

Toolbox Talks 2

077: Unsafe Conditions: Transformer Installation

Discussion leader duties for this session:

Think about the various steps involved in transformer installation, and what unsafe conditions might exist with each one.

What this Safety Talk covers:

This Safety Talk addresses conditions that make transformer installation less safe.

Discussion notes:

Unsafe conditions related to transformer installation

- Clutter or debris in work area. Transformers are heavy and unwieldy. They often require the use of jacks and rolling lifts. Even a small screw can cause a wheel to jam and the transformer to pitch dangerously.
- Poor lighting. You need to see possible dangers. Provide portable power and light, if necessary. Don't aim lights directly at people. Keep cords out of the way.
- Insufficient manpower. If you don't have enough people for the muscle work, ask for help or contact your foreman. Don't try to be macho.
- Adequate lifting means unavailable. Don't rely on back muscle and ladders for overhead installations.
- Area underneath overhead installation work area not secure. Don't risk dropping a transformer or tool onto people or equipment. Rope off the area.
- Bad weather and outdoor installation. If the work must be done regardless of the weather, provide some kind of temporary shelter. You don't want water in a transformer when you energize it. If possible, postpone until the bad weather has passed. If it has passed, remember that mud, snow, and ice are hazards. Snow and ice falling off the roof can cause serious injury.
- Neutral, bonding, or ground connections broken but not bypassed. This situation means parts that shouldn't be at a lethal voltage can be. Provide temporary bypass jumpers and/or perform lockout/tagout on the affected loads.
- Cables not tested prior to being connected. If the cable has a ground fault, you don't want to find out only after closing the supply switch.
- Downstream (load) breakers closed at time of energization. To reduce arc blast hazards, open the downstream (load) breakers before closing the disconnect to the transformer. After you energize the transformer, close each downstream breaker one at a time.
- Area around transformer vent(s) not clear of personnel at time of energization. Make sure nobody's in the path of a potential arc blast.
- Covers and doors not secure at time of energization. Secure them. The force of an arc blast is greatly reduced and properly diverted when covers are properly secured. Same goes for panels and boxes.

Review and discussion

1. Why is clutter a problem, and what should you do about it?
2. Why is good lighting important?
3. If it turns out that you really need four people to set a transformer in place but your foreman assigned only three, should you just suck it up and do the job without that other person? *[Note to Presenter: You should probably tell your foreman that you need to borrow another person or two. Sometimes, you can just ask someone from a nearby crew to lend a hand for five minutes to get you over the roughest*

part. It's important to understand that when you're moving large objects in an environment with several variables, the limits for safety fall well below the limits of your strength.]

4. How do you know if you don't have an adequate lifting means for a ceiling mounted transformer? *[Note to Presenter: This is often a matter of judgment. Generally, if the transformer has a lifting eye, use it. Also keep in mind the weight limits of the ladders being used. Note that you can't divide the weight of the transformer by two, just because you're using two ladders. The weight probably won't be evenly distributed.]*

5. Why do you need to rope off the area under an overhead installation? What about desktop computer monitors or other equipment?

6. What are some weather considerations?

7. Why is it a problem if neutral, bonding, or ground connections are broken but not bypassed? How do you correct this?

8. Why should cables be tested before being connected to your transformer?

9. Why should you open downstream breakers before energizing the transformer? *[Note to Presenter. This prevents several problems. For one thing, you reduce the current that flows across the disconnect at time of closure. You also protect the loads from surges. Another benefit is that if there's a problem with a load you will have greatly reduced troubleshooting time. But the main reason is less energy across the switch and therefore less blast hazard.]*

10. Why should you secure all covers and doors on the transformer and related panels before energizing the transformer?

Participant's Signature and Date

[illegible]