

GENERAL NOTES

FED. RD. DIV.	STATE	PROJECT
5	OHIO	T-4030 (13)

5
38

LAKE COUNTY
LAK- 20-14-30
LAK- 86-0-25
AND WASHINGTON STREET
AND ST. CLAIR STREET

7. The panel lights and switches shall be accessibly located in the controller cabinet.

CABINET

- The Master Controller and all associated electrical components shall be housed in a free standing cabinet rack.
- The rack frame shall be welded into a solid unit made of 14 gauge cold rolled steel channels.
- The sides of the rack shall have channel braces with a double row of perforations to which adjustable vertical mounting rails are fastened.
- The rails shall support, in addition to standard 19" panels, all necessary shelves and brackets required to mount all the timing equipment and accessories.
- A hinged rear door shall be provided permitting complete access to the interior of the cabinet.
- The standard finish shall be a smooth baked enamel over a prime finish.
- All internal wiring shall be placed into wire raceways and all terminations made on terminal strips.
- All field terminals shall be permanently identified.
- Relays that may be used to provide any features of the Master Control System shall be socket or jack mounted.
- All wiring of the terminals shall be 105 C stranded, with polyvinyl chloride (PVC) insulation, wiring shall be of adequate current carrying capacity.
- The master controller shall be located in the Painesville City Hall as designated on the plans.
PAYMENT FOR THIS ITEM SHALL BE MADE THE CONTRACT PRICE BID PER EACH, COMPLETE IN PLACE.

625 LOOP DETECTOR AMPLIFIER

The loop detector amplifier is an electronic device that will detect the presence or motion of a mass of metal. This detection is accomplished by the passage of a car over a wire loop imbedded in the roadway.

The amplifier shall conform to the following:

- The detector shall operate satisfactory at any temperature between -30°F. and 165°F.
- The operating voltage shall be 115 volt, 60 cycle.
- The internal circuitry shall be incorporated into printed circuit board assemblies.
- The detector design shall include a fixed frequency crystal which will generate a sinewave form of signal.
- No external equipment shall be necessary for installation, tuning or sensitivity adjustments.
- Various types of outputs shall be available including pulse and presence. These outputs shall be available by switching from one to the other without changing any internal parts.
- All transistors, crystals, and relays shall be of the plug-in type to facilitate replacement.
- The amplifier and power supply shall be capable of driving several loops from the one source. The amplifier shall be capable of detecting vehicles in a total area of up to 400 sq. ft. and shall properly function with lead-in lengths totaling up to 750 feet.

The above types of loop detector amplifiers and power supply shall be Automatic Signal No. LD-1, or LD-2 Decatur No. XLMH or Automatic Control Equipment Model LD-100 or approved equal.

Payment for Item 625 "Loop Detector Amplifier" will be made at the contact unit price for each detector amplifier, completely wired and installed in controller cabinet.

625 PEDESTRIAN PUSHBUTTON WITH SIGN

Pushbuttons shall be two piece construction, consisting of a housing and a removable cover plate assembly. The cover plate assembly shall attach to the housing with stainless steel machine screws. The cover plate assembly shall consist of one set of normally open contacts and all the necessary mechanical and electrical components required for the operation of the pedestrian pushbutton. The housing shall have single one-half (1/2) inch conduit threaded opening (top or bottom) The cover plate and housing will consist of a cast aluminum alloy material. All cast metal parts shall have a tensile strength of not less than 17,000 pounds per square inch. The alloy used shall be S-5A or CS-72A of ASTM Specification B-28-60T. Only metal components will be permitted on the outside of the pushbutton. The pushbutton shall be waterproof and designed for rugged operation.

Pedestrian pushbuttons installed on steel signal poles, and on pedestrian signal pole units shall be serviced by cables inside the poles. The Contractor shall drill the proper size holes in the steel poles in back of the pushbutton saddle and route the cable through to the pushbutton in such a manner that the cable will not appear on the outside of the poles. All pushbuttons shall be installed with the center of the pushbutton a height of 4'-0" above the ground. The pushbuttons shall be located on the side of poles as shown on the plans and as directed by the Engineer.

The housing and cover plate shall be painted with (2) coats of yellow enamel.

An 9" x 12" sign with black legend on a white background shall be furnished and installed at a point on the pole 6" clear distance above the top of the pushbutton. The sign shall be fabricated from .010 aluminum or enameled steel and shall bear the legend shown on detail sheet No. 28.

Signs and pushbuttons shall be oriented to face the crosswalk to which they apply unless otherwise noted on the plans.

Payment for Item 625 "Pedestrian Pushbutton with Sign", will be made at the contact unit price each, completely assembled and mounted in place including sign tested, and accepted.

625 SIGNAL CABLE 14 AWG. BY TYPE

Traffic signal cable shall be weatherproof and shall consist of the number of conductors as specified on the plans. All conductors shall be AWG 14. Cables shall be insulated, jacketed rated 600 volts for use in underground conduit or as aerial cable supported by a messenger. It shall be color coded and in every respect follow the International Municipal Signal Association specification number 19-1-1967.

Wires may be solid or stranded.

Payment for Item 625 "Traffic Signal Cable 14 AWG" will be made at the contract unit price per lineal foot by type, in place, completed and accepted, including wiring, terminals, connections, testing, and all incidentals necessary.

625 INTERCONNECT CABLE 12 AWG

Interconnect cable shall be weatherproof and shall consist of the number of conductors as specified on the plans. All conductors shall be AWG 12. Cables shall be insulated, jacketed, rated at 600 volts for use in underground conduit or as aerial cable supported by a messenger. It shall be color coded and in every respect follow the International Municipal Signal Association specification number 19-1-1967.

INTERCONNECT CABLE

COND#	FUNCTION
1 (White)	COMMON
2	OFFSET 1
3	" 2
4	" 3
5	DIAL 2
6	" 3
7	REMOTE FLASH 1
8	" 2
9	SPARE

Payment for Item 625 "Interconnect Cables 9/c #12" will be made at the lineal price bid per lineal foot in place, completed and accepted including wiring, terminals, connections, splicing, testing, and all incidentals necessary.

625 INTERCONNECT CABLE, INTEGRAL MESSENGER WIRE TYPE WITH ACCESSORIES

This item shall consist of the furnishing and erecting of "Figure 8" I.M. (Integrated Messenger) self-supporting Aerial Interconnect Cable conforming to INSA specification 19-3-67.

The interconnect cable shall be 600 V, 9/c #12 AWG weatherproof, color coded, insulated and jacketed for use as aerial cable.

The messenger wire shall be 1/4" seven-strand galvanized steel.

The cable shall be attached to poles as shown in the plans by means of brackets and clamps shown in detail on Sheet 27.

Cables which are to enter weatherhead, or other appurtenances shall have the messenger and supporting jacket web stripped away from an essentially round cable, however care shall be exercised not to damage the cable jacket.

Payment for Item 625 "Interconnect Cable, Integral Messenger Wire, 9/c #12 AWG w/Accessories" shall be made the contract price bid per lineal foot, in place, complete, and accepted including wiring, terminals, splice enclosures, connection, clamps, hangers, brackets, suspension fixtures, splicing, testing and all incidentals necessary.

816 MESSENGER WIRE (BY SIZE) WITH ACCESSORIES

Messenger wire shall be utility grade galvanized steel as per ASTM A 475 class B. It shall consist of seven strand (3/8" nominal diameter with a breaking load of 11,500 lbs. or 3 strand 1/4" nominal diameter with a breaking load of 4,500 lbs.) Galvanized steel lashing rods shall be used to suspend the signal cable from the messenger wire, tightly secured Wet-porcelain strain insulators (600 volt) guy clamps, and Galvanized performed guy grip dead ends, thimbles, and bull rings (when required) with a rated loading strength equal to or greater than the breaking load of the messenger wire shall be installed as shown on the plans and/or specified by the Engineer. The messenger wire shall be installed so that the entire load of the signal equipment will not cause sag to exceed a maximum of 5% or a minimum of 3% of the span.

Payment for Item 816 "Messenger Wire (By Size)" with Accessories will be made at the contract unit price per lineal foot (measured to center of pole or aerial corners) completely assembled in accordance with the typical signal installation details and shall include messenger wire, lashing rods, strain insulators, performed guy grips, thimbles, guy clamps, and aerial corner bull rings, as described above and shown on the details on sheet 28.

625 POWER CABLE 3/C #8 AWG RHW STRANDED

Power cable shall be weatherproofed and shall be 3 conductor AWG #8 RHW (or RHW Type) stranded copper. Power cable shall be installed from the controller cabinet through the appropriate conduit, signal pole, and weatherhead. It shall be attached by the Painesville Municipal Electric to the service cable with pressure connectors covered with mastic insulation. Three single conductor #8 RHW wires may be substituted; however, payment will be based upon the equivalent length of 3" conductor cable.

Payment for Item 625 "Power Cable" 3/C #8 AWG - RHW stranded will be made at the contract unit price per lineal foot, in place, complete and accepted, including wiring, terminals, connections, testing, and all incidentals necessary and shall also include any costs incurred to arrange the service installation by the Painesville Electric Power in conformance with the plans.

625 LOOP DETECTOR WIRE AND LEAD IN CABLE

Loop Detector wire shall consist of single conductor, insulated, No. 14 AWG RHW/600 v or RHW type, stranded copper wire, and be installed in accordance with the typical loop detector detail. Each wire loop shall consist of the number of turns as required by the manufacturer of the loop detector. The loop wire shall run continuously to the adjacent pull box where it shall be spliced to the loop detector lead-in cable.

Payment for Item 625 "Loop Detector Wire" will be made at the contract unit price per lineal foot in place for #14 Detector wire and shall include detector wire, installation, jacket, conduit from roadway edge to pullbox splice and all incidentals of loop detector wire shown on the plans is based on an anticipated required number of turns. Payment will be based on the actuated lineal feet installed as this is controlled by the detector manufacturer's requirement for loops.

Payment for Item 625 "Loop Detector Lead-in Cable" will be made at the contract unit price per lineal foot in place for #14 AWG 2 cond., polyethylene insulated, twisted pair, shielded and jacketed cable, including soldered waterproof poured epoxy splice.

625 CABLE SUPPORT ASSEMBLY

A cable support assembly shall be installed for each group of cables passing through each wire outlet near the top of pole, it shall be attached to the "J" hook as shown in the plans and shall consist of the following major items:

- One piece of three-strand copper-clad messenger, length as required.
- Two hot-dipped galvanized thimbles.
- Two #6 split bolt connectors.
- One bronze or stainless steel cable grip with single "U" eye bale.
- All other miscellaneous items that may be necessary to make the assembly complete.

The messenger shall be 0.164 inches in diameter consisting of three strands of 0.075 inch copper-covered steel wires twisted in the form of a cable. Guy thimbles shall be grooved to fit the guy strand and bent to the proper radius to prevent the strand from being sharply bent. The cable grip shall have a single "U" eye bale. The grips shall be of the proper size to fit the cable and shall have a minimum rated breaking strength of 250 pounds.

The grip shall be either the "closed", or "split with rod" type.

Payment for Item 625 Cable Support Assembly will be made at the contract unit price each, completely assembled in place and accepted.

625 LOOP DETECTOR PAVEMENT CUTTING

Loop detector pavement cutting shall consist of a 1-1/4 inch or 2 inch x 1/4 inch wide saw cut in accordance with typical loop detector installation detail. The saw cut shall be filled with a joint sealer after the wire has been installed.

Payment for Item 625 "Loop Detector Pavement Cutting" will be made at the contract unit price per lineal foot for saw cutting and treatment including joint sealer.

625 GROUND RODS

This item of work shall consist of furnishing and installing ground rod and cable as directed by the Engineer.

The cable shall be exothermically welded to the top of the ground rod.

Basis of payment for this item shall be at contract unit price per each, which shall include all labor, materials, and equipment required to complete this item of work.

625 CONDUIT JACKED UNDER PAVEMENT

This item shall consist of furnishing and installing conduit of the size or sizes indicated under existing pavement and contiguous shoulders by an approved method such as "drilling" or "jacking." Conduit shall be as specified under 713.04.

The Contractor shall place the conduit with the least amount of disturbance to the existing pavement, subbase, berm pavement, or shoulders of the roadway. All push pits or any necessary excavations shall be backfilled and restored in accordance with 625.01.

Measurement of the conduit shall be the actual amount of lineal feet installed under pavement and shoulders measured in place, as accepted by the Engineer.

The Unit Price Bid for Item 625 "Conduit Jacked Under Pavement" shall be full compensation for excavation, drilling or jacking, backfilling, compaction, restoration, and all labor, material, equipment, and incidentals necessary to complete the work as specified.

625 WEATHERHEAD AND CONDUIT RISER

The weatherhead and conduit riser shall provide a wiring raceway for signal cable from the controller to the overhead span wire.

The weatherhead and conduit riser shall consist of a weatherhead, conduit, and conduit fittings as specified on plan sheets and ells, and stainless steel straps.

The weatherhead shall be cast aluminum or galvanized cast ferrous metal and shall prevent entry of water into the conduit.

Conduit shall be as specified in 713.04. Stainless steel straps shall be 3/4 of an inch wide by .020 inch thick and shall be spaced at maximum intervals of five (5) feet.

Payment for 625 "Weatherhead and Conduit Riser" by size will be made at unit price bid for each weatherhead and conduit riser installation completely installed and accepted including all labor, material, equipment and incidentals necessary to perform the required item of work.