homac UT-15 or Burndy Y46 with adapter) [1]	
Size AWG or kcmil	Nicopress Dies		AFL Dies	
	Aluminum	Steel	Aluminum	Steel
4/0 – 6/1	75AS		B75AH	–
			–	B75SH
266.8 – 26/7	76AS		B76AH	–
			–	B76SH
336.4 – 30/7	20AH	–	B20AH	–
	–	10SH	–	B10SH
336.4 – 30/7 to 397.5 – 26/7	20AH	–	B20AH	–
	–	10SH	–	B10SH
397.5 – 26/7	20AH	–	B20AH	–
	–	10SH	–	B10SH
795. – 54/7	–	–	–	–
	–	–	–	–
954.5 –54/7	–	–	–	–
	–	–	–	–
1.272 – 45/7	–	–	–	–

[1] Adapter, Homac Catalog Number 15500, must be installed in Homac UT-15 head only when using AFL 12A dies (Homac formerly T&B). Adapter, Burndy Catalog Number PUADP-1, must be used with Burndy Y46.

Splices for ACSR Conductors – Full-Tension (continued)

Table 12 Full-Tension Splicing Sleeves for ACSR Conductors – Compression-Type (tool and die data) *(continued)*

ACSR Conductor	Tool and Die Data			
	AFL 60A Hydraulic Press		AFL B Press	
Size AWG or kcmil	AFL Dies		AFL Dies	
	Aluminum	Steel	Aluminum	Steel
4/0 – 6/1	6075AH	–	B75AH	–
	–	6075SH	–	B75SH
266.8 – 26/7	6076AH	–	B76AH	–
	–	6076AH		B76SH
336.4 – 30/7	6020AH	–	–	–
	–	6010SH	–	–
336.4 – 30/7 to 397.5 – 26/7	6020AH	–	–	–
	–	6010SH	–	–
397.5 – 26/7	6020AH	–	–	–
	–	6010SH	–	–

Conductor Splices for Overhead Conductors

Splices for ACSR Conductors – Non-Tension

1. The Fargo splices shown on this page were formerly manufactured by Alcan using the same catalog numbers. Surplus Alcan splices should be retained for future use.
2. The following AFL presses are not suitable for aerial work: B, F1, H, H2, and H2H.

Table 12 Non-Tension Splicing Sleeves for ACSR Conductors – Compression-Type

ACSR Conductor		Sleeve Data			Tool and Die Data		
Size AWG or kcmil	Diameter(inches)	Code	Manufacturer	Catalog Number	Nicopress 635 Hydraulic Press	AFL 12A, 12HA, Burndy Y35 (Homac UT-15 or Burndy Y46 with adapter) [1]	AFL 60A Hydraulic Press
					Nicopress Dies	AFL Dies	AFL Dies
4/0 – 6/1	0.563	305547	AFL	5075.609P	75AS	B75AH	6075AH
266.8 – 26/7	0.642	305548	Fargo	40688PC	76AS	B76AH	6076AH
			AFL	5076-688P	76AS	B76AH	6076AH
336.4 – 30/7	0.741	305668	Fargo	40800PC	20AH	B20AH	6020AH
			AFL	5020.781P	20AH	B20AH	6020AH
397.5 – 26/7	0.783	305669	Fargo	40845PC	20AH	B20AH	6020AH
			AFL	5020.844P	20AH	B20AH	6020AH
795 – 54/7	1.093	305660	Fargo	40117PC	–	–	6030AH
			AFL	5030.116P	–	–	6030AH
954 – 54/7	1.196	305848	Fargo	40126PC	–	–	6030AH
			AFL	5030.125P	–	–	6030AH
1,272 – 45/7	1.345	305972	AFL	5036.144P		–	6036AH

[1] Adapter, Homac Catalog Number 15500, must be installed in Homac UT-15 head when using AFL 12A dies (Homac formerly T&B). Adapter, Burndy Catalog Number PUADP-1, must be used with Burndy Y46.

Conductor Splices for Overhead Conductors

Splices for Aluminum Conductors – Non-Tension

Table 13 Non-Tension Splicing Sleeves for All-Aluminum Conductors - Compression-Type for Distribution and Transmission Circuits

All Aluminum Conductor			Sleeve Data		Tool and Die Data					
					Burndy Y46 Hydraulic Press	Nicopress 635 Hydraulic Press	AFL 12A, 12AH & Burndy Y35 Hydraulic Tools	AFL 60A Hydraulic Press	AFL 100A Hydraulic Press	Homac UT-15 Head With #15500 Adapter [1]
Size AWG or kcmil	Dia. (inch)	PG&E Code	Man.	Catalog Number	AFL Dies	Nicopress Dies	AFL Dies	AFL Dies	AFL Dies	AFL Dies
3/0-7	0.464	305595	AFL	5074.484P	B74AH	74AS	B74AH	6074AH	–	B74AH
4/0-7	0.522	305674	AFL	5075.547P	B75AH	75AS	B75AH	6075AH	–	B75AH
			Burndy	YCS 28A	U249 [2]	–	U249 [2]	–	–	U249 [2]
			Burndy	YCS 28A	See Footnote [3]					
266.8-7	0.586	305631	AFL	5075.609P	B75AH	75AS	B75AH	6075AH	–	B75AH
336.4-19	0.666	305667	AFL	5076.688P	B76AH	76AS	B76AH	6076AH	–	B76AH
			Fargo	40730PC	B76AH	76AS	B76AH	6076AH	–	B76AH
397.5-19	0.724	305645	AFL	5076.750P	B76AH	76AS	B76AH	6076AH	–	B76AH
			Fargo	40788PC	B76AH	76AS	B76AH	6076AH	–	B76AH
			Burndy	YCS311A	B76AH	76AS	B76AH	6076AH	–	B76AH
715.5-37	0.974	305664	AFL	5027.106P	–	27AH	–	6027AH	–	T15-27AH
			Fargo	40102PC	–	27AH	–	6027AH	–	T15-27AH
			Burndy	YNS43R	–	–	–	6027AH	–	T15-27AH
			Burndy	YNS43R	–	–	–	L724 [2]	–	–
954-37	1.124	305647	AFL	5030.122P	–	–	–	6030AH	–	–
			Fargo	40119PC	–	–	–	6030AH	–	–
1,113-61	1.217	305675	AFL	5034.128P	–	–	–	6034AH	–	–
			Fargo	40127PC	–	–	–	6034AH	–	–
1,431-61	1.379	305972	AFL	5036.144P	–	–	–	6036AH	10036AH	–
			Fargo	40145PC	–	–	–	6036AH	10036AH	–
2,300-61	1.750	306323	AFL	5044.181P	–	–	–	–	10044AH	–
			Fargo	40181PC	–	–	–	–	10044AH	–
		306356	AFL	C6117-6	–	–	–	6040H	–	–

[1] Adapter, Homac Catalog Number 15500, must be installed in Homac UT–15 head when using AFL 12A dies with 3/0 AWG to 397.5 kcmil AAC conductors. Do not use adapter with AFL T15–27AH dies on 715.5 kcmil aluminum (Homac formerly T&B).

[2] These are Burndy dies and are only to be used with Burndy sleeves.

[3] Burndy Press MD6–8 with Burndy Die W249 may be used with this sleeve.

Notes

1. The following AFL presses are not suitable for aerial work: B, F1, H, H2, and H2H.
2. P suffix on AFL catalog number stands for pre–filled with AFL filler compound.
3. The Fargo splices shown on this table were formerly manufactured by Alcan using the same catalog number. Surplus Alcan splices should be retained for future use.
4. All non-tension sleeves for all-aluminum conductors (AAC) are pre-filled with joint compound.

Conductor Splices for Overhead Conductors

Splices for ACSS Conductors for Transmission Circuits – Non-Tension

Table 14 Non-Tension Splicing Sleeves for ACSS Conductors - One-Piece Compression-Type, Aluminum Body Only

ACSS Conductor			Sleeve Data		Tool and Die Data
					AFL 60A Hydraulic Press
Size kcmil	Diameter (inches)	PG&E Code	Manufacturer	Catalog Number	AFL Dies
477-24/7 Flicker/ACSS	0.846	300608	AFL	5024.938HT	6024AH
795-54/7 Condor/ACSS	1.092	300908	Fargo	40922SSAC	
			AFL	5030.116HT	6030AH
			Fargo	40110SSAC	
954-54/7 Cardinal/ACSS	1.196	300909	AFL	5030.125HT	6030AH
			Fargo	40126SSAC [1]	
1,113-54/19 Finch/ACSS	1.292	301452	AFL	5034.138HT [1]	6034AH
			Fargo	40136SSAC [1]	

[1] Not approved for purchase yet, pending review of ANSI C119.4 tests.

Note: For non-tension sleeves there is no filler hole. Aluminum strands must be cleaned with a stainless steel brush coated in no-oxide filler compound. Then apply no-oxide filler compound generously over the outer strands before inserting both ends into a non-tension sleeve. Use AFL Alnox electrical joint compound (Code 490045 for 8 oz. squeeze tubes or
Code 490765 for a 10-tube case of 1 lb. caulking tubes) for AFL sleeves and Fargo High Temperature Joint Compound (HTJC), in a 1 lb. tube (Code 490769), for Fargo sleeves.

Conductor Splices for Overhead Conductors

Splices for ACSS Conductors For Transmission Circuits – Full–Tension

Table 15 Full-Tension Splicing Sleeves for ACSS Conductors - Two-Piece Compression-Type: Aluminum Body and Steel Sleeve

ACSS Conductor		Sleeve Data					Tool and Die Data
		Parts of the Sleeve	Manufacturer: AFL		Manufacturer: Fargo		AFL 60A Hydraulic Press
Size kcmil	Dia. (inches)	Description	Catalog Number	PG&E Code	Catalog Number	PG&E Code	AFL Dies
477-24/7 Strands Flicker/ ACSS	0.846	Aluminum Body (only)	8024.938HT	300518	10922SSAC	300499	24AH
		Steel Sleeve (only)	4010.295	300523	–	–	10SH (for AFL)
			–	–	11312	300522	12SH (for Fargo)
		Assembly: Aluminum Body and Steel Sleeve	33021HT	300498 [1]	TJA-1808-SSAC	300498 [1]	–
795-54/7 Strands Condor/ ACSS	1.092	Aluminum Body (only)	8030.116HT	301342	10110SSAC	301340	30AH
		Steel Sleeve (only)	4012.386	305685	–	–	12SH (for AFL)
			–	–	11391	301341	14SH (for Fargo)
		Assembly: Aluminum Body and Steel Sleeve	33042HT	300900 [1]	TJA-3321-SSAC	300900 [1]	–
954-54/7 Strands Cardinal/ ACSS	1.196	Aluminum Body (only)	8030.125HT	301343	10126SSAC	[2]	30AH
		Steel Sleeve (only)	4014.422	305686	–	–	14SH (for AFL)
			–	–	11422	[2]	16SH (for Fargo)
		Assembly: Aluminum Body and Steel Sleeve	33049HT	300901 [1]	TJA-4121-SSAC	[2]	–
1,113-54/ 19 Strands Finch/ ACSS	1.292	Aluminum Body (only)	8034.138HT	301450	10136SSAC	[2]	34 AH
		Steel Sleeve (only)	4014.453	305739	–	–	14SH (for AFL)
			–	–	11453	[2]	16SH (for Fargo)
		Assembly: Aluminum Body and Steel Sleeve	33055HT	301449	TJA-4724-SSAC	[2]	–

[1] Do not mix AFL and Fargo aluminum body with other manufacturer's steel sleeve.

[2] Not approved for purchase yet, pending review of ANSI C119.4 tests.

Conductor Splices for Overhead Conductors

Dead–End Assembly for ACSS Conductors

Table 16 Dead-End Assembly for ACSS Conductors - Two-Piece Compression-Type: Aluminum Body, Steel Eye and 15° Terminal Connector

ACSS Conductor		Dead-End Sleeve Data					Tool and Die Data
		Parts of the Dead-End Sleeve	Manufacturer: AFL		Manufacturer: Fargo		AFL 60A Hydraulic Press
Size kcmil	Dia. (inches)	Description	Catalog Number	PG&E Code	Catalog Number	PG&E Code	AFL Dies
477-24/7 Strands Flicker/ ACSS	0.846	Aluminum Body, Single Tongue (only)	8124.938HT	300589	12921SSAC4	300525	24AH
		Aluminum Body Double Tongue (only)	8224.938HT	300593	15921SSAC4	300592	
		Steel Eye (only)	9110.295	300591			10SH (for AFL)
			–	–	130230	Need to update description of 300590	12SH (for Fargo)
		Assembly: Aluminum Body (single tongue), Steel Eye, and 15° Terminal Connector	E33120HT	300613 [1]	SEDA-1808-SSAC4	300613 [1]	–
		Assembly: Aluminum Body (double tongue), Steel Eye, and 15° Terminal Connectors	E33320HT	301345 [1]	DEDA-1808-SSAC4	301344 [1]	
795-54/7 Strands Condor/ ACSS	1.092	Aluminum Body, Single Tongue (only)	8130.116HT	301355	12110SSAC	301351	30AH
		Aluminum Body, Double Tongue (only)	8230.116HT	301356	15110SSAC	301348	
		Steel Eye (only)	9312.386	301360	–	–	12SH (for AFL)
			–	–	130849	301349	14SH (for Fargo)
		Assembly: Aluminum Body (single tongue), Steel Eye, and 15° Terminal Connector	E33141HT	301353	SEDA-3321-SSAC	301351	–
		Assembly: Aluminum Body (double tongue), Steel Eye, and 15° Terminal Connectors	E33341HT	301352	DEDA-3321-SSAC	301350	–

[1] Do not mix AFL and Fargo aluminum body with other manufacturer's steel eye.

[2] Not approved for purchase yet, pending review of ANSI C119.4 tests.

Dead-End Assembly for ACSS Conductors for Transmission Circuits (continued)

Table 18 Dead-End Assembly for ACSS Conductors - Two-Piece Compression-Type: Aluminum Body, Steel Eye, and 15° Terminal Connector (continued)

ACSS Conductor		Dead-End Sleeve Data					Tool and Die Data
		Parts of the Dead-End Sleeve	Manufacturer: AFL		Manufacturer: Fargo		AFL 60A Hydraulic Press
Size kcmil	Dia. (inches)	Description	Catalog Number	PG&E Code	Catalog Number	PG&E Code	AFL Dies
954-54/7 Strands Cardinal/ ACSS	1.196	Aluminum Body, Single Tongue (only)	8130.125HT	301358	12126SSAC	2	30AH
		Aluminum Body, Double Tongue (only)	8230.125HT	301359	15126SSAC	2	30AH
		Steel Eye (only)	9414.422	301357	–	2	14SH (for AFL)
			–	–	131947	2	16SH (for Fargo)
		Assembly: Aluminum Body (single tongue), Steel Eye, and 15° Terminal Connector	E33150HT	300899	SEDA-4121-SSAC	2	–
		Assembly: Aluminum Body (double tongue), Steel Eye, and 15° Terminal Connectors	E33350HT	301354	DEDA-4121-SSAC	2	
1,113-54/19 Strands Finch/ACSS	1.292	Aluminum Body, Single Tongue (only)	8134.134CHT	301443	12136SSAC	2	34AH
		Aluminum Body, Double Tongue (only)	8234.134CHT	301444	15136SSAC	2	
		Steel Eye (only)	E9614.453	301445	–	2	14SH (for AFL)
			–	–	131948	2	16SH (for Fargo)
		Assembly: Aluminum Body (single tongue), Steel Eye, and 15° Terminal Connector	E33157HT	301441	SEDA-4724-SSAC	2	–
		Assembly: Aluminum Body (double tongue), Steel Eye, and 15° Terminal Connectors	E33357HT	301442	DEDA-4724-SSAC	2	

1 Do not mix AFL and Fargo aluminum body with other manufacturer's steel eye.

2 Not approved for purchase yet, pending review of ANSI C119.4 tests.

Conductor Splices for Overhead Conductors

Table 17 Burndy / Huskie Die Cross–Reference

Circular Die Cross-Reference Used in Distribution Circuits			
Code	**Burndy Model Number**	**Huskie Model Number**	**Compression Tool**
216264	P724	HT61KX	15-Ton
216582	U164	HT41CD	12-Ton or 15-Ton with adapter
210596	U165/U205	HT41CE	
216583	U166/U459	HT41CF	
210597	U167/U568	HT41CG	
216584	U168	HT41CJ	
216585	U169	HT41CK	
210622	U247	HT41DT	
216273	U249	HT41DW	
None	U251	HT41DY	
210623	U321	HT41FU	
210624	U468	HT41GX	
210625	U654	HT41JM	
216272	U-BG	HT41G	
200915	W161	HT58BX	6-Ton
200916	W162	HT58BZ	
203038	W163	HT58CB	
200917	W164	HT58CD	
200918	W165	HT58CE	
200919	W166	HT58CF	
202673	W243	HT58DM	
200921	W245	HT58DP	
200922	W247	HT58DT	
202848	W-BG	HT58G	

Conductor Splices for Overhead Conductors

Revision Notes

Revision 12 has the following changes:

1. Added Note 3 on Page 1. Renumbered notes.
2. Created new Figure 1, Figure 2, and Figure 3 on Page 2.
3. Updated “General Information” Note 5.B and 5.C. on Page 2.
4. Revised Note 6.B. on Page 2.
5. Updated New Construction Definition on Page 6.
6. Removed Foot Note 1 on Table 1 on Page 6. Renumbered Foot Notes.
7. Removed Footnote 6 from Table 6.
8. Revised Table 2 on Page 8.
9. Revised Table 3 on Page 8.
10. Revised Table 5 on Page 9.
11. Revised Table 6 on Page 10.
12. Removed Table 9 “Hand Tool Nicopress Approved for Purchase.
13. Renumbered Tables.
14. Revised Table 9 on Page 13. Revised Footnote 3.
15. Updated Table 11 on Page 15.
16. Removed Foot Note 1 in Table 11 on Page 15. Renumbered Foot Notes.
17. Removed FRO pages.