

GENERAL NOTES

QUANTITY CALCULATIONS		FHWA REGION	STATE	PROJECT
BY: <i>PCS</i>	DATE: <i>3/17/83</i>	5	OHIO	
CHKD: <i>DTC</i>	DATE: <i>3/17/83</i>			

LAK-040-098
LAK-285-583
LAK-91-549

TRAFFIC SIGNAL SPECIFICATIONS

I. GENERAL

A. Scope of Work

The Contractor shall install traffic signals at the intersections shown in the plans.

The Contractor shall furnish all labor, materials, and equipment necessary so that the traffic signals will be complete, accepted and ready for service.

B. General

Any items of labor, materials, and equipment required, but not shown as a separate pay item in the proposal shall be furnished and installed as incidental to the contract.

The reference to any name, make and model number is intended to be descriptive and not restrictive and is to indicate to bidders the design that will be acceptable. Bids on other names, makes and numbers will be considered. Before any equipment is ordered or installation of a traffic signal system is begun, a complete schedule of materials and equipment shall be submitted to and approved by the Engineer. The schedule shall include eight (8) sets of catalog cuts, diagrams, drawings, brochures, data sheets, manufacturer's certificates of compliance or other descriptive data as may be required and shall include complete descriptive data on the signals, wiring diagrams, complete cable descriptions, test data, make and capacity of all apparatus. The Contractor shall identify the item on each sheet and shall mark all prints "record drawing". One copy will be returned marked "Approved", if found satisfactory. In the event any items of material or equipment contained in the schedule fail to comply with the specification requirements, such items will be rejected.

All materials and equipment furnished under these specifications shall be new, first quality, of the latest design, and free from defects and poor workmanship.

All major items of equipment such as controllers, signals, detectors, poles, types of cables, etc. shall be of the same manufacture and same type in order to assure uniformity, interchangeability of components, single responsibility and most satisfactory service.

II. SIGNAL SPECIFICATIONS

A. Installation

- The Contractor shall conform to the national electric code and the Ohio Manual of Uniform Traffic Control Devices for streets and highways in performing contract work. He shall observe the regulations of utilities in the

area of their equipment and exercise due caution in construction work near their facilities.

- Prior to beginning construction, the Contractor shall contact all utilities having installations in the area to secure and affirm data on utility locations. These agencies and utilities shall be notified at least 48 hours prior to any excavation in areas containing their installations.
- The Contractor shall install the power to the controller cabinet and provide 120/240 volts, 30 amp service as required. The Contractor shall be responsible for arranging and providing the power in the manner shown in the plans through the Cleveland Electric Illuminating Company. The cost of obtaining the power shall be included in the bid price for "Power Cable".
- Traffic signal cable shall enter the controller cabinets and run continuously from signal head to signal head without splices. Pressure type connectors will be used to make connections inside the controller cabinet. Cable entrances shall be protected by a suitable weather head and drip loop when entering traffic fixtures.
- All wires in the controller cabinet shall be labeled, neatly lashed and fastened to the cabinet with clamps. This shall include wires to the detectors, signal heads, pedestrian units, interconnect equipment and all miscellaneous equipment.
- All splices in pull boxes shall be of the weather-proof poured type.
- All current carrying wires shall be copper unless otherwise specified.
- No splices shall be permitted in any electrical conductor with the exception of detector loop wire to detector lead-in cable splices in pull boxes.

B. Equipment

All equipment shall be furnished with two wiring diagrams, service manual and instructions on installation and maintenance.

METHOD OF MEASUREMENT

Supplementing Item 625.24, linear measurements for payment of various traffic signal bid items shall be as follows:

- Signal cable, power cable, interconnect cable, loop detector lead-in cable, service cable.

The length measured horizontally from center to center of pullboxes, poles, foundations, or signal heads; plus the following:

- Five feet per each pullbox, pole, or termination at controller or signal head to allow for slack and splicing of leads.
- The length measured vertically from trench bottom to pole outlet or mast arm attachment on vertical runs.

Multipliers as contained in 625.24 paragraphs (c) and (e) shall not be used for multi-conductor cables covered in this note.

2) Loop Detector Wire

Measured horizontally from center line of pullbox to pavement edge, to loop through loop sawlots for the number of turns required and thence returning to the pullbox, plus five feet at each end to allow for slack and splices.

3) Loop Detector Pavement Cutting

Measured along the sawcut from outside edge of pavement or curb, to loop and around the loop, using the rectangular perimeter dimensions shown on the plans or directed by the Engineer, but not including chamfer cuts at loop corners.

4) Messenger Wire With Accessories

Measured horizontally from center to center of pole to pole; or bullring (aerial corner) to pole; or bullring to bullring; but not including any additional messenger required for attachment of messenger to poles, bullrings or strain insulators by wrapping or bending.

MARKING OF CABLE

All cables shall be marked or tagged at all pull boxes, signal supports, and controllers with tag, so as to be individually identified.

The tag shall be not less than 0.031" thick copper, brass or plastic, and shall be embossed or engraved with letters or numbers of not less than 1/4" high. It shall be securely attached with an AWG #14 copper wire. Markings shall consist of the following or variations thereof: Ground, Grd.; Phase A, Ø A; Common, Com; Phase A Detector, Det-A; power, act+ or ac-; etc.

Payment for this work shall be incidental to the installation of the various cables.

623 CONSTRUCTION LAYOUT STAKES

The Contractor shall stakeout all signs and traffic signal supports in accordance with Supplemental Specification 816 prior to installation of any foundations or supports.

After stakeout the Contractor shall notify the Engineer a minimum of seven (7) days in advance of scheduled work. Support locations for each support will be field checked and approved by the Engineer who shall coordinate with the District and/or City, Traffic Engineer prior to proceeding with construction work required.

If both major and minor type supports are included within the project it will be permissible to perform the construction stakeout and field inspection in two (2) stages, one for major supports and one for minor supports.

Cost for this item of work will be included in the lump sum bid for Item 623, Construction Layout Stakes.

RESTORATION OF DISTURBED AREAS

The Contractor shall replace all median pavement, seeded and sodded areas, paved shoulders, and all other disturbed surfaces to a condition equal to that existing before the work was started. All replacements shall be done in accordance with the pertinent specification items and as directed by the Engineer. Payment for all restoration work, including materials, equipment, labor, incidentals and disposal of all surplus materials, shall be included in the Unit Prices bid for various items.

CAPPING OF CONDUIT

All conduit in foundations which will not have wire or cable pulled into it during construction shall have the ends closed with capped bushings or otherwise sealed in an approved manner to completely keep all moisture and foreign matter out of the conduit.