2026 OJUA Spring Training
Sample Pole-Equipment and Violations

Chris Barley

President

Oregon Aerial Construction LLC

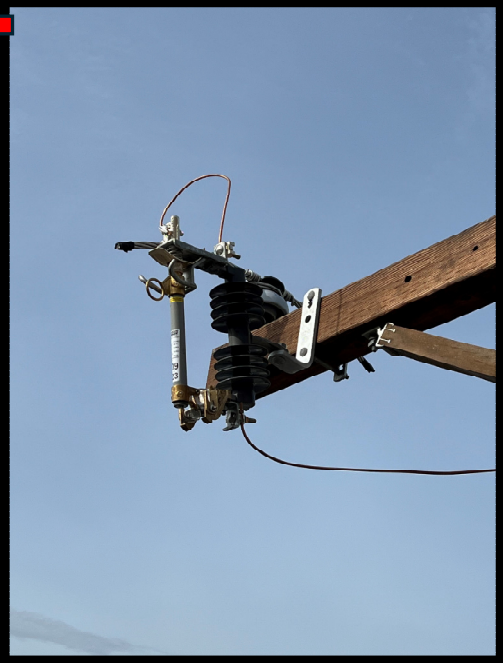
Purpose of this training is to bring a real-life example into the classroom setting and be able to identify the following:

- Violations in the Supply Space
- Violations in the Communications Space
- Violations between Power and Comms
- Violations in Climbing Space
- Bonding/Grounding Violations
- Violations at a Building
- Riser violations

Power Attachments in Supply Space

Primary Power

Primary Cut Out



Secondary Attachment

More Power Attachments in Supply Space

Transformer

Neutral

Communications Attachment

ADSS Fiber on Fiberglass Arm

Joint Use Wood Arm

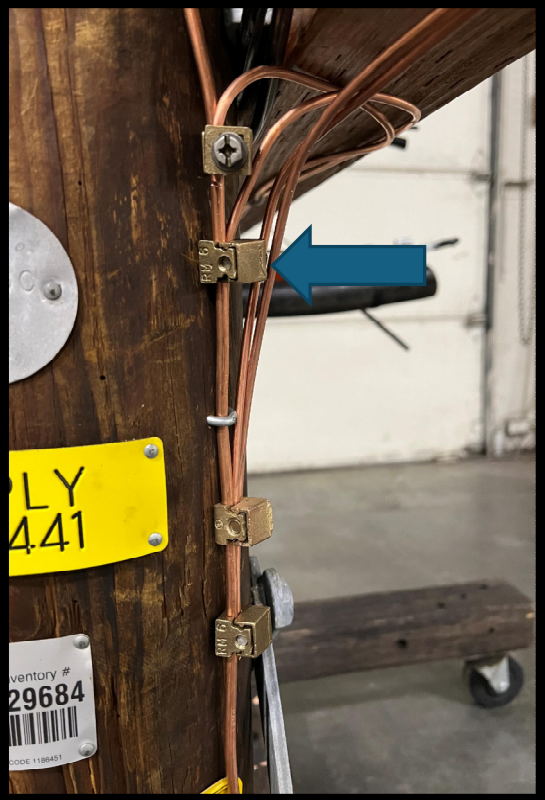
Slack Span

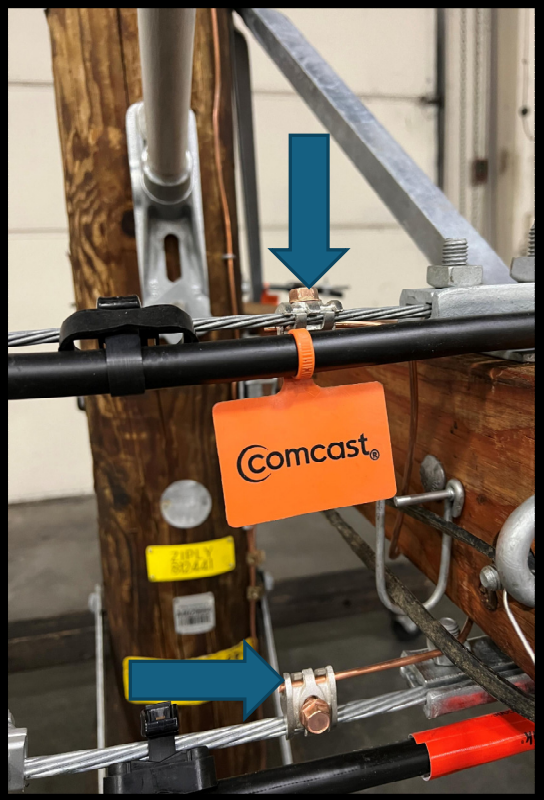
Communication Worker Safety Zone

- 40” minimum between lowest power attachment to highest communication attachment
- Streetlight can be in the CWSZ above the comms if the bracket is effectively grounded

Climbing Space

Bonding/Grounding





Fiber Storage

Pole Tags


NO POSTING OF
ADVERTISING SIGNS
OR OBJECTS
PENALTIES
PER RCW 70.54.090
CPUD
45876


ZIPLY
812441
CPUD
31514

Cable Tags

All Communications Facilities are required to mark their facilities

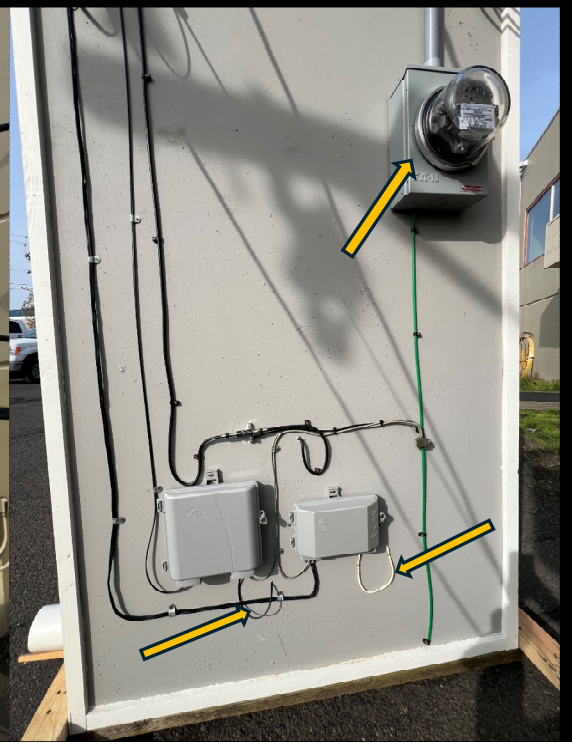
Riser pole with conduit and stand-off brackets

Communication's Service Drops and Supply Service Drops at the Building

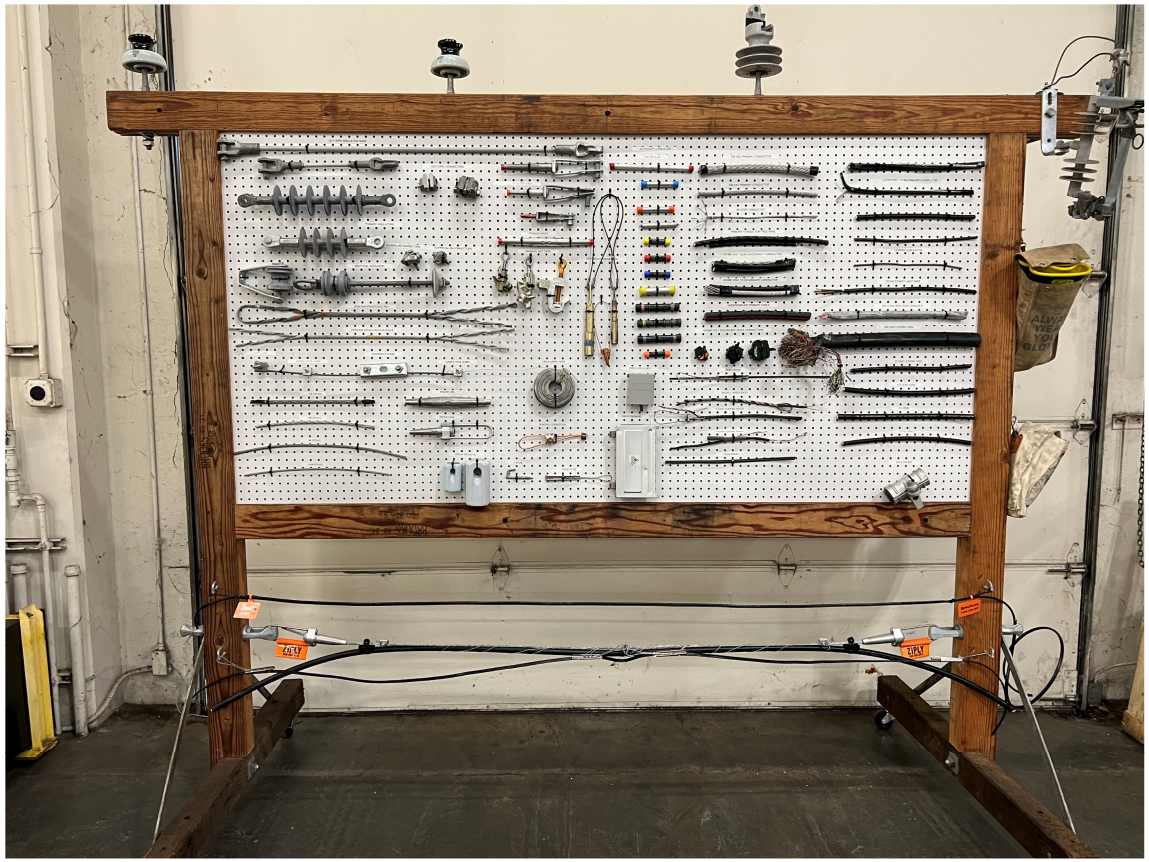
Service Conductors at Premise

- Reduced Separations

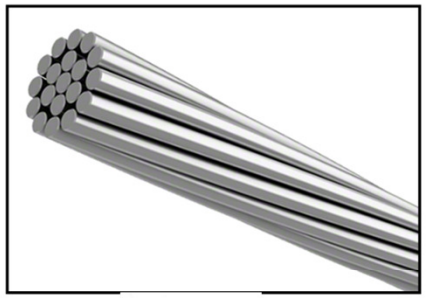
- Service Point Separation from NESC to NEC

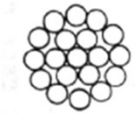


Display Board-Power Equipment



Overhead Primary Conductors





Cross Section of 336 AAC Wire

Cross Section of #2 ACSR Wire

TW – Tree Wire or WP – Weatherproof OH Wire has insulation over the bare conductor.

Older primary installations used copper wire. There are still a lot of #4 and #6 OH tap lines all over our service territory.

LD 23000 – Overhead Conductors
New Installations

795 AAC

795 ACSR

795 AAC XLP

2 ACSR

2 ACSR XLP – (Tree Wire, TW or WP)

LD 17030 – Overhead Secondary Conductors

New Installations – Three Phase

2 QX

2/0 QX

4/0 QX

Old Installations – Three Phase

6 CU
4 CU
2 CU

Rarely found for 3 phase and it is usually 3 hot wires and no neutral.

Overhead Materials

Polymer Cutout

T-Link Fuse
This fuse is inserted into the tube of a cutout gate.

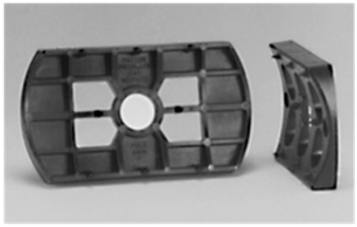
Lighting Arrester

Cutout Arm Bracket

CB4 Bracket
Attaches to pole, for mounting cutout or arrester

L Bracket
Attaches cutout or arrester to CB4 Bracket

Overhead Materials



D. A. Bolt
Used for building "double arms" – with Avian Framing these will go away.

Machine Bolts
Various Sizes

Carriage Bolt

Pin & Glass

Pins for Wood Arms

Lapp Glass

Pin for Lapp Glass

Hot Tap Clamp

Aluminum Hot Tap Copper Hot Tap

There are large and small Hot Tap for both copper and aluminum.

Connectors – Buttons – One Bolts

Copper to Aluminum	Big/Little Copper to Aluminum	Aluminum to Aluminum	Magic Clamps

Fargo

Copper to Copper
Sizes are #6, #4, 2 Str, 1/0, 2/0, and 4/0

Peanut

Copper
Connection
To Gr. Rod

Aluminum Deadend Automatic

Copper Deadend Automatic

Deadend Clamp

Also called "Deadend Shoes". Various sizes - make sure you have the right size before installing on wire. Always used for slack span deadends.

Polymer Insulator

Automatic splices, "pickles, bump,"

Aluminum and copper sleeves are marked with the wire size they fit. Aluminum splices have colored ends to identify the wire size they fit.

Clevis Bracket

Clevis Spool
"05" Glass used on upset bolt and clevis brackets.

Butterfly

Secondary Spreader

Heffling Bracket
Provides an attachment point for a service drop on the side of a house.

Upset Bolt
Used with "05" glass to support neutral conductor on pole.

Frog

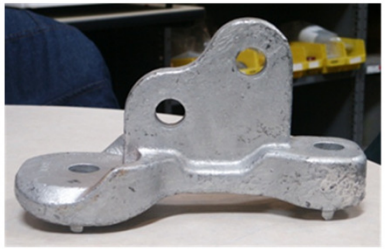
House Knob

Wedge Grip
Sized for the service conductor being installed.

Firecrackers

Guying Hardware

Goat Head Or Rabbit Head



Single Sled **Double Guy Sled**

Yellow Guy Guard
Install on all downguys.

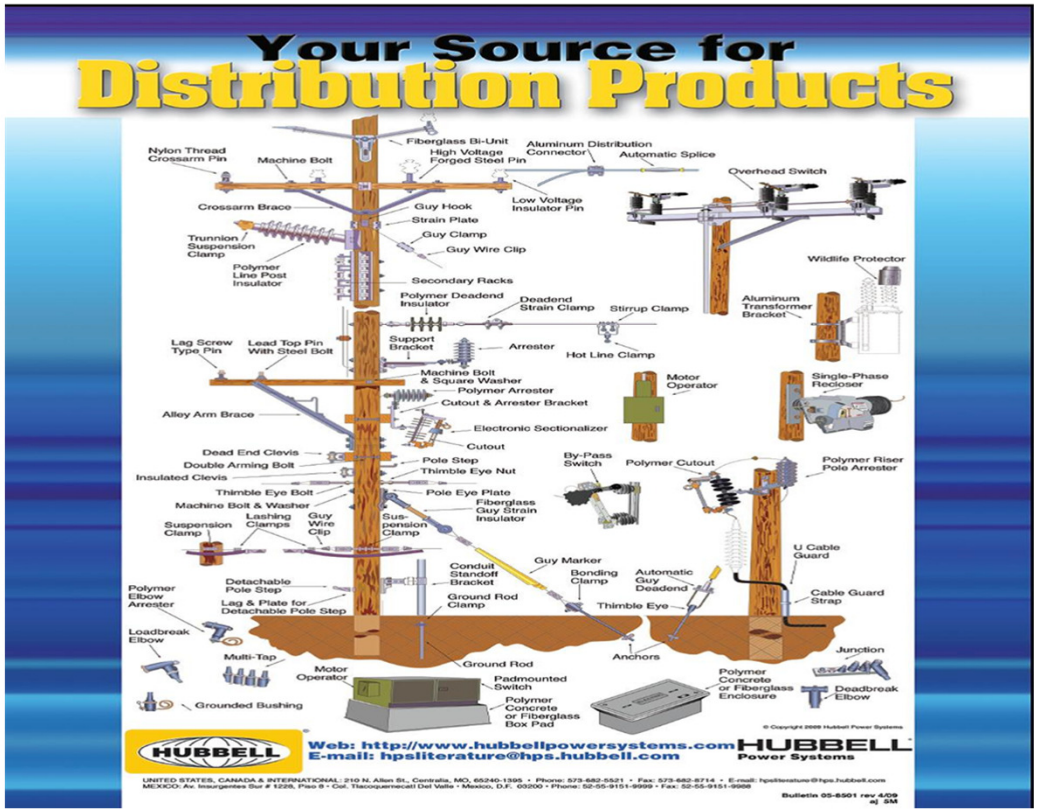
Guy Wire Splice - "PICKLE"

Guy Wire Preforms

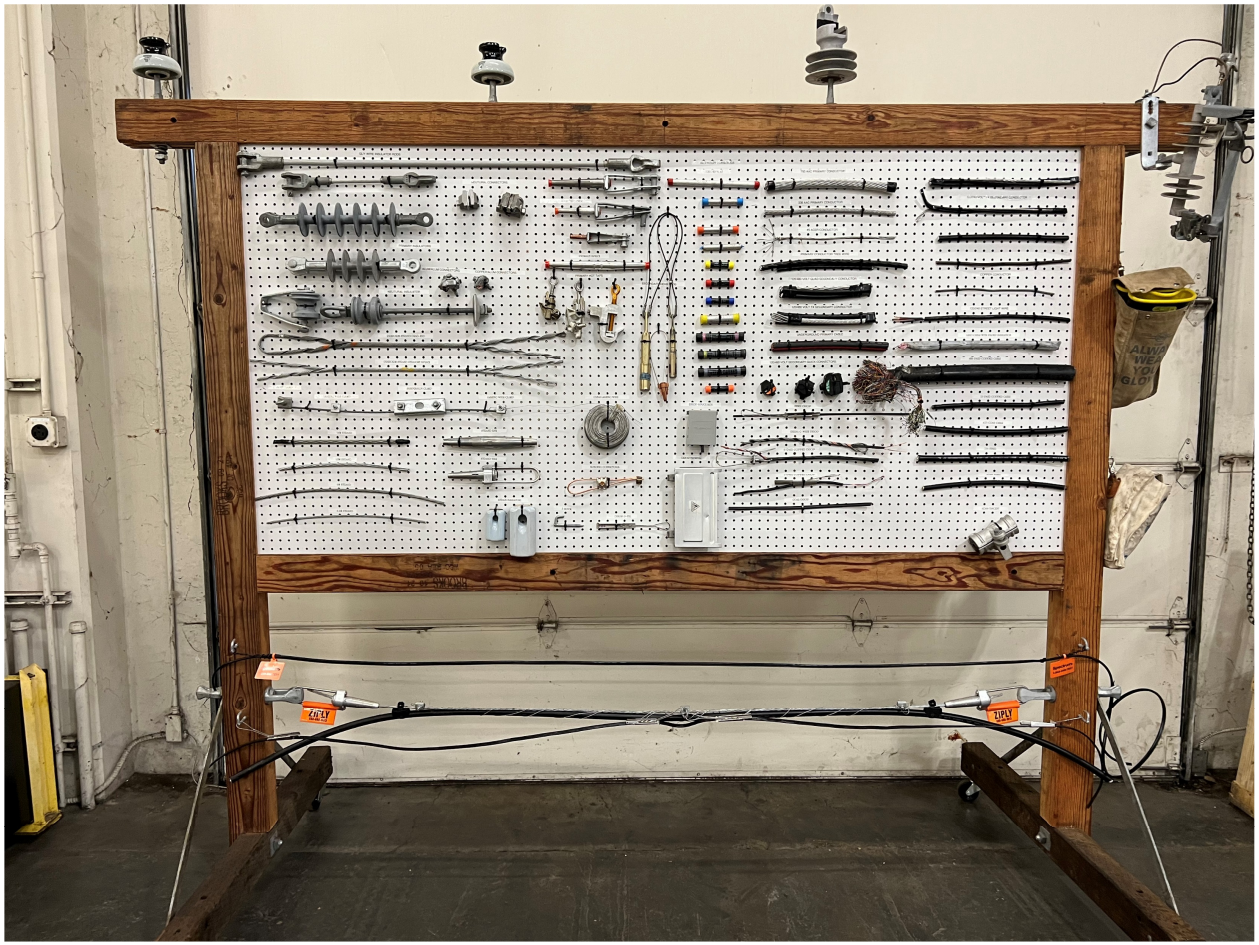
Guy Strain Insulators
Porcelain - (Johnny Ball) Fiberglass Rod

Guy Deadends

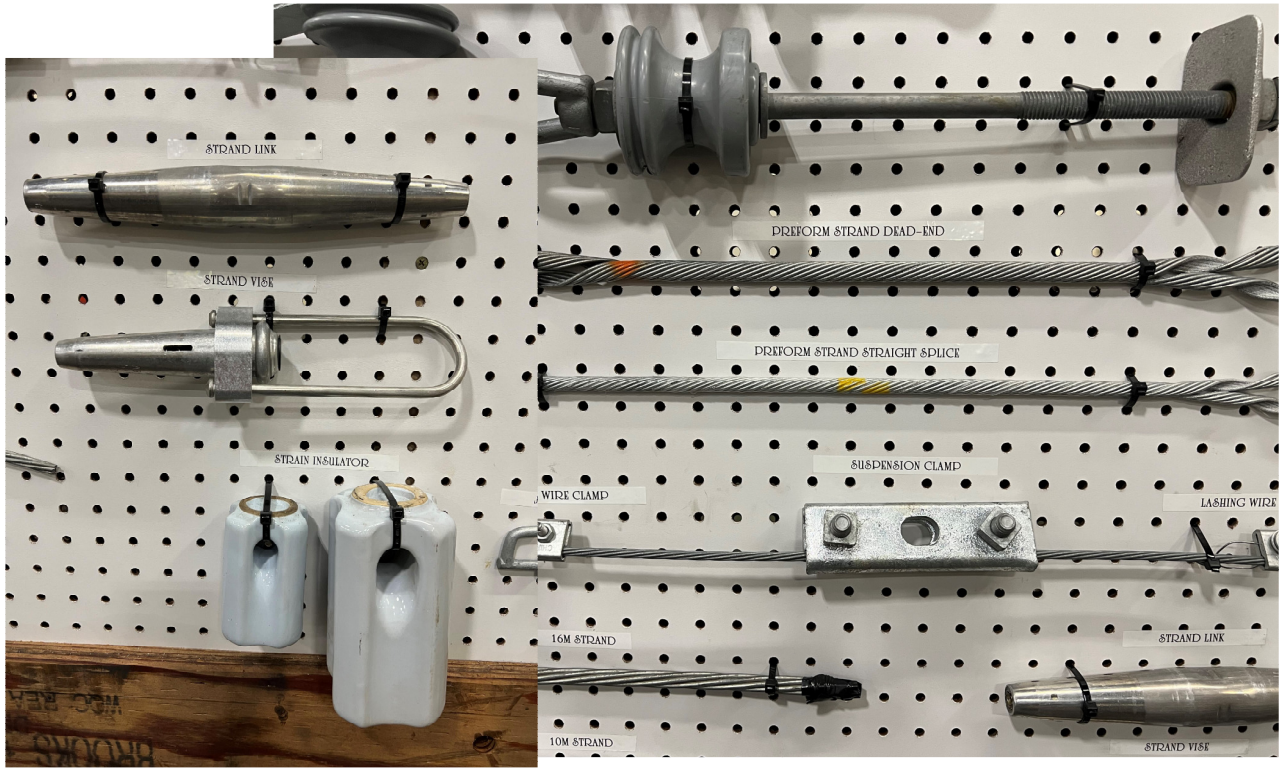
Available in Resource Materials



Display Board- Communications Equipment



Communications Line Equipment



Communications Line Equipment

- Lashing wire, bonding and drop equipment

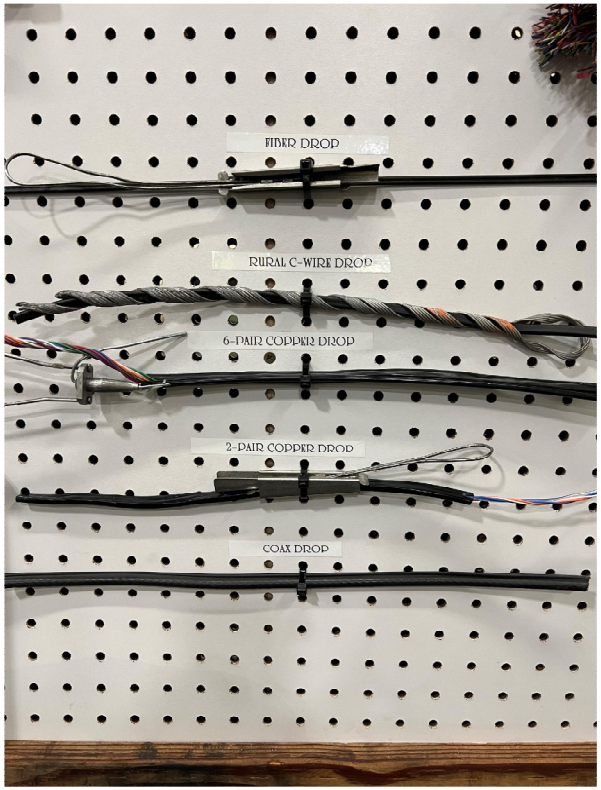
Communications Messenger

Various sizes of strand

Communications Cables

Various types and sizes of communications cable

Communications Service Drops

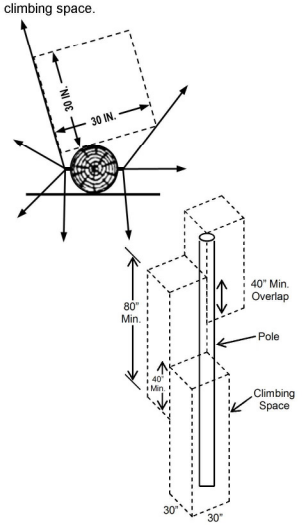


- Various sizes and types of drops

Lashed Fiber Cable & Communication Drops

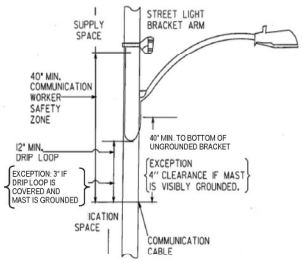
NESC 236
CLIMBING SPACE

Climbing Space is an unobstructed, vertical space along the side or corner of the pole. In general, it consists of an imaginary box, 30-inches square, extending at least 40 inches above the highest communications cable or other facility and 40 inches below the lowest communications cable or other facility, but may be shifted from any side or corner to any other side or corner. Support arms are not considered to obstruct the climbing space.

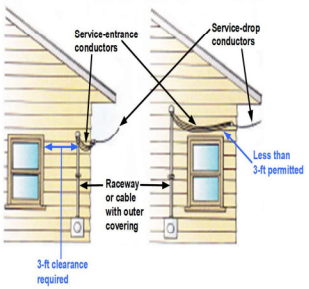


NESC 238
UNGROUNDED MAST ARMS

(Assume all streetlights are ungrounded unless ground is visible)



NESC 234C3d(2)
SUPPLY CLEARANCE TO WINDOWS



OJUA
OREGON JOINT USE ASSOCIATION

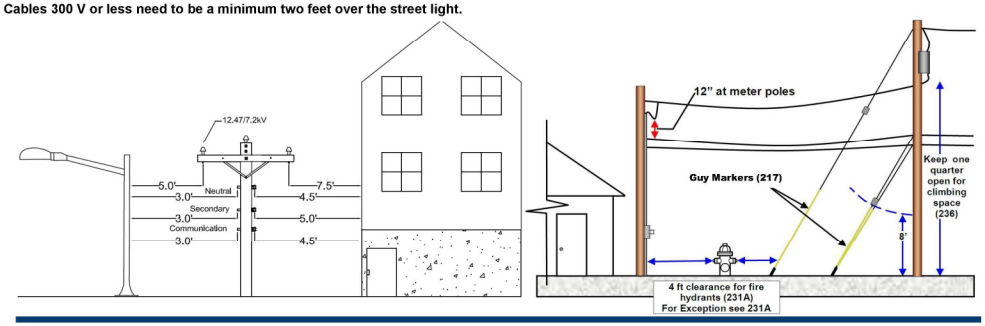
This is not an official codebook. This Document is intended to provide reference for aerial clearances of Communications and Power facilities. When constructing aerial facilities, please refer to the governing codes, such as the National Electrical Safety Code, National Electric Code, Oregon Public Utility Commission Safety Rules, Oregon Occupational Safety and Health Administration, State, County and Municipal codes, and all other applicable company standards, including contracts.

Other Resources:

OJUA	www.ojua.org
OPUC	www.oregon.gov/PUC/safety/index.shtml
IEEE	www.ieee.org/portal/site
NESC	http://standards.ieee.org/nesc
OSHA	www.orosha.org/admin/safejobsb/sjsbagriculture.html

Updated May 2017

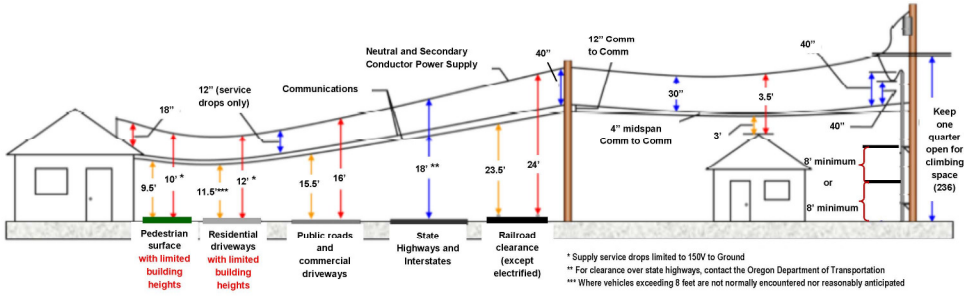
NESC 234 CLEARANCES TO OTHER STRUCTURES
Cables 300 V or less need to be a minimum two feet over the street light.



NESC TABLE 232-1 VERTICAL CLEARANCE OVER SURFACES
NESC TABLE 235-5 VERTICAL CLEARANCE AT SUPPORTS
NESC 235C2b(1)(a) SAG RELATED CLEARANCES
NESC 235H CLEARANCE AND SPACING BETWEEN COMMUNICATIONS

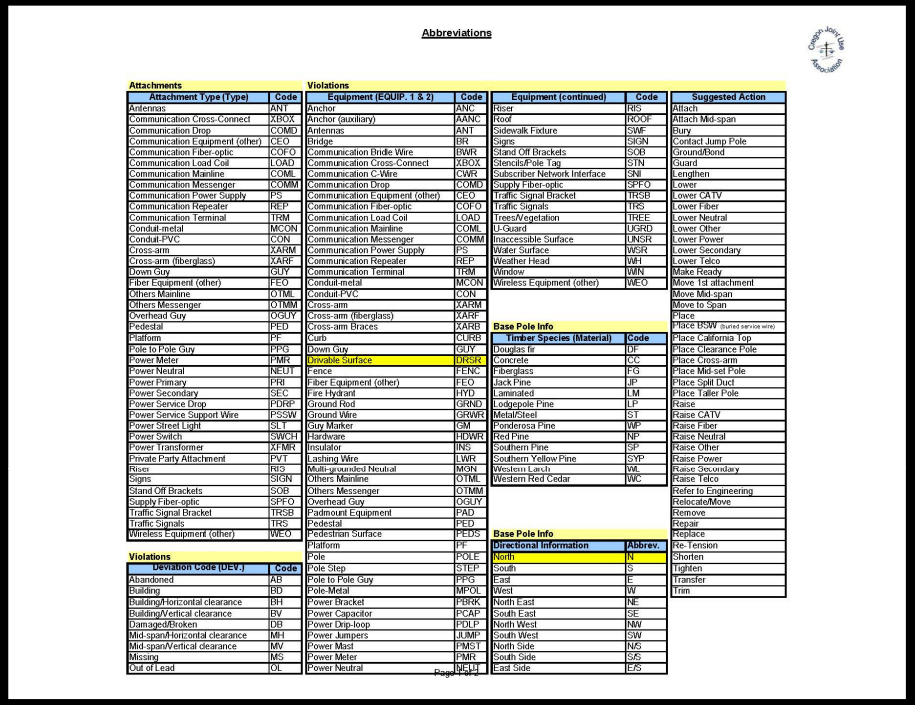
MINIMUM ACCEPTABLE CLEARANCES

NOTE: These values are intended for NESC inspection reference only and are not intended for construction or design criteria.



OJUA STANDARDS REFERENCE CARD

OJUA Code Abbreviations



Abbreviations

Attachments

Attachment Type (Type)	Code
Antennas	ANT
Communication Cross-Connect	XBOX
Communication Drop	COMD
Communication Equipment (other)	CEO
Communication Fiber-optic	COFO
Communication Load Coil	LOAD
Communication Mainline	COML
Communication Messenger	COMM
Communication Power Supply	PS
Communication Repeater	REP
Communication Terminal	TRM
Conduit-metal	MCON
Conduit-PVC	CON
Cross-arm	XARM
Cross-arm (fiberglass)	XARF
Down Guy	GUY
Fiber Equipment (other)	FEO
Others Mainline	OTML
Others Messenger	OTMM
Overhead Guy	OGUY
Pedestal	PED
Platform	PF
Pole to Pole Guy	PPG
Power Meter	PMR
Power Neutral	NEUT
Power Primary	PRI
Power Secondary	SEC
Power Service Drop	PDRP
Power Service Support Wire	PSSW
Power Street Light	SLT
Power Switch	SWCH
Power Transformer	XFMR
Private Party Attachment	PVT
Riser	RIS
Signs	SIGN
Stand Off Brackets	SOB
Supply Fiber-optic	SPFO
Traffic Signal Bracket	TRSB
Traffic Signals	TRS
Wireless Equipment (other)	WEO

Violations

Deviation Code (DEV.)	Code
Abandoned	AB
Building	BD
Building/Horizontal clearance	BH
Building/Vertical clearance	BV
Damaged/Broken	DB
Mid-span/Horizontal clearance	MH
Mid-span/Vertical clearance	MV
Missing	MS
Out of Lead	OL

Violations

Equipment (EQUIP. 1 & 2)	Code
Anchor	ANC
Anchor (auxiliary)	AANC
Antennas	ANT
Bridge	BR
Communication Bridle Wire	BWR
Communication Cross-Connect	XBOX
Communication C-Wire	CWR
Communication Drop	COMD
Communication Equipment (other)	CEO
Communication Fiber-optic	COFO
Communication Load Coil	LOAD
Communication Mainline	COML
Communication Messenger	COMM
Communication Power Supply	PS
Communication Repeater	REP
Communication Terminal	TRM
Conduit-metal	MCON
Conduit-PVC	CON
Cross-arm	XARM
Cross-arm (fiberglass)	XARF
Cross-arm Braces	XARB
Curb	CURB
Down Guy	GUY
Drivable Surface	DRSR
Fence	FENC
Fiber Equipment (other)	FEO
Fire Hydrant	HYD
Ground Rod	GRND
Ground Wire	GRWR
Guy Marker	GM
Hardware	HDWR
Insulator	INS
Lashing Wire	LWR
Multi-grounded Neutral	MGN
Others Mainline	OTML
Others Messenger	OTMM
Overhead Guy	OGUY
Padmount Equipment	PAD
Pedestal	PED
Pedestrian Surface	PEDS
Platform	PF
Pole	POLE
Pole Step	STEP
Pole to Pole Guy	PPG
Pole-Metal	MPOL
Power Bracket	PBRK
Power Capacitor	PCAP
Power Drip-loop	PDLP
Power Jumpers	JUMP
Power Mast	PMST
Power Meter	PMR
Power Neutral	NEUT

Equipment (continued)	Code
Riser	RIS
Roof	ROOF
Sidewalk Fixture	SWF
Signs	SIGN
Stand Off Brackets	SOB
Stencils/Pole Tag	STN
Subscriber Network Interface	SNI
Supply Fiber-optic	SPFO
Traffic Signal Bracket	TRSB
Traffic Signals	TRS
Trees/Vegetation	TREE
U-Guard	UGRD
Inaccessible Surface	UNSR
Water Surface	WSR
Weather Head	WH
Window	WIN
Wireless Equipment (other)	WEO

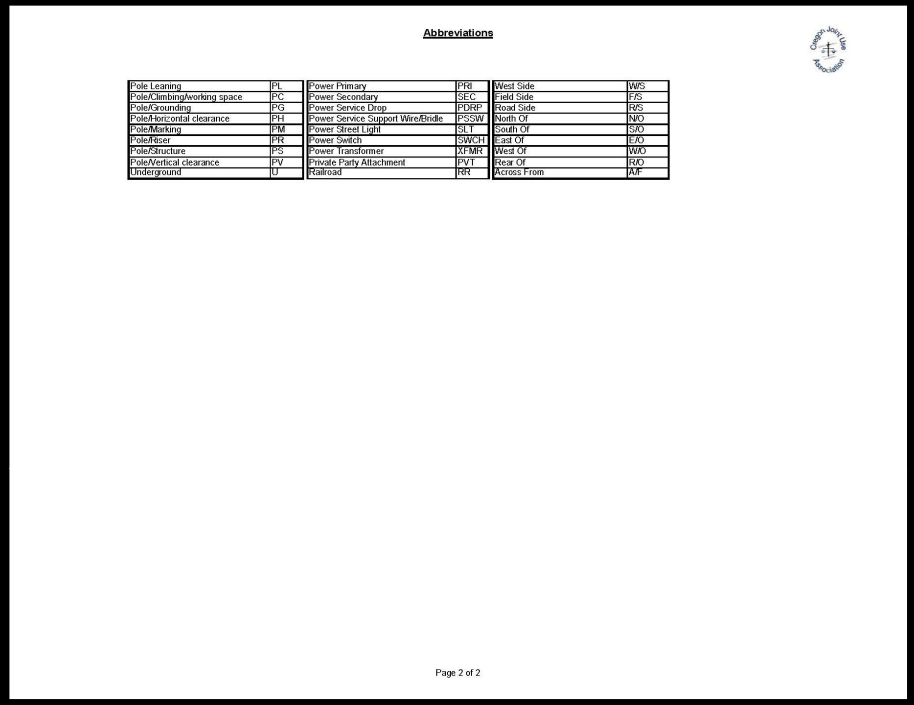
Base Pole Info

Timber Species (Material)	Code
Douglas fir	DF
Concrete	CC
Fiberglass	FG
Jack Pine	JP
Laminated	LM
Lodgepole Pine	LP
Metal/Steel	ST
Ponderosa Pine	WP
Red Pine	NP
Southern Pine	SP
Southern Yellow Pine	SYP
Western Larch	WL
Western Red Cedar	WC

Base Pole Info

Directional Information	Abbrev.
North	N
South	S
East	E
West	W
North East	NE
South East	SE
North West	NW
South West	SW
North Side	N/S
South Side	S/S
East Side	E/S

Suggested Action
Attach
Attach Mid-span
Bury
Contact Jump Pole
Ground/Bond
Guard
Lengthen
Lower
Lower CATV
Lower Fiber
Lower Neutral
Lower Other
Lower Power
Lower Secondary
Lower Telco
Make Ready
Move 1st attachment
Move Mid-span
Move to Span
Place
Place BSW (buried service wire)
Place California Top
Place Clearance Pole
Place Cross-arm
Place Mid-set Pole
Place Split Duct
Place Taller Pole
Raise
Raise CATV
Raise Fiber
Raise Neutral
Raise Other
Raise Power
Raise Secondary
Raise Telco
Refer to Engineering
Relocate/Move
Remove
Repair
Replace
Re-Tension
Shorten
Tighten
Transfer
Trim



Abbreviations

Pole Leaning	PL	Power Primary	PRI	West Side	W/S
Pole/Climbing/working space	PC	Power Secondary	SEC	Field Side	F/S
Pole/Grounding	PG	Power Service Drop	PDRP	Road Side	R/S
Pole/Horizontal clearance	PH	Power Service Support Wire/Bridle	PSSW	North Of	N/O
Pole/Marking	PM	Power Street Light	SLT	South Of	S/O
Pole/Riser	PR	Power Switch	SWCH	East Of	E/O
Pole/Structure	PS	Power Transformer	XFMR	West Of	W/O
Pole/Vertical clearance	PV	Private Party Attachment	PVT	Rear Of	R/O
Underground	U	Railroad	RR	Across From	A/F

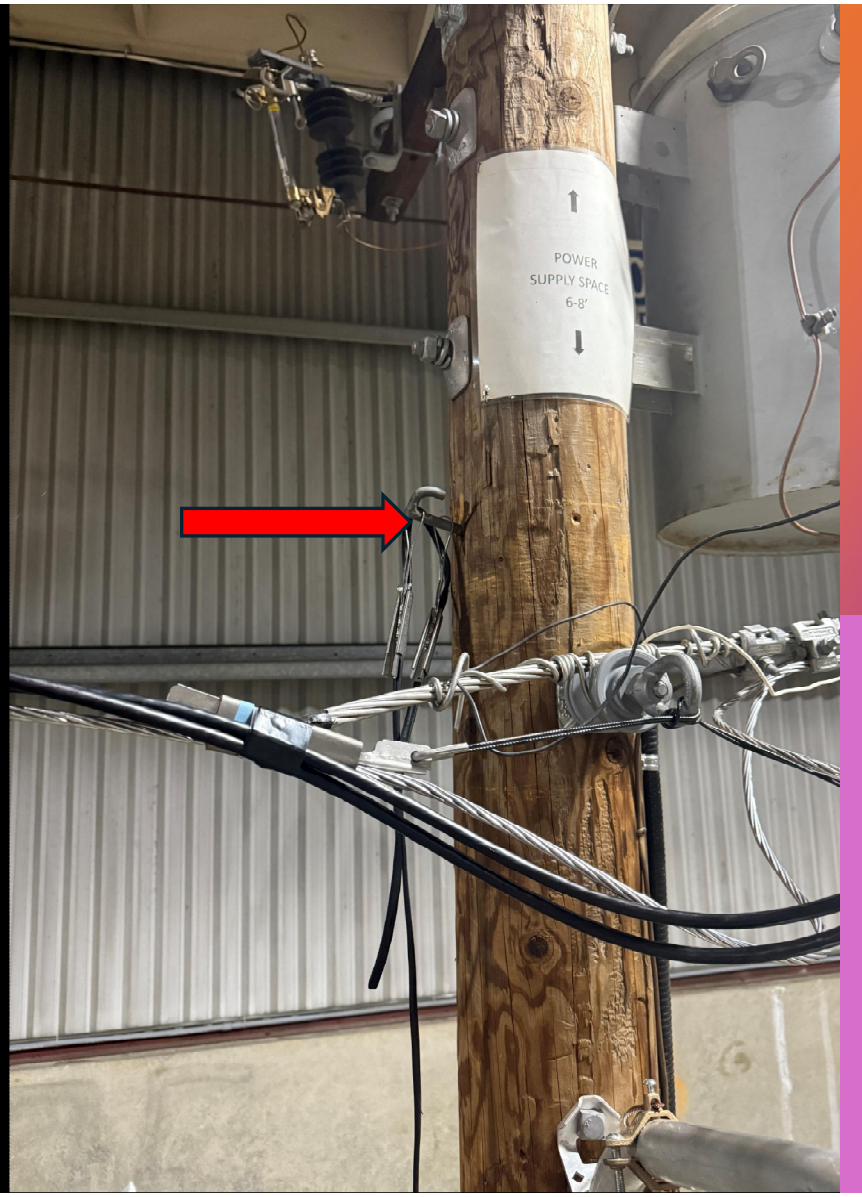
Sample of Violations Reported

I	J	K	L	M	N	O	P	Q
POLE TAG	STREET ADDRESS	CITY	LATITUDE	LONGITUDE	VIOLATION TYPE	EQUIPMENT 1	EQUIPMENT 2	VIOLATION
D1205A 165	7138 SE MAIN ST	PORTLAND	45.51356809	-122.589191	Abandoned	Communication Drop	Pole	12588682
D1205A 165	7138 SE MAIN ST	PORTLAND	45.51356809	-122.589191	MidSpan/Vertical Clearance	Communication Drop	Drivable Surface	12594087
D1205A 165	7138 SE MAIN ST	PORTLAND	45.51356809	-122.589191	MidSpan/Vertical Clearance	Communication Drop	Drivable Surface	11953000
D1205A 240	7230 SE SALMON ST	PORTLAND	45.51437447	-122.5885327	Building/Vertical Clearance	Communication Drop	Pedestrian Surface	12272733
D1205B 119	760 SE 70TH AVE	PORTLAND	45.5177029	-122.5908858	Building/Vertical Clearance	Communication Drop	Pedestrian Surface	12272738
D1205B 124	6926 SE MORRISON ST	PORTLAND	45.51739757	-122.5918397	MidSpan/Horizontal Clearance	Communication Drop	Down Guy	12589795
D1205B 124	6926 SE MORRISON ST	PORTLAND	45.51739757	-122.5918397	MidSpan/Vertical Clearance	Communication Drop	Drivable Surface	12591375

Abandoned Equipment in the Supply Space

Abandoned Communication Equipment in Supply Space

- Can a qualified communications worker remove this in the supply space if the individual can maintain MAD?



Pole Vertical Violations

Possible Solutions

- Bond/Ground Street Light
- Lower all Comms

- Resag/Shape and Tap Secondary

Pole Vertical Violation -Lowest power(top of riser) to highest comm

Possible solutions

- Extend power riser

- Lower comm attachment

Climbing Space Violations

- Comm Drop in Climbing Space

- Equipment in Climbing Space

Climbing Space Violations

Riser Cable in Climbing Space

- Equipment in Climbing Space

Relocate Comm. Drop out of Climbing Space

Communications Riser in climbing space

Relocate riser cable- may need splicing

Damaged
Broken Comm
Mainline

- DB-COML

- AB-COMD

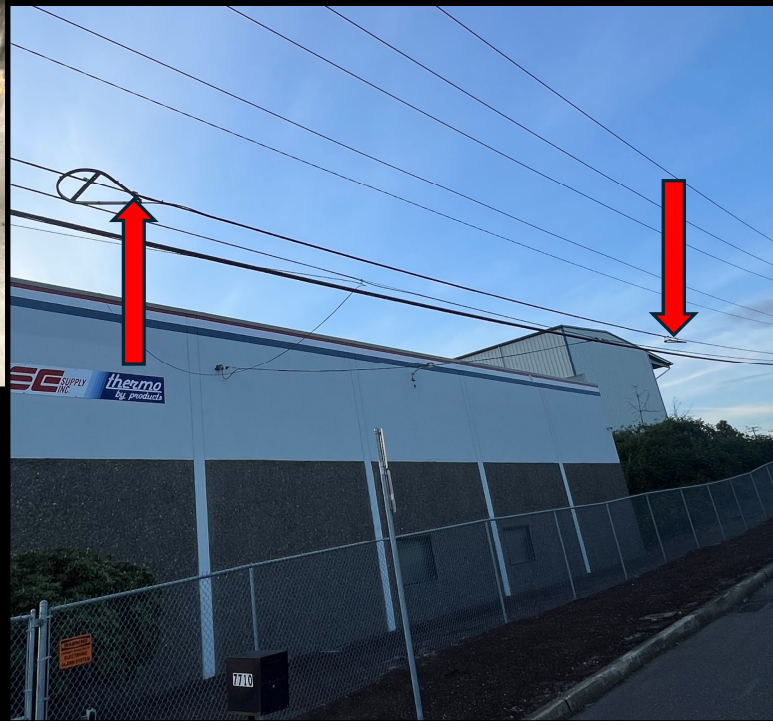
Attach Communication Mainline and Bond

Abandoned Coils/

- Remove or properly secure coils
- Tape not recommended
- If coils are to be left for extended period of time-place into snowshoes

Unsecured Storages

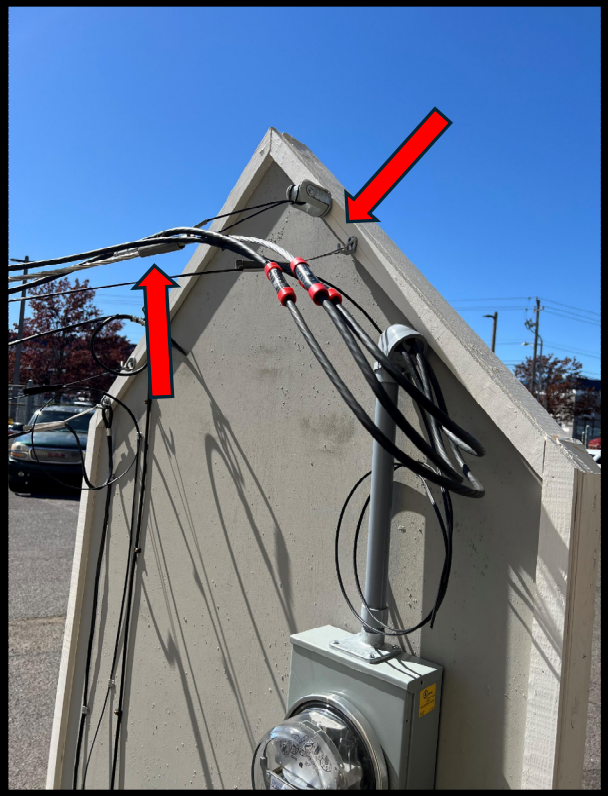
Storages with Proper Snowshoes



Loose riser attachment

Place clamp on riser pipe and stand-off

Building Clearances



- 12” Required between Comm and Secondary Attachments
- 12” also required separation in the span
- Abandoned Comm Drop

Solutions at the Building

- Relocate the building attachment for either power or communications
- Remove abandoned communications service drop

Questions?