

**ELECTRICAL SERVICES NOTES**

All work, materials, services, and incidentals, whether or not specifically shown on the plans, which may be necessary for a complete and proper electrical service installation as specified in the plans to obtain electrical power (except extending primary lines to electrical service) shall be paid for, performed, furnished and installed by the Contractor. The Contractor shall contact the Utility for metering and shall comply with all Utility requirements.

Primary line extensions, when required, shall be paid for under Force Account work. The Contractor shall consult with the appropriate Utility to determine costs and requirements, and shall coordinate the Utility's work as approved by the Engineer. The contractor shall be reimbursed only the amount billed by the Utility. No additional amount for supervision of the Utility's work will be paid.

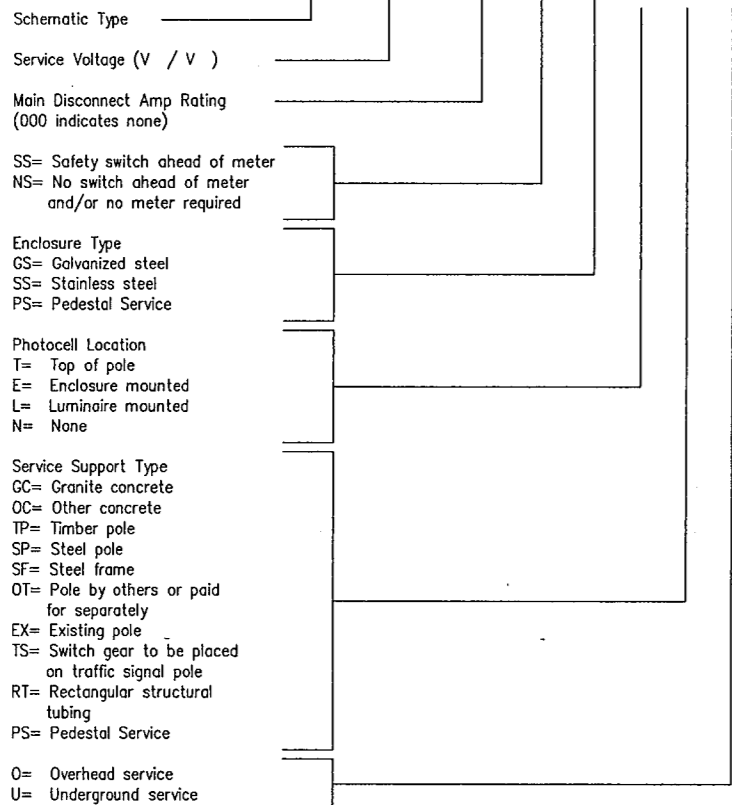
Materials shall be new and unused, and materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards and shall be Underwriters Laboratories (UL) Listed. Electrical Service conduits, conductors, disconnects, contactors, circuit breaker panel sizes, and branch circuit breakers, shall be as shown in the Electrical Service Data elsewhere in the plans. Faulty fabrication or poor workmanship in any material, equipment, or installation shall be justification for rejection.

The Contractor shall submit for approval no less than five (5) copies of catalog cut sheets on electrical service materials. Submittals shall be legible and shall be marked to indicate which product on a cut-sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees.

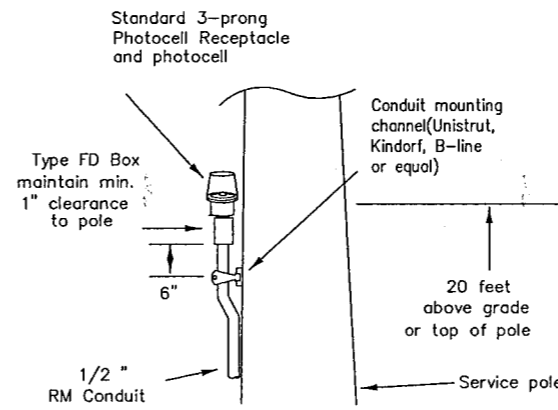
- I. Safety Switch. A safety switch, placed ahead of the meter, shall only be used when specified by the Utility and is shown on the Electrical Service Data. The switch shall be UL Listed, heavy duty type, 600 volt, unfused, with a UL type 3R enclosure and equipped with a solid neutral (s/n) assembly. The switch shall be padlockable in the "on" position.
- II. Service Type. Electrical service types A, C, D, and T shall be as schematically detailed on ED(4). Other service types shall be as detailed elsewhere on the plans.
- III. Branch Circuit Breakers. Circuit breakers shall be thermal magnetic and have a minimum interrupting capacity of 10,000 amps and a voltage rating compatible with their use. Circuit breakers shall be sized as shown on electrical service data table. Circuit breakers in panelboards and load centers shall be full size and designed exclusively for the panelboard or load center in use. Tandem and half-width breakers shall not be used. All circuit breakers shall be permanently and clearly marked identifying the circuit or device attached. Circuit breakers shall be UL Listed to UL489. Circuit breakers shall be switch duty.
- IV. Circuit Breaker Panelboard. Panelboards shall be UL Listed and shall meet Federal Specification W-P-115b, Type 1, Class 1 requirements. Panelboards shall have copper busses, a minimum of 12 one-pole spaces, and shall be rated for service equipment. Enclosure shall meet UL type 3R classification. Panelboards shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be bolt-in type only.
- V. Circuit Breaker Load Center. Load centers shall be UL Listed, and shall meet Federal Specification W-P-115c, Type 1, Class 2 requirements. Load centers shall have copper busses, a minimum of 4 one-pole spaces, and shall be rated for service equipment. Enclosure shall meet UL type 3R classification. Load centers shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be plug-in type only. Load centers for type T services shall accommodate a maximum of 6 one-pole breakers.

**EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE**

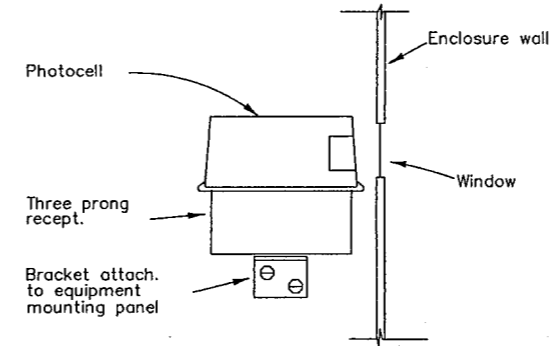
ELEC SERV TY X (XXX/XXX) XXX (XX) XX (X) XX (X)



Example: ELEC SERV TY D(120/240)070(NS)GS(T)TP(O)

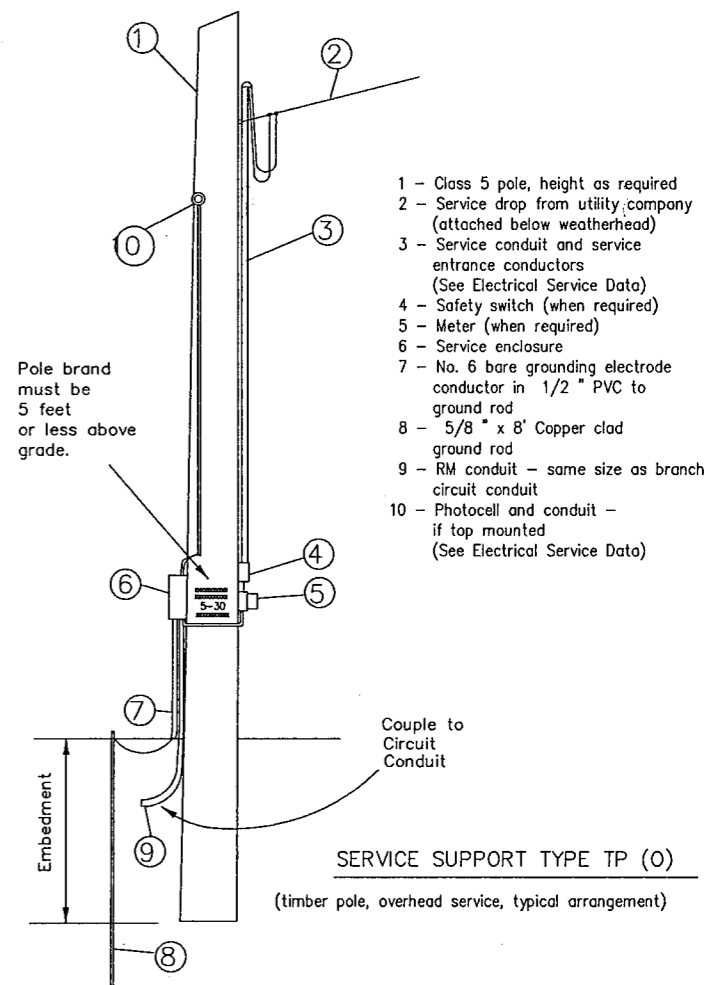


**TOP MOUNTED PHOTOCELL**



**ENCLOSURE MOUNTED PHOTOCELL**

For photocell specifications see ED(4), XII.



- 1 - Class 5 pole, height as required
- 2 - Service drop from utility company (attached below weatherhead)
- 3 - Service conduit and service entrance conductors (See Electrical Service Data)
- 4 - Safety switch (when required)
- 5 - Meter (when required)
- 6 - Service enclosure
- 7 - No. 6 bare grounding electrode conductor in 1/2" PVC to ground rod
- 8 - 5/8" x 8' Copper clad ground rod
- 9 - RM conduit - same size as branch circuit conduit
- 10 - Photocell and conduit - if top mounted (See Electrical Service Data)

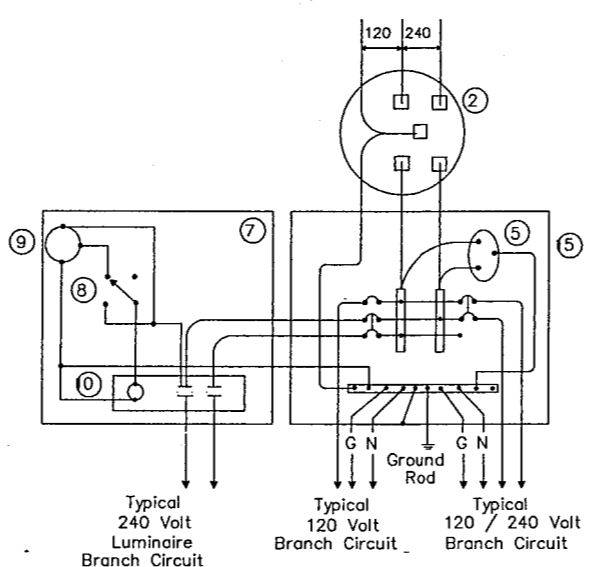
**SERVICE SUPPORT TYPE TP (O)**  
(timber pole, overhead service, typical arrangement)

**TIMBER POLE NOTES**

1. Conduit and conductors attached to service pole and underground within 12 inches of service pole shall not be paid for directly but shall be subsidiary to the service pole.
2. Install photo electric control on north side of pole or in service enclosure as required. See Electrical Service Data.
3. Attach service enclosure with galvanized channel (Unistrut, Kindorf, or equal). Gain pole two places to provide flat surfaces. Paint ends of channel with zinc rich paint.
4. Embedment depth shall be as required in Item 627 Treated Timber Poles.
5. Poles trimmed for excess length shall be trimmed from the top end only.

**SCHEMATIC LEGEND**

- 1 - Safety Switch (when required)
  - 2 - Meter (when required)
  - 3 - Service Assembly Enclosure
  - 4 - Main Disconnect (Switch or Breaker, See Electrical Service Data)
  - 5 - Lightning Arrestor
  - 6 - Circuit Breaker, 15A
  - 7 - Auxiliary Enclosure
  - 8 - Control Station ("H-O-A" Switch)
  - 9 - Photo Electric Control (enclosure-mounted shown)
  - 10 - Lighting Contactor
  - 11 - Power Distribution Terminal Blocks
  - 12 - Neutral/Ground Bus
  - 13 - Branch Circuit Breaker (See Electrical Service Data)
  - 14 - Circuit Breaker Panelboard (See Electrical Service Data)
  - 15 - Load Center (See Electrical Service Data)
- Power Wiring  
 — Control Wiring  
 — N — Neutral Conductor (when required)  
 — G — Grounding Conductor



**SCHEMATIC TYPE T**  
120/240 VOLTS - THREE WIRE

Install photocell and lighting contactor when shown on Electrical Service Data.

▲ Added pedestal service

STANDARD PLANS  
TEXAS DEPARTMENT OF TRANSPORTATION  
*Traffic Operations Division*

**ELECTRICAL DETAILS—  
SERVICE SCHEMATICS AND  
SUPPORT—TYPE TP (OVERHEAD)**

**ED(3)-98**

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STATE DISTRICT	FEDERAL REGION	FEDERAL AND PROJECT			SHEET	
DALLAS	6	CM 97 (449)			76	
COUNTY	CONTROL	SECTION	JOB	HIGHWAY		
DALLAS	8050	18	034	BELT LINE		

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 DATE: 7/8/98  
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