

SECTION 647

MAST ARM COMBINATIONS, STANDARD

647-1 SCOPE

This Section specifies the requirements for steel poles and mast arm combinations, which includes the mast arm, the pole and street lighting luminaries arm (when specified) used in the installation of traffic signals.

647-2 DESIGN REQUIREMENTS

Refer to the Steel Mast Arm Detail Sheet in the plans for full details and specifications for this item.

647-3 INSTALLATION REQUIREMENT

647-3.1 Foundation Installation:

Installation of the foundation shall be in accordance with the information provided in the Steel Mast Arm Detail Sheet in the plans package and regulations in the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

647-3.2 Pole and Mast Arm Installation:

The combination pole and mast arm shall be erected on the foundation as defined on the detail sheet. The mast arm shall be aligned as shown on the signalization plans, according to field inspection and/or as directed by the Engineer.

The pole shall be raked per manufacturer's instruction so that it will assume a vertical position under full load.

The pole shall be grounded by connecting a #6 AWG solid copper ground wire to the grounding lug.

All traffic signal heads shall be mounted horizontally on the mast arm with an articulating aluminum mounting bracket (natural color) with stainless steel mounting cables. All signs shall be mounted with a similar mounting bracket. Larger signs will require two (2) or more brackets. Mounting bracket attachments shall be centered with the signal head, for equal weight distribution. All traffic signal heads and signs shall be mounted level; i.e., parallel to the horizon.

The contractor shall make all necessary splices. Splices and connections shall be made on terminal strips or terminal lugs. Color coding of wire, as established by the City of Tallahassee, Public Works Department, Traffic Engineering Division, shall be observed.

All terminations shall be made on terminal blocks located in the hand hole area of the mast arm pole. See Table 647-1 for color-coding and wire assignments. One separate signal cable shall be wired to each signal and run through the mast arm and down the pole to terminate at the hand hole terminal strips.

647-3.3 Luminaire Arm Attachment Installation:

Luminaire arm attachment shall be in accordance with the information provided in the Steel Mast Arm Detail Sheet in the plans package.

The luminaire arm attachment shall be of the same type and spread as existing units.

647-3.4 Steel Mast Arm Pole Wiring:

The home run cables from the controller cabinet to each pole (to each arm in double arm Mast Arm Combinations) shall be a minimum of twenty (20) - conductor cables. This cable will extend as far as the hand hole in the pole with an excess length of three (3) feet for termination purposes. The home run cables shall be marked with pole location and movements (i.e., NW ph 1 and ph 5). The color code for the twenty (20) conductors shall be accordance with Table 647-1.

Each signal head shall have a separate signal cable, which will drop down inside the pole and be terminated to the appropriate home run cable at the hand hole where the home run cables terminate on the terminal board.

Each signal head feeder cable shall consist of a minimum seven (7)-conductor cable. Each signal head feeder in each pole/arm shall be marked and numbered consecutively commencing with the signal nearest the pole and continuing outward away from the pole.

For Pedestrian signal heads a separate feeder consisting of individually colored wires shall be used and run from the each pedestrian head down through the pole to the terminal block located at the hand hole in the base of the pole. This allows connection to the home run cable for that pole. The main street pedestrian signal head wire colors shall be RED -- (Don't Walk), GREEN -- (Walk) and White -- (Neutral). The side street pedestrian signals shall be ORANGE -- (Don't Walk), Blue -- (Walk) and WHITE -- (Neutral).

For Pedestrian push buttons a separate feeder consisting of individual colored wires shall be used and run from the each pedestrian head down through the pole to the terminal block located at the hand hole in the base of the pole. This allows connection to the home run cable for that pole. The main street pedestrian push button wire color shall be BLACK and The side street pedestrian push button shall be BLACK with a WHITE TRACER. Push button return wires shall be separate from any other neutral, "signal return grounds." They shall be terminated on the proper terminal in the controller cabinet for Push Button Returns.

Traffic signal heads shall be wired per the Signal Operating Plan (SOP). The Contractor shall install the signal cable between the signals and the terminal blocks at the base of the poles and through the home run cable to the terminal blocks in the controller cabinet. Color-coding of wire, as established by the City of Tallahassee, Public Works Department, Traffic Engineering Division shall be observed.

647-4 METHOD OF MEASUREMENT

Mast arm combinations and foundations as called for in this Section shall include all hardware necessary to make a complete installation. Measurement for payment shall vary according to the following task.

The unit price for furnishing and installing mast arm combinations shall include all materials and equipment plus all labor and materials necessary for a complete and accepted installation of the assembly described by the item number. In addition, the unit price shall include all labor and material required to restore damaged areas as ordered by the Engineer.

647-5 BASIS OF PAYMENT

The contract price for each mast arm combination as specified by the plans or special provisions shall be full compensation for all work specified in this Section. Payment shall vary according to the bid items:

TABLE 647-1

COLOR CODE FOR TRAFFIC SIGNAL CABLE

TWENTY (20) CONDUCTOR CABLE

<u>WIRE #</u>	<u>COLOR</u>	<u>ASSIGNMENT</u>
1	Green	Main Street Green
2	Yellow	Main Street Yellow
3	Red	Main Street Red
4	Green / Black Tracer	Side Street Green
5	Yellow / Black Tracer	Side Street Yellow
6	Red / Black Tracer	Side Street Red
7	Blue	Main Street Green Arrow
8	Blue / Black Tracer	Main Street Yellow Arrow
9	Black	Side Street Green Arrow
10	Black / White Tracer	Street Yellow Arrow
11	White / Black Tracer	Neutral
12	White	Neutral
13	Green / White Tracer	Main Street Walk
14	Red / White Tracer	Main Street Don't Walk
15	Blue / White Tracer	Side Street Walk
16	Yellow / Red Tracer	Side Street Don't Walk
17	White / Red Tracer	Neutral for Pedestrian Signals
18	Blue / Red Tracer	Main Street Pedestrian Push Button(s)
19	Black / Red Tracer	Side Street Pedestrian Push Button(s)
20	Red / Green Tracer	Neutral for Pedestrian Push Buttons

Traffic Signal Heads shall be wired as per a Signal Operating Plan (SOP) 10. All movements including pedestrian movements **shall be wired separately**. All cables shall be terminated in the controller cabinet base and the Contractor shall then wire the intersection as per the SOP shown on the Plan for that intersection. The Contractor shall install the signal cable between the signals, and between the signals and the terminal boards in the controller cabinet.