

SECTION 950—TRAFFIC SIGNALS - GENERAL

950.1 DESCRIPTION—These specifications are the general requirements pertaining to the work of furnishing and installing operational traffic signals; including controller assemblies, traffic signal supports, electrical distribution, traffic signal heads, detectors, communications, and systems.

NEMA TS 2 specifications do not supersede NEMA TS 1 specifications, and are to be used separately, as indicated. Comply with current NEMA TS 1 or NEMA TS 2, as specified, unless superseded in part or whole by specific items in these Specifications or special provisions. Words and phrases peculiar to traffic signals that are not defined in these specifications or in the regulations, are to be defined as in NEMA TS 1 or NEMA TS 2.

950.2 MATERIAL—

(a) Materials Acceptance. Before the submission of a bid proposal, verify that Certificates of Approval, Sale or Provisional, have been issued by the Department, for traffic signal equipment, as provided in 67 PA Code, Chapter 211.

Within three weeks after the Notice to Proceed, submit to the Department, for review and acceptance, a tabulation of all project traffic signal materials. Include the type of material, manufacturer's name, model number, and the Department's Certificate of Approval number for each item to be supplied. Provide catalog cuts for further clarification of the material, when requested. As applicable, tabulate the following:

- Controller Units
- Flasher Units
- Signal Heads
- Detector Amplifiers
- Auxiliary Equipment
- Electrically Operated Signs

(b) Wiring Diagrams and Timing Plans. Provide three copies of the cabinet wiring diagram and manufacturer's timing plan for each controller assembly. Place a clear protective envelope in the controller assembly cabinet that contains one copy of the manufacturer's instruction manual for each controller unit, time clock, coordination unit, software programming manuals, time setting charts, wiring diagrams, and parts list. If there are any changes to the timing patterns during the 30-day test, then provide three new copies of a revised timing plan.

(c) Certification. As specified in [Section 106.03\(b\)3](#). Certify that all signal supports satisfy the Department's criteria and are adequate to support the loads indicated. This certification shall include the signature and seal of a Professional Engineer registered in the State. Certify the structural adequacy of all sign and signal brackets.

(d) Warranties, Instruction Manuals and Guarantees. Furnish, as specified in [Section 1104.01](#).

(e) Shop Testing. Submit results from shop tests to the Representative, as specified in [Section 1104.01](#).

950.3 CONSTRUCTION—As shown on the [Standard Drawings](#) and as follows:

Perform work according to applicable codes, regulations, and standards.

Existing signals are to remain in operation, as is, until the new traffic signal equipment and devices are in place and operable.

Complete installation of the new system at the earliest possible date. If it becomes necessary to turn off the existing system of signalization, obtain approval and provide flaggers to direct traffic within the intersection during periods when the signals are not operating.

Place temporary poles to support existing signals, as indicated or directed. Provide certification to the Department that such poles have sufficient strength to support the traffic signals.

Make revisions to the existing system of signalization, as indicated or directed.

Before any excavation for placement of traffic signal or sign support poles, mark proposed locations in the field. Field review pole locations with the Representative and adjust pole locations as necessary.

Remove all existing traffic signal supports, including those with traffic signals, flashing warning devices, and lane control signs and signal equipment, unless otherwise indicated.

Maintain existing controller assemblies, as a unit. Store material on the project site. Provide a listing of the equipment for the municipal owner and make arrangements to deliver equipment to the municipal storage area. Do not damage items during removal and storage.

Abandon underground conduit, conductors, and detectors not interfering with new construction. Remove foundations and junction boxes that are designated to be abandoned and are located in an “off traveled roadway” area, to 0.3 m (1 foot) below final grade and dispose of removed materials. Fill, compact, and landscape the resulting hole, including topsoil if necessary by the particular planting.

Repair damage to galvanized finishes.

If any vegetation is blocking the visibility of signs or signals, in the opinion of the Representative, generate and submit a list of items to the Representative. Obtain approval to remove or relocate any of the items.

If not notified by the Representative, notify the Representative as soon as it is recognized that a utility facility is causing, or will cause, an obstruction to visibility.

Before the initial turn-on, verify for the Representative that all signals are working properly. Make the initial turn-on to flashing mode and full operation in the presence of the Representative between the hours of 9 AM and 2 PM, Tuesday through Thursday except holidays. Under special circumstances involving safety of motoring public, the Representative may grant exceptions to this rule. Give the Representative a minimum three-calendar day notice before the initial turn-on. For locations presently unsignalized, flash signals for a period of three to seven days.

After the traffic signal installation becomes operational, conduct a continuous, 24-hour operating test for not less than 30 consecutive calendar days. Correct failures during the test period by repairing or replacing malfunctioning parts or equipment or faulty workmanship regardless of the cause in less than 24 hours as directed. After correcting failures caused by defective equipment, material, or faulty workmanship, re-conduct the 30-day test.

During the 30-day test period, adjust or revise initial signal timing parameters, as directed, to optimize signal operation due to actual traffic flows and field conditions. During this time period, power and communication costs associated with maintaining the operation of the new or modified permanent traffic signal installation will be the responsibility of municipality or other party that will ultimately assume ownership or maintenance of the installation.

In addition to the provisions of [Sections 105.10](#) and [107.10](#), those Department, Federal, and municipal personnel and agencies, as well as public and private interests, that are involved with the signal installation, have jurisdictional control over the installation or adjacent facilities, or will ultimately assume ownership or maintenance of the installation, shall, at the discretion of the Department, be allowed to observe signal turn-on, installation of initial timing parameters and any subsequent adjustment, and inspection before completion of 30-day test.

Guarantee the in-service operation of mechanical and electrical equipment, related components, and the controller assembly for a period of 180 days from the date of completion of the specified 30-day field test. During this period:

- Maintain equipment in the controller cabinet. Use additional locks, as necessary, to prevent entry by others.
- Repair faulty workmanship, repair or replace defective materials or equipment and correct malfunctions in the controller cabinet within 48 hours after commencing repairs.
- Commence repairs no later than the working day following notification of failures or malfunctions.
- Guarantee repairs or replacements for the balance of the 180-day guarantee period, or 30 days, whichever is the longer period.

- Repair or replacement work not performed within the guarantee period, or any extension period, will be considered latent defects as specified in [Section 107.16\(b\)](#).

Provide the Representative with the name and telephone number of the person to be notified in the event of failures or malfunctions during the guarantee period.

Restore areas damaged by construction.

Issuance of an acceptance certificate or final settlement of the Contract does not in any respect relieve the Contractor of responsibility for the in-service guarantee period described in these Specifications.

950.4 MEASUREMENT AND PAYMENT—The removal and storage of existing traffic signal material, the restoration of areas damaged by construction, and testing are incidental to the work specified in Sections 951 through 957.