

Section 676 Signal Assemblies

676.1 Description

- (1) This section describes providing traffic signal assemblies.

676.2 Materials

676.2.1 General

- (1) Since overhead ramp control, display enforcement, and type 2 advance flasher signal assemblies are mounted on existing poles, the requirements specified in [676.2.2](#) and [676.2.3](#) are not applicable.

676.2.2 Traffic Signal Standards

- (1) Furnish traffic signal standards conforming to [657.2.2.3](#). Use standards with an overall length of 13 feet, except for type 1 advance flasher signal assemblies, use 15-foot standards.

676.2.3 Pedestal Bases

- (1) Furnish pedestal bases conforming to [657.2.2.4](#). Use square bases with a 12 3/4-inch bolt circle.

676.2.4 Signal Heads

- (1) Furnish signal heads conforming to [658.2.2](#).

676.2.5 Signal Mounting Brackets

- (1) Furnish signal mounting brackets conforming to [658.3.1](#).

676.2.6 Sidemount Sign Mounting Brackets

- (1) Mount signs on overhead signal supports using a sign mounting system conforming to [637](#).

676.3 Construction

676.3.1 General

- (1) Perform work conforming to [651](#), [655](#), [657](#), and [658](#), the WSEC, and as the plans show.
- (2) Install bases conforming to [657.2.2.5](#).
- (3) Ensure that the positioning, mounting height, and lateral placement of signal heads are according to the MUTCD. For overhead signals, provide a clearance from the pavement surface of the roadway to the lowest part of the mast arm, or the lowest part of any object mounted on the mast arm, between 17 feet and 19 feet. The contractor may be required to revisit locations to re-adjust the signal heads once the engineer observes the metering operation of the ramp.
- (4) For traffic signal cable that extends from the signal base to the terminal strips in the signal heads, provide the number of conductors as the plans show. Match the color of the conductor to the lens color.
- (5) Install conductors in continuous lengths without splices from terminal to terminal. Splice only at hand holes at the bases of the standards or poles. Do not splice in underground pull boxes or conduit.
- (6) Group and identify sets of conductors in signal cables, 3 each per signal phase, whether insulated with red, yellow, green, or other colors, at each pertinent termination. Use conductors colored to match lens colors first. The engineer shall approve the method of identification. Furnish 2 as-built cable layout drawings with labeling to the engineer upon completion of the work. Place one of those copies in the cabinet.
- (7) Connect the white 14 AWG wires to a 10 AWG current carrying neutral. Make the connection with a wirenut. Extend the 10 AWG wire from the current carrying neutral grounding strip in the ramp meter processor assembly cabinet, being installed from base to base to the far end of each signal conduit run.
- (8) Furnish the 10 AWG USE XLP current carrying grounded conductor in white colored insulation.
- (9) Furnish the 10 AWG USE XLP equipment-grounding wire in green colored insulation.
- (10) Furnish equipment and appliances necessary to test the complete installation of the ramp meter control signal assembly, including electrical conductors.

676.3.2 Installation

- (1) Use traffic signal cable between signal assemblies and the processor assemblies conforming to [655](#).
- (2) Furnish equipment and appliances necessary to test the complete installation of the signal assemblies, including electrical conductors.
- (3) Provide type II reflective signs, as specified in [637](#).

676.4 Measurement

- (1) The department will measure the Signal Assembly bid items as each individual assembly acceptably completed.

676.5 Payment

- (1) The department will pay for measured quantities at the contract unit price under the following bid items:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
676.0100	Signal Assembly Ramp Control Sidemount	EACH
676.0105	Signal Assembly Ramp Control Overhead	EACH
676.0200	Signal Assembly Display Enforcement	EACH
676.0300 - 0399	Signal Assembly Advance Flasher (type)	EACH

- (2) Payment for the Signal Assembly bid items is full compensation for providing traffic signal standards, pedestal bases, signal heads, signal mounting brackets, and the sign support system; for providing electrical connections and grounding; and for testing.
- (3) The department will pay separately for cable under the appropriate Cable Traffic Signal and Electrical Wire Traffic Signals bid items as specified in [655.5](#).
- (4) The department will pay separately for signs and mounting those signs under the Signs Reflective Type II bid item as specified in [637.5](#).
- (5) Department will not pay for the first 2 trips required to revisit and readjust signal heads as required under [676.3.1](#). The department will pay for subsequent trips, if required, as extra work.