



Code Pitfalls You Can Avoid

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NEC® Compliance

- ✓ Safe Design
- ✓ Safe Materials and Equipment
- ✓ Safe Installation





There's More!!

State and Local Requirements

ORDINANCE NO. 24584-12-2020

AN ORDINANCE AMENDING THE FORT WORTH ELECTRICAL CODE, BY ADOPTING THE 2020 NATIONAL ELECTRICAL CODE, WITH LOCAL AMENDMENTS; AMENDING SECTIONS 11-1 THROUGH 11-4 OF THE CODE OF THE CITY OF FORT WORTH (2015); REGULATING ERECTION, CONSTRUCTION, DEMOLITION, CONVERSION, ALTERATION, REPAIR, MOVING, REMOVAL OF MATERIALS, USE AND MAINTENANCE OF ELECTRICAL EQUIPMENT IN THE CITY OF FORT WORTH, TEXAS; DEFINING CERTAIN TERMS; ESTABLISHING MINIMUM REQUIREMENTS FOR THE INSTALLATION, ALTERATION OR REPAIR OF ELECTRICAL SYSTEMS; PROVIDING FOR THE ISSUANCE OF PERMITS AND THE COLLECTION OF FEES THEREOF; PROVIDING FOR THE INSPECTION OF SUCH SYSTEMS; REQUIRING ANY REGulating LICENSES AND REGISTRATIONS FOR ELECTRICIANS AND PRESCRIBING THE FEES THEREFOR; PROVIDING A SEVERABILITY CLAUSE; PROVIDING A SAVINGS CLAUSE; PROVIDING FOR A PENALTY CLAUSE; PROVIDING THAT THIS ORDINANCE SHALL BE CUMULATIVE; PROVIDING FOR PUBLICATION IN PAMPHLET FORM; PROVIDING FOR PUBLICATION OFFICIAL NEWSPAPER AND PROVIDING AN EFFECTIVE DATE.

**OCCUPATIONS CODE
CHAPTER 1305. ELECTRICIANS
(Effective September 1, 2019)**

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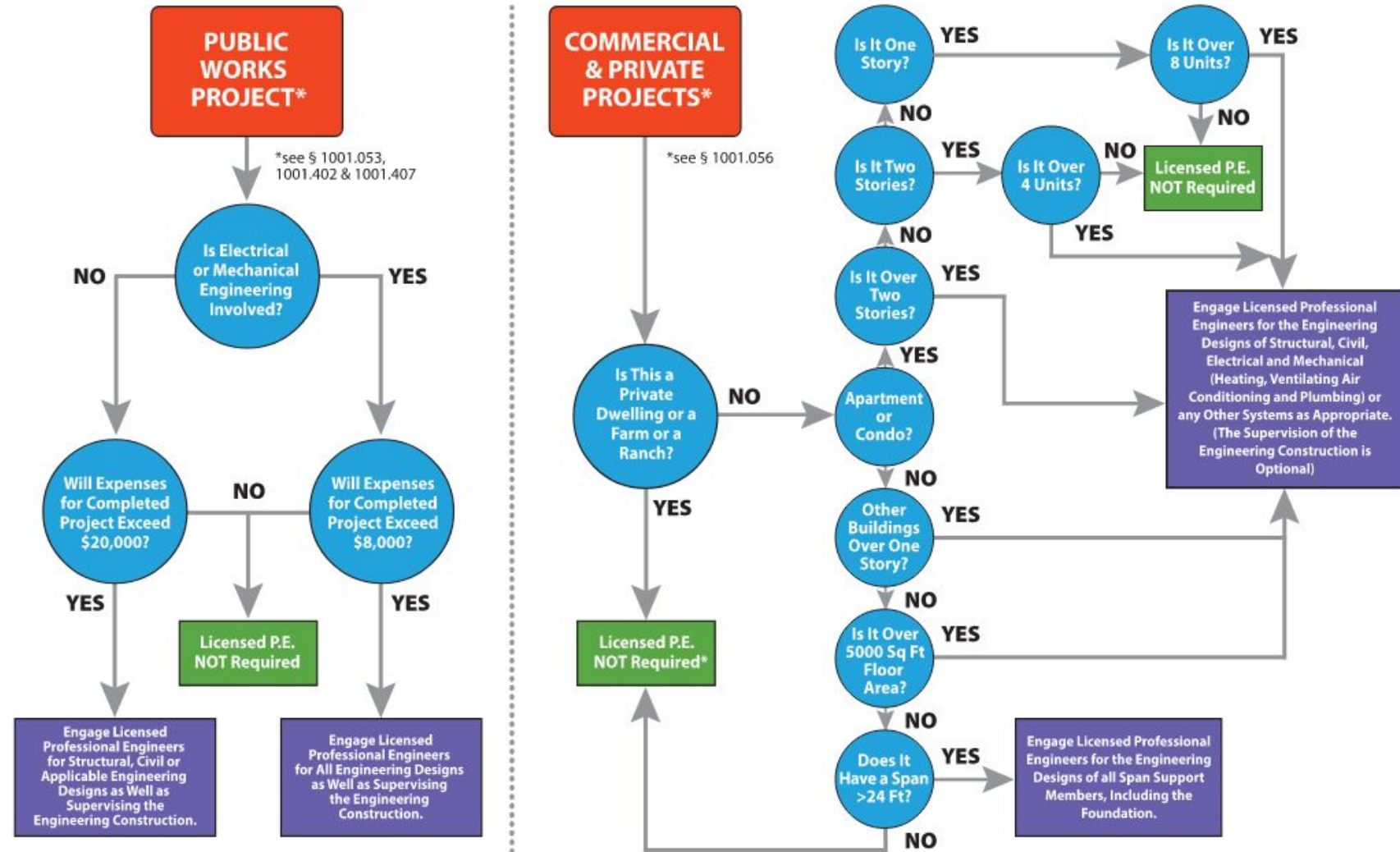
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State and Local Requirements

- ❑ Modify NEC® Requirements
- ❑ Are often more restrictive
- ❑ Define what work must be done by licensed electricians
- ❑ Define what work must be permitted
- ❑ Define when sealed engineered drawings are required

Texas Requirements for Licensed Engineer

When is a **Professional Engineer** required on a project?



This flowchart is intended for guidance purposes only and the Texas Engineering Practice Act and Rules govern final interpretation. Local codes and ordinances may be more restrictive as long as not in conflict with the Texas Engineering Practice Act and Rules.

* Unless not exempt per 1001.056(c)
Visit <http://pels.texas.gov/downloads.htm> for a copy of the Texas Engineering Practice Act and Board Rules and download this diagram.

Texas Department of Licensing and Regulation:

Exemptions to Electrician Licensing

(a) This chapter does not apply to:

(12) The design, installation, erection, repair of Class 1, Class 2, or Class 3 remote control, signaling or power-limited circuits, fire alarm circuits, optical fiber cables, or communications circuits, including raceways, as defined by the National Electrical Code; (Section 1305.003(a)(12) of Texas Electrical Safety and Licensing Act).

Local Amendment from the Dallas Electrical Code:

82.16 Certain Work Exempt from Registration. *The following performance of work may be carried out by persons who are not registered or licensed electricians:*

(2) The installation, alteration, or repairing of any wiring or equipment where such wiring or equipment operates at a voltage not exceeding 30 volts and does not include generating or transforming equipment.

Local Amendment from the Dallas Electrical Code:

6. *Part I, “General,” of Article 100, “Definitions,” of Chapter 1, “General,” of the 2017 National Electrical Code is amended by amending or adding the following definitions:*

“Approved. *Approved by the chief electrical code administrator in accordance with chapter 52 of the Dallas City Code* ~~*[Acceptable to the authority having jurisdiction (CMP 1)]*~~

Local Amendment from the Dallas Electrical Code:

7. Section 110.2, "Approval," of Part I, "General," of Article 110, "Requirements for Electrical Installations," of Chapter 1, "General," of the 2017 National Electrical Code is amended to read as follows:

"110.2 Approval. The conductors and equipment required or permitted by this Code shall be acceptable only if approved. Approval of equipment may be evident by listing and labeling of equipment by a Nationally Recognized Testing Lab (NRTL) with a certification mark of that laboratory or a qualified third-party inspection agency approved by the AHJ.

AAAARRRRRRGGGGHHHH!!!!



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To Avoid Potential Pitfalls, Do Your Homework!

- ❑ Check State and Local Code adoptions
- ❑ Check Local Amendments
- ❑ Check State and Local licensing requirements
- ❑ Check local permitting requirements

A Few Things That Might Help

- ❑ Realize that Intelligent Building technology has outpaced Codes and Standards
- ❑ Don't assume that AHJs understand PoE technology
- ❑ Don't assume that AHJs are against use of PoE to power utilization equipment
- ❑ Keep in mind that AHJs are charged with protecting the public



LABELING & UL RATINGS

Underwriters
Laboratory



Intertek



CSA Group



Current Total
NRTLs

20

NATIONAL TESTING LABORATORIES

- Devices have to be tested by a **Nationally Recognized Testing Lab (NRTL)**.
- UL has become the defacto most common standard in the US, and many of the Labs have "equivalent" rating systems to compare.
- Many inspectors are looking for labs they recognize and might limit which labs they will accept results from.

LABELING

- Most technology products are required to be permanently marked with specific safety-related information and ratings
- For PoE, this includes lighting, lighting drivers, sensors, and networking switches
- Even if a product is listed, if it does not have a label on the equipment, it might not be accepted by the AHJ
- *Either or label/ searchable database*

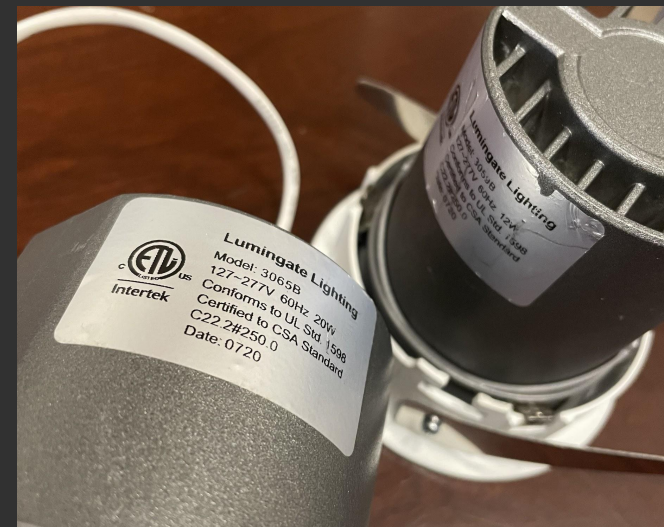
Printed



On packaging



Sticker



INDIVIDUAL RATINGS



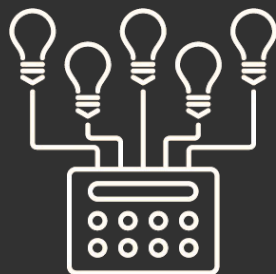
Light Fixtures

Preferred

UL 2108: Class 2 PoE, other low-voltage luminaires and lighting systems

Also seen accepted:

UL 1598: Luminaires, does not specifically remove low-voltage from scope



Lighting Drivers

Preferred

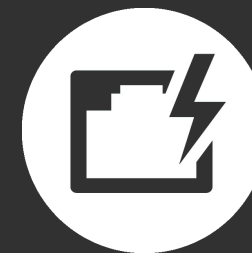
UL 2108: Class 2 PoE, other low-voltage luminaires and lighting systems

If applicable:

UL 2043: Plenum Rated

UL 1598C: Retrofitting line voltage lighting

UL 8750: If integral with LED



PoE Switches

Preferred

UL 62368-1: Safety of electrical and electronic equipment within low voltage IT field

UL 2108: Class 2 PoE, other low-voltage luminaires and lighting systems

If applicable:

UL 2043: Plenum Rated
IEC EN 62368-1: IEC safety standard

RATING AS A SYSTEM

If all of the individual components in a system do not have the appropriate UL ratings, then it is possible to multiple components together as a “system”

- Not necessary to be limited to products that have UL ratings
- Can be done onsite and within a shorter time frame than the individual products being sent for ratings

PRO

CON

- Can become extremely expensive: All individual parts have to be re-rated now as a “system” regardless of if individual ratings that may be held
- Could cause onsite delays



UL 924

- *What is UL924?*
 - Standard for Emergency lighting and power equipment
- *Which of my devices need to be UL924?*
 - Active devices vs Passive Devices
 - Up to the discretion of AHJ
 - Something should have UL924
 - Need a clear plan to address
- *Devices we see most commonly required to have UL924*
 - Exit signs, lighting drivers, battery systems

THANK YOU