

S 625 Plan Specification References

References to Item 625 and 713 in these plans shall be considered to read as respective references to Items S 625 and S 713.

GENERAL

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.

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 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, specific 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.

SIGNAL SPECIFICATIONS

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 24 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 Painesville Electric Company. The cost of obtaining the power shall be included in the price bid 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 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.

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 made as follows:

1. Signal cable, power cable, interconnect cable, loop detector lead-in cable, service cable.
The length measured horizontally from center to center of pull boxes, poles, foundations, or signal heads; plus the following:
 1. Five feet per each pullbox, pole, or termination at controller or signal head to allow for slack and splicing of leads.
 2. The length measured vertically from trench bottom to pole outlet or mast arm attachment on vertical runs. Multipliers as contained in 625.24 paragraph (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 sawslots 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 but not including any additional messenger required for attachment of messenger to poles, bullrings or strain insulators by wrapping or bending.

GENERAL NOTES

CONSTRUCTION LAYOUT STAKES FOR SIGNS (AND TRAFFIC SIGNALS)

The Contractor shall stake out 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 checked taking into account both underground and overhead obstructions and conflicts and approved by the Engineer who shall coordinate with the division 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 stake-out and field inspection in two (2) stages, one for major supports and one for minor supports.

Cost for this item or 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.

TESTING OF TRAFFIC SIGNALS

The Contractor shall furnish all personnel, equipment and appliances required to successfully test the completed installations.

The Contractor shall test and demonstrate to the satisfaction of the Engineer or his authorized representative that the circuits are properly connected, continuous and free from short circuits, crosses and unspecified grounds, and that they are connected in accordance with the wiring instructions and that each circuit is operable correctly and independently of any other circuit.

The Contractor shall test each ungrounded circuit and spare wires for signals terminating at the traffic controller cabinet for resistance to ground. This resistance to ground shall be not less than ten (10) megohms. The Contractor shall furnish a complete report of all megohm readings of each circuit and spare conductors in cables appearing at the controller base. The ground rod at the traffic controller shall have a resistance of not more than 25 OHMS to ground.

After all circuits and spare conductors have been tested the Contractor will install the traffic controller and connect the field wiring to the terminal contacts of the traffic controller. The completed installation shall operate continuously for a period of ten days without interruption or failure attributable to poor workmanship or defective material prior to acceptance and after any defective parts have been replaced and all faults corrected.

The Contractor shall have the responsibility of correcting malfunctions of the installation. Power for the test will be furnished from the service installed as a part of this contract. The cost of the power to conduct the test will be borne by the Contractor. Costs of conducting tests by the Contractor shall be included in the price bid for the item tested.

625 TRAFFIC SIGNALS

Each signal unit, which shall consist of one or more lens, shall be sectional in construction requiring one section for each lens.

The units shall be of the pole mounted or hanging type and shall include all the accessory parts fabricated of the latest corrosion resistant materials.

All work and materials shall conform to the latest Institute of Traffic Engineers specifications.

The housings and doors for the individual sections shall be die-cast of corrosion-resistant copper-free non-ferrous metal having a minimum of tensile strength of 17,000 pounds per square inch.

All parts shall be clean, smooth and free from flaws, cracks, blowholes and other imperfections.

The housing shall have integral cast hinge lugs located on the left side and on integral cast latching bolt lug located on the right side. The door, likewise, shall have integrally cast hinge lugs and a latching bolt fork lug to match the housing lugs. Twelve inch sections shall have two integral cast latching bolt lugs located on the right side of the casting.

The top and bottom of each lens section shall be fitted with locking ring assembly with seventy-two serrations which will permit the rotation, one section in relation to the other, of each section by five degree increments. In addition, the openings of the top and bottom sections shall be adaptable to accommodate a standard inch and one half bracket arm or suspension hardware as specified.

The door shall have an integrally cast rim completely encircling the lens opening to prevent any light leakage between the door and lens. Also, the inside of the door shall have cast therein a groove to accommodate a one piece neoprene type gasket for a totally weatherproof and dustproof assembly when the door is in the closed position.

All incidental parts of the completed, ready-to-mount assembly shall be of stainless steel or other corrosion resistant material.

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AND ST. CLAIR STREET

Where the signal unit is to be of the suspended or hanging type, the completed assembly shall also be equipped with balance adjusters to maintain a vertical unit when mounted.

Each signal unit section shall be fitted with a standard tunnel visor fabricated of sheet aluminum with a minimum thickness of five-hundredths (0.05) of an inch.

The visor shall be so designed to encircle and fit tightly against the door and lens rim so as to prevent light filtration between the visor and the door.

The visor shall be mounted on the door with at least four stainless steel screws in such a manner as to allow the removal of the visor without the total removal of the screws.

The lens shall be either eight inches or twelve inches in diameter as indicated on the plans, and shall be cast of impact resistant glass or other similarly abrasive and impact resistant material conforming to the latest I.T.E. specifications.

The lens shall be encased in and protected by a neoprene gasket which provides a dust seal between the door and the lens.

Mounting of the lens to the door shall be by means of stainless steel lugs and screws.

The reflector assembly shall consist of a highly polished specular aluminum reflector, die-cast metal retaining ring, lamp receptacle and spring-type bail for holding the assembly together.

The assembly shall be designed so that it can be swung out of the housing and easily removed without use of tools. Additionally, the assembly shall include a neoprene gasket between the reflector and retaining ring.

The lamp receptacle shall be a bail spring mounted, rotating-position type to provide a rigid installation which is adjustable to permit the positioning of the lamp filament at the correct focal point of the reflector.

The receptacle shall be such that the socket will rotate thru 360 with eight stop positions of adjustment for the positioning and repositioning of the lamp. Lamps shall be installed with the open portion of the filament, in the upward position.

Standard traffic signal lamps with a minimum of 6,000 hour rating shall be furnished with all signal units. One hundred fifty watt lamps shall be installed in all 12 inch sections except yellow, 121 watts in all 8 inch red or green sections, 69 watt lamps shall be furnished with all amber sections. Traffic signals shall be installed such that the lowest point of the signal is sixteen (16) to seventeen (17) feet above the pavement surface.

All signal sections shall have provision and space for the mounting of an eight screw terminal block, however, one section of each assembled unit shall have at least a five screw terminal block.

Payment for Item 625 "Traffic Signals" ^{By Type} will be made at the contract unit price for each signal assembly, mounted in place, tested, and accepted.

625 PEDESTRIAN SIGNAL HEAD, INCANDESCENT 12" x 12"

This item shall consist of furnishing and installing incandescent pedestrian signal heads of the size shown on the plans, and installing them as shown on the detail Sheet No. 27 and as herein specified. Pedestrian signals shall be in accordance with "Adjustable Face Pedestrian Signal Head Standard" as approved by the Institute of Traffic Engineers (ITE) Board of Direction June 29, 1963, with the following exceptions and qualifications:

1. A pedestrian signal head shall be a complete unit capable of displaying both of the indications "Walk" and "Don't Walk" to one approach of pedestrian traffic, together with all incidental items described below and in the details which are required to complete the installation.
2. The nominal size of each unit lens face shall be 12 x 12 inches. The "Walk" indication shall be "Lunar White" Light and the "Don't Walk" indication shall be "Portland Orange" Light.
3. Visors shall be 7 inches in length and shall extend from the top and both sides of the lens.
4. Exterior metal surfaces including mounting brackets shall be finished with black color paint with the exception of the interior surface of visors which shall be finished with flat black (instrument black) paint.
5. All necessary brackets, nipples, conduit, trunnions, and other hardware required for either pedestal top or pole mounting as shown on the plans and details, shall be included in, and considered incidental to, the unit price bid for pedestrian signals heads.
6. The "Walk" lens shall be completely opaque with the exception of the letters.
7. Reflectors shall be of the highly specular finished aluminum type.
8. The Contractor shall furnish and install a traffic signal lamp in each pedestrian signal section. Signal lamps shall conform to "a standard for traffic signal lamps" as approved by the Institute of Traffic Engineers (ITE) Board of Direction on December 26, 1967 with the following qualifications and exceptions:
 - a. Brass screw bases shall be required.
 - b. Lamp sizes shall be 121 watt, 6000 rated life hour, 2-7/16" light center length.
3. The reflector shall be assembled or constructed of a material which will not corrode, change color or change reflective properties significantly under normal urban atmospheric conditions.

Payment for Item 625 Pedestrian Signal Head, Incandescent ^{By Type} will be at the unit price bid per each, complete and installed, including signal head, light source, mounting brackets, miscellaneous fittings and testing.