



# THE WIRE

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## APRIL 2024

### **The Presidents' Letter**

The attendance for the March general membership meeting was 43. This was encouraging to the fact that these numbers were the best for the year. As promised, David True and I gave a detailed financial report showing revenue and expenses. As with the February meeting the members in attendance had some excellent input. And this input was very much appreciated as it gave the Board of Directors some specific direction for our March board meeting. We will continue to update the membership at future meetings.

Also, at the last meeting a motion was made, seconded and passed to raise the membership dues for next year (beginning September 2024) to \$60.00. Hopefully this will help some to offset continued rising expenses.

David True has done a very nice job of putting together the ECHL Website Sponsorship Form. This form will soon be loaded on the website in a PDF format for members to download and take to supply houses or other interested parties for a \$100 website sponsorship. This was a suggestion from our members to help create more revenue. Good job David!

I would like to thank Board member Mark Yates for setting up the March presentation by Summit Sales. Solid information was passed on to the members in attendance regarding surge protection and basic fire alarm systems. Thanks, Mark, for coordinating this presentation.

The topic for our next general membership meeting on April 8<sup>th</sup> will be the new 2024 NFPA 70E Standard for Electrical Safety in the Workplace. Dennis Steier and I will be fielding questions regarding the main changes to this very important Standard.

The feedback that I have recently received from the Department of Housing, Building, and Construction Advisory Committee is that the 2023 National Electrical Code is on track for adoption this fall. The adoption is long overdue, but at least the process has begun. The 50/50 drawing was won by Mark Steurer for a total of \$57. Congratulations Mark!

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### **APRIL 8, 2024 Code Program**

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

Dennis Steier will present our April program and will be the new 2024 NFPA 70E Standard for Electrical Safety in the Workplace. Dennis Steier and I will be fielding questions regarding the main changes to this very important Standard.

Bring a friend and enjoy the program.

Dennis Steier will also go over the Code Questions in the April 2024 Wire.

See you Monday Evening, April 8, 2024, at 6:30 pm.

### **Mark you calendars - CEU Renewals!**

Inform your co-workers, Friends and other electricians about our organization. Encourage them to join and attend our meetings.

Our General Membership meetings are held at the Elks Lodge located at 2824 Klondike Lane. The meeting starts at 7:00 pm with sign-ins beginning at 6:30 pm. You can obtain 1.5 CEU Hours toward your Master Electrician License. Attend 4 programs and you will have enough to renew your license.

### **Upcoming ECHL General Membership Meeting Dates**

**May 13, 2024**

### **Summer Break (June, July & August)**

#### **Fall Programs**

**September 9, 2024**

**November 11, 2024**

**October 14, 2024**

**December 9, 2024**

**Mark your calendars for our Fall Programs. Invoice for memberships will be mailed with the September Wire.**

### APRIL Code Questions

1. You have some equipment with a NEMA 12K rating that is located in a possible wet location during construction, does this need to be protected from the elements? Where would you find this answer the 2017 NEC?

YES                      NO  
Section \_\_\_\_\_

2. You have to replace a snap switch rated at 20 amps in a dwelling that is wired and with aluminum wire with non-metallic cable, what marking should this be require to have? Where would you find this answer in the 2017 NEC?

Section \_\_\_\_\_

3. What is the minimum thickness of a faceplate made of an insulated material? Where would you find this answer in the 2017 NEC?

A. 2.5mm                      C. 2mm  
B. 0.10in.,                      D. 0.100in.  
Section \_\_\_\_\_

4. What is the clearance requirement for conductors entering a bus enclosure with insulated bus bar inside? Where would you find this answer in the 2017 NEC?

A. 12in                      C. 10 in.  
B. 6 in.                      D. 8 in.  
Section \_\_\_\_\_

5. What is the minimum spacing requirement between bare live metal parts to ground in a switchboard rated at 480/277v? Where would you find this answer in the 2017 NEC?

A. 1/2 in.                      C. 2 in.  
B. 1 in.                      D. None of above.  
Section \_\_\_\_\_

6. You are replacing old ballast in a fluorescent luminaire that is installed in an office area that does not have integral thermo protection is this replacement required to have this protection? Where would you find this answer in the 2017 NEC?

Yes                      No  
Section \_\_\_\_\_

### Code Corner

.Article 312

Article 312 of the NEC is titled **Cabinets, Cutout Boxes and Meter Socket Enclosures**. If you are designing or sizing a Cabinet or Box for you application you need to refer to this Article for the requirements set by the NEC.

**312.1 Scope.** Covers the installation and construction specifications of cabinets, cutout boxes and meter sockets **enclosures**. It does not apply to equipment operating at over 1000 volts, except as specifically elsewhere in the *Code*.

**312.2 Damp and Wet Locations.** If you read the Section you will see where you may have violated the Code at some time in your career. Did you mount the Box or Enclosure with a ¼” of airspace between the Box and Enclosure? Well this section requires that you install it in that fashion. You are also required to use a Box or Enclosure that is listed for Wet Location.

**312.3 Position in Wall.** This requires you to install boxes on or enclosure to be not set back more than a ¼” in noncombustible material wall and are require to be flush in combustible material walls.

#### Table 312.6(A) Minimum Wire Bending Space at Terminals And Minimum Width of Wiring Gutters.

If you would be sizing a wiring gutter you would need to refer to this table for the proper size required for the application.

**Table 312.6 (B) Wire Bending Space at Terminal.** This was an issue raised by Toyota engineering recently and their facility in Georgetown and they were correct in calling this out to the contractor. Table 312.6(B) has the Bending radius for the size conductor you may be installing. Don't have the end user call you out on violating the NEC.

**312.8(B) Power Monitoring Equipment.** This is a new section added in the 2017 NEC this allows you to mount these type of devices in the wring space on you enclosure or panelboard. The monitoring equipment shall be identified as a field installable accessory as part of a listed equipment or is a listed kit evaluated for installation in a switch or overcurrent device enclosure. The total area of this equipment cannot exceed 75% of the cross sectional area of this space.

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### **Top Three Code Violations Louisville Metro Inspections**

**APRIL 2024**

**These violations are costing you time and money.**

1. NEC Article # 225.20 Protection Against Physical Damage

Conductors installed on buildings, structures, or poles shall be protected against physical damage as provided for services in 230.50.

2. NEC Article # 210.62 Show Windows.

At least one 125-volt, single-phase, 15- or 20-ampere-rated receptacle outlet shall be installed within 450 mm (18 in.) of the top of a show window for each 3.7 linear m (12 linear ft) or major fraction thereof of show window area measured horizontally at its maximum width.

3. NEC Article #210.4(B) Disconnecting Means

Each multiwire branch circuit shall be provide with a means that will simultaneously disconnect all ungrounded conductors at the point where the branch circuit originates.

You lose money when you are turned down on a project. It also cost you time, when you have to return to the job site to make the necessary changes to correct the violation, that too, cost you money. Time is money.

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*

### **Presidents Letter Cont'd**

Our next general membership meeting is scheduled for Monday April 8<sup>th</sup> 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 to see you there.

As Always Stay Safe and Work Safe  
Steve Willinghurst  
ECHL President

### **Code Corner Cont'd**

This Article can be overlooked and need to be used in sizing and type of boxes, enclosure and wiring gutters the installation requirements you may need in your application.

*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, it 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*

### **WHAT IS THE DIFFERENCE BETWEEN ABOVE GROUND AND BELOW GROUND CONDUIT?**

The main difference is fire resistance. Above ground conduit has fire resistance per UL2515 and CSA C22.2 No. 2515 standards, meaning the conduit will self-extinguish within 15 seconds after each of five successive flame applications per the UL 2515 flame test standard.

Below Ground conduit meets UL94 HB (horizontal burn) requirements, which aren't as stringent as vertical burn requirements. This also means that conduit manufactured and labeled for "above ground" applications can be used for "below ground" applications.

#### ***Digging Deeper into Direct Burial Conduit***

Direct buried conduit is a type of conduit used in below ground installations of electrical systems in commercial and industrial construction projects. Typically direct burial conduit is used in applications where there will be minimal digging after installation, as digging has the potential to disrupt and damage conduit (and the cable) buried beneath. Direct burial serves to protect electrical systems from environmental factors such as trees, branches, wind, and fire plus it can also be an aesthetic solution that hides overhead power lines. Additionally, direct burial conduit is often a solution when electrical systems use cross roadways because it offers less disruption to traffic patterns. Specifically, direct burial is often used in applications such as data centers, waste water treatment facilities and utilities.

Direct buried (DB) conduit must have mechanical strength to withstand the load of the soil that's packed over it. DB quality applications should utilize UL Listed conduit. We typically recommend using our Standard Wall for ¾" – 4" in diameter, and Medium Wall for 5" and 6" (UL designates Champion Fiberglass MW for 5" and 6" as SW). For very deep trenches, special soil conditions for where high rate of compacting can be expected, and even heavier wall should be selected.

#### ***Key Considerations for Direct Burial Cable and Conduit in Industrial Construction Projects***

When determining whether your below ground conduit installation requires direct burial quality, there are several factors to consider:

**Volatility of the environment.** Soil types and load as well as the mechanical strength of the conduit

must be considered here. Frost and settlement can impact the stability of direct burial conduit. Corrosion from soil can compromise the conduit as well.

**Compacting of soil.** This is an important factor in direct burial conduit. For very deep trenches, special soil conditions or where a high rate of compacting can be expected, a heavier wall conduit should be selected *Contact Champion Fiberglass* to answer any questions above the leveling of compacting in a project.

**Ease of access for later service.** Using conduit will allow you to more easily locate and repair cables down the road with less risk of damage to the conduit. Consider a conduit's coefficient of friction to evaluate for ease of pulling as well as cable fault resistance, which allows a cable to be easily pulled through for repair and replacement.

**Project complexity.** Challenging installations can benefit from the efficiency that carefully planned conduit use can provide for cable runs.

**Local regulations.** While NEC (National Electrical Code) may approve a conduit (also referred to as "duct" or "pipe") use for direct burial, local regulations may call for more stringent installations techniques such as dictating how deep the conduit must be buried.

**Future landscaping.** It is important to consider whether future landscaping projects may disrupt direct buried conduit and put the conduit at risk for damage

Electrical conduit provides additional protection for cables in industrial construction projects.

#### ***Selecting a Conduit Type***

For projects requiring direct burial conduit, Selecting the best underground conduit for the job is important. You'll want to also consider the costs associated with each type of conduit's raw materials as well as installation, the long-term financial impacts of a conduit's durability, as well as availability for your substrate of choice. Commonly used conduits for underground applications include traditional metal conduits such as RMC (rigid metal conduit or EMT (electrical metallic tubing). Fiberglass (RTRC Conduit and PVC Conduit.