



**CONTRACTOR**  
**SAFETY**  
**ORIENTATION**  
**ELECTRIC LINE CONSTRUCTION**



# ELECTRIC LINE CONSTRUCTION

## Nominal voltage of lines and equipment

- **7.3kV phase-to-ground, 12.7kV phase-to-phase**

## Maximum switching transient voltage

- **25.6kV (3.5 x phase-to-ground)**

## Presence of hazardous induced voltages

- **Possible on underbuilt lines or adjacent to transmission lines**

## Protective grounds & equipment grounding

- **Ground wire on poles, equipment in subs, etc.**
- **If you find ground wires cut or missing notify Connexus immediately**



# ELECTRIC LINE CONSTRUCTION

## Location of electric circuits & equipment

- Refer to Connexus circuit maps
- Ask for details if uncertain

## Condition of poles and structures

- Visually inspect before climbing. Unsafe poles are marked with red tag

## Environmental conditions

- Outdoors, uneven terrain, possible buried utilities, adjacent to busy roads

## Permit required to enter enclosed spaces?

- Very Limited – will be advised if work involves enclosed spaces



# ELECTRIC LINE CONSTRUCTION

## Minimum Approach Distance (MAD)

- **5.1-15.0 kV = 2'- 2"**

## Are employees exposed to hazards from flames or electric arc?

- **Yes, minimum 8 cal/cm<sup>2</sup> Flame Resistant clothing required if working within the minimum approach distance (MAD)**
- **Use 8 ft. insulated hot line tools when working in energized primary cabinets**

## Estimated incident energy from electric arc

- **Connexus has developed an Arc Flash Safety Quick Reference**



# ELECTRIC LINE CONSTRUCTION

## Estimated incident energy from electric arc

**ARC FLASH SAFETY QUICK REFERENCE**  
with and without Hot Line Tool (HLT)

3 Phase Pad-mount Transformer Hazard Category						
Voltage	kVA	15" Distance		8' Distance		Arc Flash Boundary w/o HLT (Ft)
		Hazard Category w/o HLT	Hazard Category w/ HLT	Hazard Category w/o HLT	Hazard Category w/ HLT	
120/208	45	1	1	1	1	2
120/208	75	1	1	1	1	2
120/208	112.5	1	1	1	1	3
120/208	150	1	1	1	1	3
120/208	225	1	1	1	1	3
120/208	300	2	2	1	1	4
120/208	500	2	2	1	1	4
120/208	750	1	1	1	1	3
277/480	45	1	1	1	1	1
277/480	75	1	1	1	1	2
277/480	112.5	3	1	1	1	5
277/480	150	3	1	1	1	5
277/480	225	3	1	1	1	10
277/480	300	3	1	1	1	9
277/480	500	N/A	2	1	1	18
277/480	750	3	1	1	1	8
277/480	1000	N/A	1	1	1	15
277/480	1500	N/A	2	1	1	18
277/480	2000	N/A	3	2	1	23

3 Ph Pole-Mounted Transformer Hazard Category						
Voltage	kVA	15" Distance		8' Distance		Arc Flash Boundary w/o HLT (Ft)
		Hazard Category w/o HLT	Hazard Category w/ HLT	Hazard Category w/o HLT	Hazard Category w/ HLT	
120/208	8	1	1	1	1	2
120/208	150	1	1	1	1	2
120/208	300	1	1	1	1	2
120/208	500	1	1	1	1	2
120/208	750	1	1	1	1	2
277/480	75	1	1	1	1	2
277/480	150	3	1	1	1	4
277/480	300	3	1	1	1	5
277/480	500	4	2	1	1	7
277/480	750	N/A	1	1	1	10

Hazard Risk Category	Clothing Description	Clothing Layers	Min Arc Rating of PPE (cal/cm <sup>2</sup> )
0	Long Sleeve Shirt & Denim Jeans	1	0
1	FR Shirt & Pants + Hard Hat	1	4
2	Cotton Underwear + FR Shirt & Pants + Hard Hat & Face Shield + Hearing Protection	1 or 2	8
3	Cotton Underwear + FR Shirt & Pants + FR Coverall + Hard Hat & HRC 3 Flash Suit Hood + Hearing Protection	2 or 3	25
4	Cotton Underwear + FR Shirt & Pants + HRC 4 Flash Suit + Hard Hat + Hearing Protection	3 or more	40



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**Are devices designed to open/close circuits under load?**

- **Yes - fuses, cutouts, reclosers, etc. Ask for specific information if you are unsure**

**Known sources of electric energy**

- **OH /UG circuits originating from substations supply power. Customer-owned distributed generation (specifics will be provided) may have potential to backfeed if protective switches fail.**

**Do protective grounds have adequate current carrying capacity?**

- **Yes, minimum 1/0 for personal grounds**

**Possible hazardous transfer of potential if fault occurs?**

- **Yes, less than 10kA**





# **ELECTRIC LINE CONSTRUCTION**

**Contractors may request other information about the design and operation of the Connexus electrical system that is known and related to the protection of the contractor employees**

