

Design Standards Letter

Letter Number: G-1962-01

Letter Date: 01/04/1962

Effective Date: 01/04/1962

Section/Plan No.: None

Subject: Revised and New Standard Drawings

Body

ALL DIVISION , DISTRICT AND URBAN ENGINEERS:

We are furnishing you under separate cover with several 8 1/2" x 11" copies of the following revised and new standard drawings.

Standard 48.12. Dowel Supporting Units, has been revised to include the Type C dowel assembly which has been approved for use as a result of recent experimental installations.

Standards 57.00, 57.10, and 57.11, Standard, Timber, and Temporary Bridges, which have been revised to change the grades of lumber required to be in agreement with the latest grading and dressing rules of the lumber industry.

Standard 71.40. Traffic Signal Detectors, has been revised to include the new Ultra-Sonic type detector, as described in General Letter No. 61, 1961.

Standard Drawing 70.13 is a new standard for pad-mounted substations for use in highway lighting design work.

The pad-mounted substation has been designed to perform the same basic electrical functions as the pole-mounted substation. The major differences consist of:

- a). Packaging of electrical components
- b). Modification of the control cabinet
- c). Substitution of potential transformers for control purposes
- d). Use of underground primary feeder system
- e). Termination requirements for primary cable.

In addition, minor changes will also be noted, such as the photoelectric control location. The photoelectric control should be mounted on top of the nearest light pole and such pole should be identified on the plans, along with the three No. 10 cables. These control cables may occupy the same trench as secondary power cables. The No. 10 cable quantities must be shown on the "B" sheets, since this item is not included as part of the substation, except for schematic purposes. In addition to a potential transformer, there are secondary lightning arrestors and stress cone or pot-head terminations. Individual project special provisions need not be submitted covering these items. Coverage will be accomplished by special provisions written in the Main Office upon receipt of the project plans.

The primary reason for specifying the pad-mounted substation is: 1). to eliminate unsightly regulator poles at parks, interchanges, urban areas, and similar sites, and, 2). to increase maintenance efficiency. It is therefore, intended that use of pad-mounted substation installations be given due consideration in regard to location, utility service pole availability, length of primary feeders, access for maintainability, and other general similar factors.

An important item in pad-mounted substations is the primary feeder system. Selection of primary cable for the feeders will be governed by the recommendations of the utility company supplying electric power. This is necessary due to the fact that utility companies normally will own or maintain such primary feeders from their service pole to the right-of-way line. It is intended that the Contractor purchase the cable and install it to the utility service pole. Sufficient cable should be provided at the pole for service connections. Since the utility company will usually pay costs or portions of costs of such cable, mutual cooperation in selection of appropriate cable is therefore desired. Upon selection of the primary cable, a special provision must be submitted with the plans specifying the type of cable to be used. The quantity of cable should not be listed as a pay item. This item will be included in the total cost of the substation. In view of the above paragraph, the cable type, cost arrangements, and mutual agreement on the over-all primary feeder system must be agreed upon for each project and may vary somewhat in different areas of the state. It is the intent, however, that a procedure similar to that of pole-mounted substation service connections be followed. Districts should also reach agreement with utility companies in written form regarding the substation general design, location, service connections, metering, and any other mutual requirements common to pad-mounted substations.

In regard to metering, it would be preferable to accomplish this at the utility company service pole. Such an arrangement will usually be acceptable to the utility company. In the event that metering is accomplished at the service pole, or in the case where metering is not required, appropriate notations should be made in the plans.

For purposes of completing quantity sheets and estimates, payment of pad-mounted substations shall be entered under Item 70091, Pad-mounted Substation, Lump Sum.

Standard Drawing 70.13 provides substation design requirements for primary voltages not to exceed 4,800 volts. Standard Drawing 70.14 will be issued at an early future date to accommodate primary voltages above 5,000 volts, but not to exceed 12,500 volts.

Additional copies of these standards will be furnished upon request. If there are any questions regarding these standards, please advise.

R. N. Hunter
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