

Toolbox Talks 2

074: Unsafe Conditions: Running Raceway

Discussion leader duties for this session:

Make some notes on safety problems that can arise when routing, running, and securing raceway. Be prepared to talk about these.

What this Safety Talk covers:

This Safety Talk addresses conditions that make running raceway unsafe.

Discussion notes:

Unsafe conditions related to running raceway

- Energized equipment. Before you run raceway into energized enclosures, use insulated blankets and/or other means to safeguard against touch shock hazards. Before you run raceway above any enclosures with top openings, provide a means to prevent dropped tools or fasteners from falling in. Metallic raceway such as EMT and conduit typically come in 10 foot sticks—keep that in mind, as well.
- Operating equipment. If you can't take equipment out of service, provide a way to keep it from coming into contact with you or anything you're holding. This can be a simple matter of ladder positioning, or a more involved matter of erecting barriers.
- Clearances. The minimal working clearances per OSHA and the NEC are for maintenance, not construction. If you don't have enough room to work safely, especially with metallic raceway, contact your foreman.
- Clutter. The typical raceway job involves lifting, carrying, and ladder-climbing. Clutter can make each of these dangerous, due to slipping, tripping, and bumping hazards.
- Traffic. If you have to work in an area that has foot traffic, you don't want people bumping into you or your ladder. You may need to erect barriers and create an alternate route. Similar considerations apply to lift trucks or motor vehicles if you're working on their routes.
- Bonding violations. If your raceway job involves metallic raceway or metallic enclosures, you may need to fix bonding violations before doing the job. On green construction, this is seldom an issue. On retrofits, it's often an issue. If you're running raceway to any equipment or enclosure that has a ground rod driven next to it, suspect bonding violations exist. Bonding is the only way to eliminate the differences of potential that create a shock hazard. Discuss with your foreman and the project manager whether to install permanent or temporary bonding jumpers.
- Miscellaneous NEC violations. These apply mainly to retrofits or new construction on existing sites, rather than green site construction. Unplugged enclosure openings pose an immediate hazard. You could poke a stick of EMT through one. If anything doesn't look right, report it to your foreman for resolution.
- Portable cord problems. Keep cords routed out of the way of foot traffic. Obviously, you don't want a tripping hazard. But you also don't want the cord damaged. Many people don't know they aren't supposed to walk on cords.
- Fatigue. Running raceway can be hard work, especially if it's large raceway or being run overhead. Don't be macho. If the hard work is beginning to take its toll, ask your foreman for something else to do for the rest of the shift.

Review and discussion

1. If you're doing add-on work and need to run raceway to an energized

2. What danger exists if you're running raceway above an energized enclosure, such as switchgear or a transformer? What precaution should you take?

3. If you're running raceway near energized equipment, do you need to consider blast protection in addition to everything else? Why or why not? *[Note to Presenter: The answer is yes. The danger exists because the energized equipment is there.]*

4. If your raceway job is going to put you physically close to operating equipment, what are some dangers and safety considerations?

6. When might you need to take precautions for foot traffic or vehicular traffic? *[Note to Presenter: New construction is a high foot traffic situation, so erecting barriers and rerouting traffic is seldom practical. People know not to walk under ladders, to give a wide berth to folks who are carrying things, not to walk into a space where a person is working, and to generally be careful where they're going. But this is seldom true on operational sites where retrofit work is being done or on sites that contain a mix of new construction and existing operations.]*

7. Why is it important to correct bonding violations before running metallic raceway?

8. What are some NEC violations you've encountered on past jobs? How can these endanger you when you're running raceway?

9. Why is portable cord management important to your safety? What are some good practices?

10. Why is fatigue dangerous when running raceway? What are some signs you've had enough for the day, and what should you do? *[Note to Presenter: Electrical construction is often physically demanding. There's a difference between continuing to work when you're a little tired and continuing to work when it's really time to stop. If you find your forearms are bloated and your grip is now so weak that you have a hard time holding that piece of 4-inch rigid, it's really time to stop. You may be able to "shake out" the fatigue (done by simply dropping your arms and shaking them) to finish putting that piece in place. You may also find that taking 15 to 30 minutes to do another task, such as cleaning up some tools, making a bend, or filling out paperwork, will allow you to safely continue. But it may be time to switch to something else for the rest of the day, so you don't hurt yourself. Talk it over with your foreman and see what you can work out.]*

Participant's Signature and Date

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