



# **NEC, NESC, and TxDOT**

**SWEDE Conference**

**Design Workshop**

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# The Issue – Letter from Mr. Saenz, TxDOT Assistant Executive Director



**Texas Department of Transportation**

DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

February 13, 2006

Mr. Brian Almon, P.E.  
Director, Electric Transmission Network Section  
Infrastructure Reliability Division  
Public Utility Commission of Texas  
1701 North Congress Avenue  
Austin, Texas 78711

Dear Mr. Almon:

As we discussed at our meeting on February 3, 2006, it has recently come to the attention of the Texas Department of Transportation (TxDOT) that electrical utility companies are installing roadway lighting on TxDOT right of way according to the standards of the National Electrical Safety Code (NESC) rather than the National Electrical Code (NEC) (please see attached correspondence). As you know, the NESC is the national standard for the installation, maintenance, and operation of electric supply and communication system facilities. The NEC is the national standard used for installing utilization equipment, which includes roadway lighting. TxDOT uses the NEC because it provides better protection to the public from the hazards of electrical shock on roadway lighting installations. TxDOT is responsible for electrical installations on the highway right of way, and public safety is our top concern.

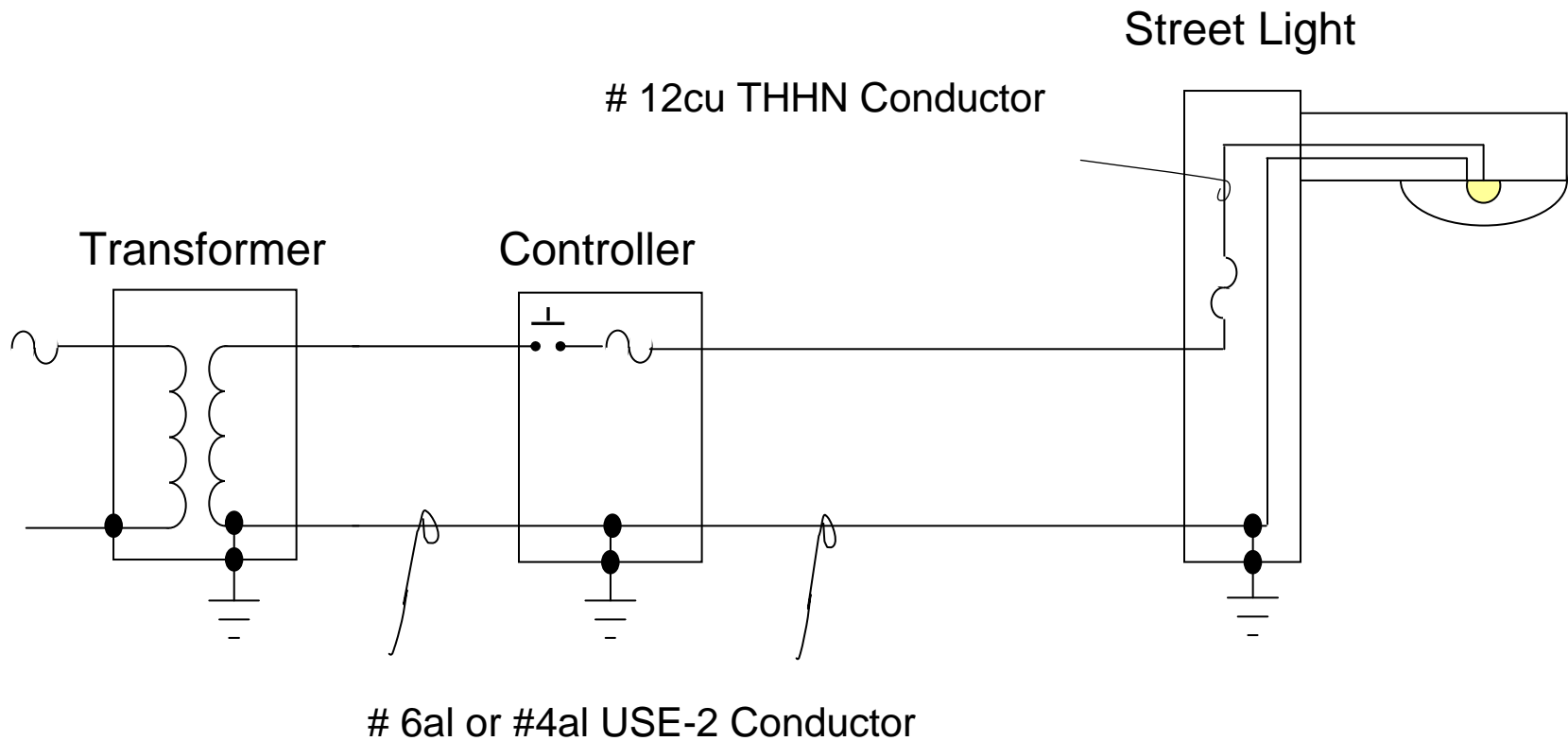
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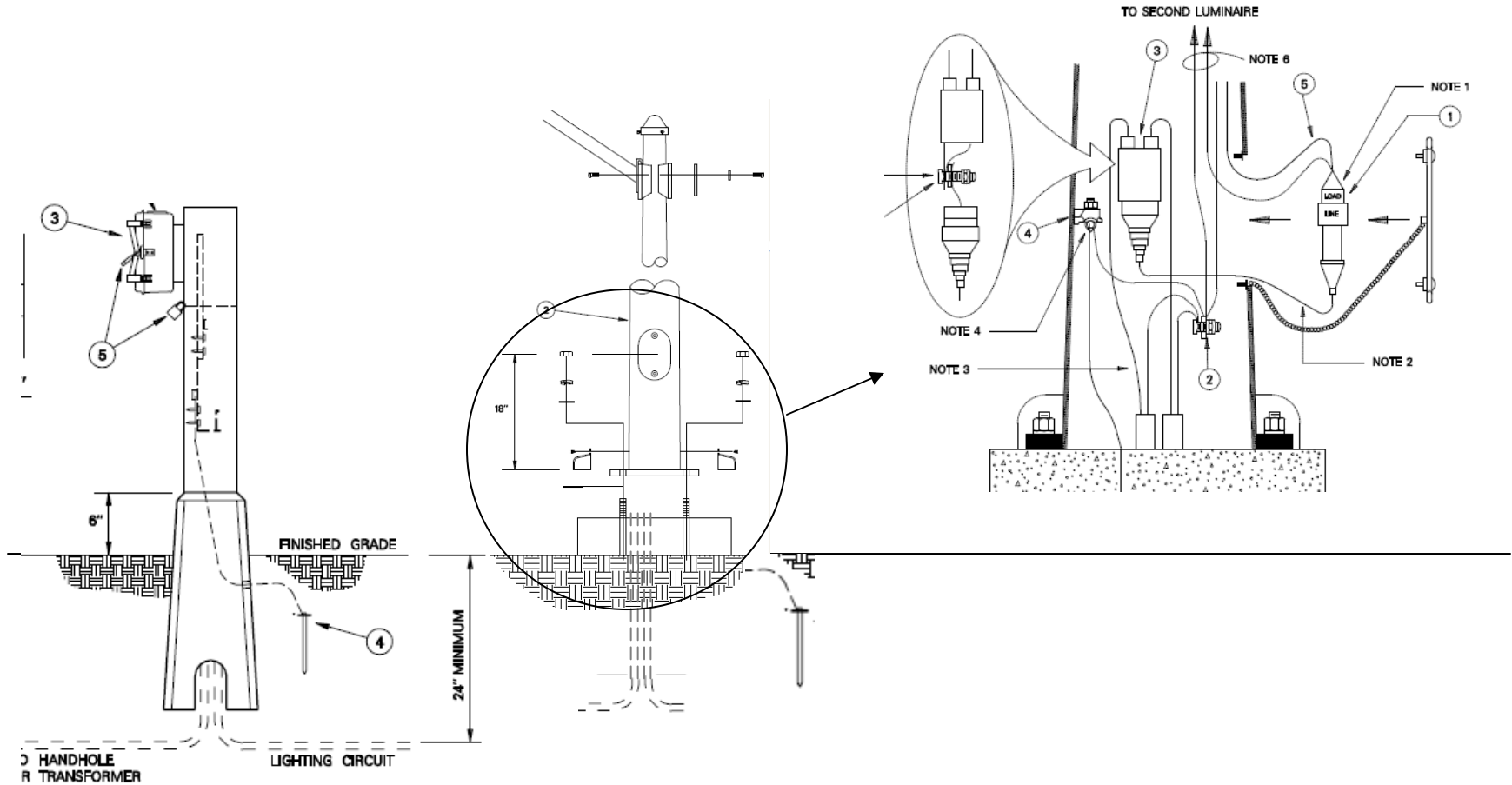
In the interest of public safety, TxDOT requests that the Public Utility Commission (PUC) advise utilities that, when installing roadway lighting with metal or conductive poles on highway right of way, an applicable code should be used for their installation. In Texas, that applicable code is the NEC. This is allowed by the following sections of the NESC and the PUC Substantive Rules:

- NESC Section 1, Rule 011.C states that luminaires not under exclusive control of the utility (lights in TxDOT right of way are not exclusively under utility control) are governed by the NEC.
- PUC Substantive Rule 25.101(d) states that other codes generally accepted by the industry may be used.

# Line Diagram for Typical Oncor Master Controlled Street Light Circuit



# Typical Oncor Facilities for Master Controlled Street Light Circuit



# Upgrade Options Discussed with TxDOT (Dallas District) on September 11, 2009



- ❑ Triplexed conductor with third conductor used as dedicated grounding conductor (neutral to ground bonds maintained)\*
  
- ❑ Requirement that all multi-light underground street lighting circuits in TxDOT rights-of-way use a master controller\*
  
- ❑ Addition of a disconnect at master controller (with Oncor locks)\*
  
- ❑ Elimination of neutral-to-ground bonds down-line from master controller (contingent on internal approval)\*

\* Oncor is reimbursed for difference in cost above standard installation

# Specific TxDOT (Dallas) Requirements



- ❑ If pad mounted, controller could not serve as a main/disconnect which would have to have individual breakers and be NEMA 3R compliant
- ❑ All conductor must be copper with XHHW insulation
- ❑ No neutral-to-ground bonds would be permitted down-line from main
- ❑ Installation must be done under the supervision of a licensed electrician
- ❑ All conduit elbows must be G.I.
- ❑ Median lighting must have break-away bases
- ❑ TxDOT might choose to de-energize installations not meeting all TxDOT requirements
- ❑ *Light fixtures must be UL listed(?)*

# Conclusions



- ❑ Upgrade options alone would not render facilities that would be acceptable to TxDOT
  
- ❑ TxDOT (Dallas) requirement is actually not that the facilities meet NEC, but that they meet the requirements that TxDOT places on its contractors (NEC plus)
  
- ❑ Specific requirements would be subject to some level of local TxDOT office interpretation
  
- ❑ Facilities would be highly non-standard (for Oncor) and would be unlike other Oncor facilities (they would be like other TxDOT installations)