

731 STRUCTURAL SUPPORTS AND FOUNDATIONS FOR TRAFFIC SIGNAL AND HIGHWAY LIGHTING

To ensure traffic signal and lighting systems perform as designed and provide the required life as expected, it is very important that project personnel closely monitor the installation of foundations and structural supports.

The Inspector should be familiar with those specifications that apply to proper excavation, placement of concrete, and backfill requirements when applicable. The Inspector must ensure that all excavations and construction of foundations are coordinated in order to minimize the time of open trenches or excavations. Those excavations that are open and not complete must be covered and properly barricaded to protect the workers and the public.

Construction and Inspection Requirements

The following guidelines are intended to assist the Inspector in providing a complete and thorough inspection of foundations and supports on the project:

Foundations:

Locations for foundations will generally be laid out by station numbers, offsets, and elevations by the Contractor's survey crew.

- Check consistency of survey layout and plans. If in doubt, have the survey crew recheck.
- Are locations of underground utilities blue staked?
- Have overhead utilities, high voltage electric lines, and overhangs been checked for clearance?
- If a pole foundation cannot be installed at the location designated due to obstructions, they may be moved as directed by the Resident Engineer. If a foundation location is moved, it is critical to verify that the mast arm length specified will still meet the placement criteria.
- Check sides and bottoms of augured holes for firm and stable soil conditions.
- Are foundation holes the proper size?
- Are forms and templates securely braced?
- Check anchor bolts and conduit stubs for proper size, alignment, position, and height projections.
- Is there a 25-foot (7.6-meter) coil of #4 AWG copper ground wire placed at the bottom of the pole foundation hole and a 1-inch (25 millimeter) sleeve for a 5/8-inch (16-millimeter) by 10-foot (3-meter) ground rod in cabinet foundation?
- Make sure that utilities like water, sewer, and telephone lines are not encased in foundation holes.
- Check steel wire cages for sizes and dimensions.
- When placing steel wire cages, spot check spacing and elevation for clearance compliance.
- Check steel wire cages for loose rust and scale.
- Have all certificates been received and submitted to the project field office for anchor bolts and steel wire cages?
- Has the concrete design mix, source, and curing compound been approved?
- Does the Contractor have a vibrator and tremie at the project site?
- Have the sides and bottom of the foundation hole been thoroughly moistened prior to placing concrete?
- Check to see that surface finish on concrete is as specified.
- Make certain on all types of cabinet foundations that there are two 2-inch (50-millimeter) conduit stubs for future use. The conduit should be stubbed out and capped 2 feet (600 millimeters) past the edge of foundation and noted on the as-built plans.
- Was there a PCC pad poured in front of all cabinets in unpaved areas?

- Have batch tickets for each load been received and submitted to the project office along with the required quantities report?
- Was a ground resistance test performed and recorded in the presence of the Electrical Inspector on each foundation ground.
- Was the result of the ground resistance test 25 ohms or less?
- Have all changes been noted on the as-built plans?

Pole and Mast Arm Installation:

All pole foundations must set for three days prior to pole installation except for the Type J, K, Q, and R pole foundations (which must cure for seven days).

- Were poles and mast arms inspected upon delivery to the job site for conformity with the approved material list and shop drawings?
- Were certificates of compliance furnished upon delivery?
- Was the galvanized finish damaged in shipment?
- Check coloring of galvanizing for uniformity.
- Check to see if a metal information tag is permanently affixed by the manufacturer to all poles and mast arms at the time of delivery to the job site.
- Before poles are erected, make sure that there are no high voltage overhead electric lines any closer than 10 feet (3 meters). If closer, has the Contractor made arrangements with the servicing utility company to de-energize or rubber-over to protect the workers from injury from the conflicting power lines?
- Were high strength bolts A325 used to connect mast arm to pole?
- Were poles plumbed to the vertical with all mast arms, signal heads, and/or luminaries installed?
- Has the nonshrink, nonmetallic grout used between pole base and foundation been approved?
- Check block out area between pole base and foundation for complete grout fill.
- Make sure, for slip-away foundation base plates, that conduit entering into the plate is 1 inch (25 millimeters) below top of plate.
- Check clearance of anchor bolts on slip-away foundation base plates. Is it 1/8 inch (3 millimeters) below top of plate?
- Was there a 28 gauge galvanized steel keeper plate installed on slip-away poles between the slip plates?
- Were high strength connecting bolts on slip-away bases torqued to 208 ft·lb. (282 N·m) in the presence of an Inspector?