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ECHL THE WIRE

APRIL 2023

The Presidents' Letter

For this April 2023 edition of ***The Wire*** I hope all of our members are doing well. We have two more general membership meetings left before our summer break, April 10th and May 8th.

Our March 13th general membership meeting was attended by 47 members. Dennis Steier gave a solid presentation on overcurrent protection. As with most of this season's presentations, there were many good questions and a lot of discussion.

The 50/50 drawing was for $46 and was won by David Witten. Please remember, if you have any suggestions on presentations, get with one of the board members.

Metro Inspector Norb Thorpe will be conducting our April 10th presentation covering the basics of grounding and bonding.

Dennis Steier and I attended the Department of Housing, Building, and Construction Advisory Committee meeting on March 28th in Frankfort. During the meeting, a motion was made and approved to develop a task force to explore the adoption of National Electrical Code. I will update our members as this process continues.

As mentioned in the last several newsletters, the Department of Housing, Building, and Construction has gone to a new data base system which will no longer allow users to search for their licenses or their continuing education hours. We have had several members whose hours were not transferred from the old data base into the new one. So, for more information or any problem please call the Department at (502) 573-2002.

Our next general membership meeting is Monday April 10th at the Elks Lodge located at 2824 Klondike Lane. The meeting starts at 7:00 pm with sign-ins beginning at 6:30 pm. Hope you will be able to attend. If the opportunity arises, mention the Clearing House to your coworkers. I think they would be pleased with our presentations.

As Always Stay Safe and Work Safe
Steve Willinghurst
ECHL President

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APRIL 10, 2023 Code Program

Sign-in 6:30 P.M. - Program at 7:00 P.M.
ELKS LODGE # 8 - 2824 KLONDIKE LN -

Our April program will be presented by Norb Thorpe, Louisville Metro Inspector. Norb will put together a program on Grounding and Bonding.

Dennis Steier will also go over the Code Questions in the April 2023 Wire.

See you Monday Evening, April 10, at 6:30 pm.

Stay Alert! Stay Informed! & Work Smart!

Supporting our Industry

***** Electrical Equipment Needed *****

ECHL is committed to supporting the electrical industry and the training required to further the trade. In doing so, we ask for your old equipment / inventory to use for training.

ECHL contractors and or suppliers - if you are cleaning out your old Inventory and have material (electrical Equipment) that is taking up space in your warehouse, the Iroquois High School Electrical Program is seeking material that can be used for teaching students about electrical products they may encounter in the field. Educating our future apprentices is the goal.

IEC is the hub for most of the surrounding area's for the electrical trade training schools. She has contacts for Jefferson County, Bullitt County, to Hardin County.

If you would call, Erin Pretorius or Stephanie at 502-493-1590 or email Erin at erin@iec-kyin.com to make arrangements for pick up or delivery.

Old or new! - Thanks for your support!

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APRIL Code Questions

1. Can you use EMT for an underground raceway for the service conductors? Where would you find this answer in the 2017 NEC?

   YES NO

   Section _____

2. The conductors that are supplying a feed that will power 3 welders, the overcurrent device needed to be _____ percent of the conductor ampacity. Where would you find this answer in the 2017 NEC?

   Section _____

3. Can a thermal device be used to open a short circuit or ground fault? Where would you find this answer in the 2017 NEC?

   YES NO

   Section _____

Can you use a # 4 THHN in a 1" EMT to feed a 100 amp service to a single family dwelling? Where would you find this answer in the 2017 NEC?

YES NO

Section _____

5. Can you install a threadless RMC connector or coupling on a threaded end of the conduit? Where would you find this answer in the 2107 NEC?

   YES NO

   Section_____

6. Can you install 12 twin breakers for 24 circuits in a 12 circuit breaker panelboard? Where would you find this answer in the 2017 NEC?

   YES NO

   Section_____

Code Corner

Available Fault Current

NFPA 70E the Safe work Practices document that I attention at last months is now more it is influencing NFPA 70 the Electrical installation document. The past 5 *Code* cycle there have been addition regarding Safety in the workplace, which safety in the workplace is a welcome addition to the *Code Which purpose is to protect persons and property from hazards arising from to use of electricity* .

The definition from Article 100 on **Short-Circuit Current Rating.** Is the prospective symmetrical fault current at a nominal voltage to which an apparatus or system is able to be connected without sustaining damage exceeding defined acceptance criteria. This is telling you that if the available fault current is let say 80,000 amps you must use a device rated higher than that that to comply with the NEC.

110.9 Interrupting Rating. Equipment intended to interrupt current at fault levels shall have an interrupting rating at nominal circuit voltage at ***Least Equal to*** the current that is available at the line terminals of the equipment. So if there is 50k available the overcurrent device must be at least rated for 50k to be in compliance with the 2017 *NEC*.

110.24 **Available Fault Current** Covers requirements to comply with the NEC in other than dwelling units in your installation.

110.24(A) **Field Marking** States that service equipment shall be legibly marked in the field with the maximum available fault current. The field marking (s) shall include the date the fault current calculations was performed and be of sufficient durability to withstand the environment involved. The calculations shall be documented and made available to those authorized to design, install, inspect, maintain or operate the system.

110.24(B) **Modifications.** States when modifications to an electrical installation occurs that affects the

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Top Three Code Violations Louisville Metro Inspections March 2023

These violations are costing you time and money.

1. NEC Article # 408.41 Grounded Conductor Terminations.

Each grounded conductor shall terminate within the panelboard in an individual terminal that is not also used for another conductor.

Exception: Grounded conductors of circuits with parallel conductors shall be permitted to terminate in a single terminal if the terminal is identified for connection of more than one conductor.

2. NEC Article # 408.7 Unused Openings.

Unused openings for circuit breakers and switches shall be closed using identified closures, or other approved means that provide protection substantially equivalent to the wall of the enclosure.

3. NEC Article # 408.4(A) Field Identification—Circuit Directory or Circuit iIdentification.

Every circuit and circuit modification shall be legibly identified as to its clear, evident, and specific purpose or use. The identification shall include an approved degree of detail that allows each circuit to be distinguished from all others. Spare positions that contain unused overcurrent devices or switches shall be described accordingly. The identification shall be included in a circuit directory that is located on the face or inside of the panel door.

Being Turned down on a project, you lose money and time required to return to the job site for repairs and to correct the violation.

We hope this will help save you time and money on inspection fees by reviewing the articles and making sure you have not violated the code before calling for the initial inspection.

Submitted by Arnold Hornback
Assistant Chief Electrical Inspector
Louisville Metro Dept. of Codes and Regulations

Code Corner Cont'd

maximum available fault current at the service, the maximum available fault current shall be verified or recalculated as necessary to ensure the service equipment rating are sufficient for the maximum available fault current at the line terminals of the equipment. The requirements of field marking (s) in 110.24(A) shall be adjusted to reflect the new level of maximum available fault current.

There is an Exception that industrial installation with maintenance and supervision with qualified persons are not required to be field marked.

Submitted by Dennis Steier

LG&E NEWS

Timetable for a Job to be completed.

Just a reminder that the typical timeline it takes to give service to a customer is 4 to 6 weeks. Therefore, it is important for the electrician to complete the "load sheet" and return it to the locator to initiate moving the project toward construction. The lead time may involve getting easements, collecting any payments necessary and any easements necessary. If a state or metro road permit is necessary, that could take up to 30 days to receive. Therefore, it is imperative to get things started early and on time for your project to be completed on time.

Submitted by Joel McCauley
Team Leader Electric Design Svcs
LG&E and KU Energy LLC

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NFPA 70E: Electrical Safety for Portable Cord- and Plug-Connected Electric Equipment

Portable equipment and portable cords are designed/built to be used with many safety considerations in mind because (among other reasons) materials have their limits.

Take, for example, the common practice of lowering an impact driver or other power tool from a ladder by its cord, which is banned by Sec. 110.9(A). This appears to cause no harm. The cord didn't come apart and looks the same as before. But it's not the same as before. The cord actually stretches due to the weight, and this stretching reduces the integrity of the insulation. Maybe the effect is insignificant the first time, but keep doing this and you will have a cord with significantly compromised insulation. Remember, a portable cord is not a utility rope.

Another effect that occurs is when the "careful" worker (who is not depending on the plug of the tool to stay inserted into the cord receptacle) wraps the cord around the tool. And if he's really "careful," he ties that cord into a knot. This exceeds the bend radius of the cord, permanently damaging it. A few microtears here and there, and the cord is not nearly as safe as it should be. Use a properly tied rope, a rope and carabiner system, or a lanyard of suitable length to lower the tool. Another "safety" practice is to secure a cord with staples or wrap it around a structural member to keep it out of the way. The main problem with this "safety" practice is it ensures you damage the cord. This practice is also banned by Sec. 110.9(A).

But the idea of securing a cord out of the way so that it's not a tripping hazard, and it's not damaged by being walked on is a good idea. Others have had this idea too, which is why there are products made specifically for routing, securing, and protecting portable cords. If you are going to work in areas with foot traffic or vehicular traffic, obtain such products ahead of time. Keep in mind also that if you are using an overhead solution, you will need to allow for two vertical runs of cord length to accommodate that. Don't try to use a 50 ft. cord with cord trees if the work location is 40 ft. from the receptacle. The same logic applies to routing around the perimeter of a room or other area. Don't plan in terms of straight line distance, plan in terms of the route the cord will take — it's similar to planning what length of conductor you need for a branch circuit.

NFPA 70E: Electrical Safety Cont'd

When purchasing portable cords, always purchase a contractor-grade (e.g., heavy-duty) cord, and ensure it has a grounding conductor. This last bit will ensure you always comply with Sec. 110.9(B), which requires using a cord with a grounding conductor any time you use grounding-type equipment. If you don't have a cord without a grounding conductor, then you can never choose the wrong cord. Before putting a cord away, visually inspect it for external defects, such as loose parts or a chunk missing from the jacket. Also inspect it for signs of internal damage; if the jacket is pinched or crushed, the cord probably has internal damage. Performing these inspections before using the cord is required [110.9(C)(a)]. But by performing them after use, you have time to address any issues before you need a cord again — and it's the only one you have.

One incorrect way to fix a cord with damaged insulation is to wrap phasing tape around it and call it good. That is not a good way to fix a cord. First of all, phasing tape doesn't offer the same protection that the jacket insulation does. And if the insulation is damaged, you should assume that what's under it is damaged also. There are only two correct solutions:

1. Remove the cord from service [110.9(C)(b)], and discard it.
2. Remove the cord from service [110.9(C)(a)], cut and remove the damaged part, and attach new ends (male and female connectors) to the remaining pieces if they are long enough to be useful.

How should you store portable cords? Tossing one into the bottom of a gangbox is an obvious mistake. A great solution is to use portable cord spools. These properly wrap the cords in a way that doesn't exceed their bend radius, and they allow for easy cord laying because there are no knots or 21257535 tangling.

Another solution is to use an "air spool"; you simply make cord loops on the floor. How big should the loops be? Just let the cord relax as you make these and you won't exceed the bend radius. If you go this route, consider putting the cord into a suitably sized drawstring bag. In all cases, keep the cord loose. Binding it with cable ties, even if you do so in figure eight fashion, can damage the insulation. Binding it with any kind of tape could leave a conductive film on it while also leaving the cord sticky.

Source: Email EC&M Code Watch - Jan. 20, 2023- Portable equipment powered via plug and cord is often abused and mishandled. By Mark Lamendola