Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

May 27, 2010

SUBJECT: FAP Route 656 (IL 29)
Section (8) RS-3; (L) RS-4
Tazewell County
Contract No. 68743
Item No. 299, June 11, 2010 Letting
Addendum A

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised page ii of the Table of Contents to the Special Provisions.
2. Added pages 53 - 66 to the Special Provisions.

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

Scott E. Stitt, P.E.
Acting Engineer of Design and Environment

By: Ted B. Walschleger, P. E.
Engineer of Project Management

cc: Joseph E. Crowe, Region 3, District 4; Mike Renner; Estimates

TBW:MS:jc

Revised 05/27/2010

LOCATION OF UNDERGROUND STATE MAINTAINED FACILITIES

The Contractor shall be responsible for locating all existing IDOT electrical facilities prior to performing any work at his/her own expense if required. The Contractor shall also be liable for any damage to facilities resulting from inaccurate locating. The Contractor may obtain, on request, plans of existing electrical facilities from the Department.

The Contractor shall also be responsible for locating and providing protection for facilities during all phases of construction. If at any time, the facilities are damaged, the Contractor shall immediately notify the Department and make all necessary arrangements for repair to the satisfaction of the Engineer. This work shall be included in the contract bid price and no additional compensation will be allowed.

CONTRACT GUARANTEE

The Contractor shall guarantee all electrical equipment, apparatus, materials, and workmanship provided under the contract for a period of six (6) months after the date of final inspection according to Article 801.14.

All instruction sheets required to be furnished by the manufacturer for materials and supplies and for operations shall be delivered to the Engineer prior to the acceptance of the project, with the following warranties and guarantees:

1. The manufacturer's standard written warranty for each piece of electrical equipment or apparatus furnished under the contract.

2. The Contractor's written guarantee that, for a period of six (6) months after the date of final inspection of the project, all necessary repairs to or replacement of said warranted equipment, or apparatus shall be made by the Contractor at no cost to the Department.

3. The Contractor's written guarantee for satisfactory operation of all electrical systems furnished and constructed under the contract for a period of 6 months after final inspection of the project.

REBUILD EXISTING SIGNAL HEAD, LED

This work shall be in accordance with the applicable Articles of Sections 880, 895, and 1078 of the Standard Specifications with the following modifications:

<u>The work shall consist of the following:</u>

- The Contractor shall modify the existing four or five section mast arm mounted or bracket mounted signal heads from a protected/permissive configuration to a four section FYA (flashing yellow arrow) configuration. The locations of the signal heads are shown on the plan sheets.

Added 05/27/2010

- The Contractor shall remove all LED indications from the head and deliver them to the IDOT Traffic Building, located at 1025 W. Detweiller Dr., Peoria. The Contractor shall notify Paul Grant, Traffic Signal Technician, at (309) 671-4474 a minimum of forty eight hours prior to delivery.

- The Contractor shall remove one section from existing five section heads to make a four section head.

- The Contractor shall install the following new LED indications in the four section traffic signal head: one red arrow, two yellow arrows, and one green arrow. The LED modules shall conform to the specifications listed in the special provisions.

- The Contractor may reuse the existing pole mounting and mast arm mounting brackets and associated hardware. In the event that these items are damaged and cannot be re-used, the Contractor shall furnish and install all parts required to mount the head and make it fully functional and operational.

- The Contractor shall furnish and install stainless steel banding as required.

- The Contractor shall modify the existing backplate as needed to the satisfaction of the Engineer.

- The Contractor shall remove any “Left Turn on Green Ball” signs and dispose of them.

Basis of Payment: This work will be paid for at the contract unit price per each for REBUILD EXISTING SIGNAL HEAD, LED which price shall be payment in full for all labor, materials, and equipment required to rebuilding the existing signal head as described above.

ELECTRIC CABLE IN CONDUIT, SIGNAL, NO. 14 5C

This work shall be in accordance with the applicable Articles of Sections 873, 1076, and 1088 of the Standard Specifications with the following modifications:

The work shall consist of the following:

- The contractor shall install cable in existing conduits, handholes, mast arms, and traffic signal poles as shown on the plan sheets to re-feed existing traffic signal heads.

- The existing 7/C traffic signal cable shall be used to operate the FYA traffic signal heads.
- The proposed #14 5/C cable shall be extended to the existing three section signal head closest to the mast arm pole.

- The Contractor shall identify the existing jumper connected to the FYA head and disconnect and cap the cable in both signal heads.

- The Contractor shall perform all work required, including, but not limited to, removing and reinstalling the existing signal heads to accommodate the proposed cable and disconnecting and removing any unused jumpers.

Added 05/27/2010

- The Contractor shall furnish and install all items (brackets, hardware, etc.) that have been rendered unusable as a result of removing and reinstalling the existing signal heads.

Basis of Payment: This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, SIGNAL, NO. 14 5C which price shall be payment in full for all labor, materials, and equipment required to install the electric cable as described above.

TRAFFIC SIGNAL LED MODULE SPECIFICATIONS

The material requirement shall be in accordance with Sections 880 and 1078 of the Standard Specifications except as modified herein.

The LED assemblies for the red, yellow, and green solid and arrow indications shall meet or exceed the following minimum specifications:

RED LED ASSEMBLY

Currently, only the following models are approved by the Department for use provided that they meet the minimum specifications listed below:

GELcore	Model DR6-RTFB-17A
Dialight	Model DURALED 433-1210-003XL

The LED assembly shall conform to the following minimum specifications:

Lens : 12” Diameter, Red, Hard Coated for Abrasion Resistance, UV Stabilized Dome, Designed to Evenly Distribute Light Across the Entire Face of the Lens to Provide a Uniform Illuminance Across the Face of The LED, Provide a Wide Angle For Viewing, And Eliminate any "Dotty" or Grainy Appearance.

LEDS: Interconnected to minimize the effect of single LED failures, Nominal Wattage: 6-10 W or less, Nominal Wavelength: 625-626nm

Minimum Luminous Intensity (cd): 365

Product Warranty: 5 Year Replacement (Materials, Workmanship, and Intensity)

The assembly shall be capable of operating from 80 to 135 VAC with less than 10% variation in intensity, shall have an operating temperature range of -40° to 74°C, and shall be sealed and highly resistant to water intrusion.

The assembly shall conform to the latest applicable (Part II) ITE color requirements and meet ITE VTCSH LED Circular Signal Supplement June 2005 specifications for LED traffic signals, including intensity requirements at -40° to 74°C.

Added 05/27/2010

The assembly shall be compatible with signal control equipment per NEMA TS-2, NEMA TS-1 standards, and include transient voltage protection and fusing to withstand high-repetition noise transients and low repetition high energy transients per NEMA standard 1992 and ITE VTCSH - STD PART 2.

YELLOW LED ASSEMBLY

Currently, only the following models are approved by the Department for use provided that they meet the minimum specifications listed below:

GELcore	Model DR6-YTFB-17A
Dialight	Model DURALED 433-3230-001XL

The LED assembly shall conform to the following minimum specifications:

Lens : 12” Diameter, Clear or Yellow, Hard Coated for Abrasion Resistance, UV Stabilized Dome, Designed to Evenly Distribute Light Across the Entire Face of the Lens to Provide a Uniform Illuminance Across the Face of The LED, Provide a Wide Angle For Viewing, And Eliminate any "Dotty" or Grainy Appearance

LEDS: Interconnected to minimize the effect of single LED failures, Nominal Wattage: 19 W or less, Nominal Wavelength: 589-590nm

Minimum Luminous Intensity (cd): 910

Product Warranty: 5 Year Replacement (Materials, Workmanship, and Intensity)

The assembly shall be capable of operating from 80 to 135 VAC with less than 10% variation in intensity, shall have an operating temperature range of -40° to 74°C, and shall be sealed and highly resistant to water intrusion.

The assembly shall conform to the latest applicable (Part II) ITE color requirements and meet ITE VTCSH LED Circular Signal Supplement June 2005 specifications for LED traffic signals, including intensity requirements at -40° to 74°C, except for when its terms are in conflict with the terms contained in this special provision. In such cases, this special provision shall supersede the contrary ITE specification.

The assembly shall be compatible with signal control equipment per NEMA TS-2, NEMA TS-1 standards, and include transient voltage protection and fusing to withstand high-repetition noise transients and low repetition high energy transients per NEMA standard 1992 and ITE VTCSH - STD PART 2.

GREEN LED ASSEMBLY

Currently, only the following models are approved by the Department for use provided that they meet the minimum specifications listed below:

GELcore	Model DR6-GCFB-17A (Clear)
Dialight	Model 433-2220-001XL (Tinted Lens)

Added 05/27/2010

The LED assembly shall conform to the following minimum specifications:

Lens: 12” Diameter, Hard Coated for Abrasion Resistance, UV Stabilized Dome, Designed to Evenly Distribute Light Across the Entire Face of the Lens to Provide a Uniform Illuminance Across the Face of The LED, Provide a Wide Angle For Viewing, And Eliminate any "Dotty" or Grainy Appearance

LEDS: Interconnected to minimize the effect of single LED failures, Nominal Wattage: 9-13 W or less, Nominal Wavelength: 500nm

Minimum Luminous Intensity (cd): 475

Product Warranty: 5 Year Replacement (Materials, Workmanship, and Intensity)

The assembly shall be capable of operating from 80 to 135 VAC with less than 10% variation in intensity, shall have an operating temperature range of -40° to 74°C, and shall be sealed and highly resistant to water intrusion.

The assembly shall conform to the latest applicable (Part II) ITE color requirements and meet ITE VTCSH LED Circular Signal Supplement June 2005 specifications for LED traffic signals, including intensity requirements at -40° to 74°C.

The assembly shall be compatible with signal control equipment per NEMA TS-2, NEMA TS-1 standards, and include transient voltage protection and fusing to withstand high-repetition noise transients and low repetition high energy transients per NEMA standard 1992 and ITE VTCSH - STD Part 2

RED ARROW LED ASSEMBLY

Currently, only the following models are approved by the Department for use provided that they meet the minimum specifications listed below:

GELcore	Model DR6-RTAAN-17A
Dialight	Model 432-1314-001XOD

The LED assembly shall conform to the following minimum specifications:

Lens: 12” Diameter, Hard Coated for Abrasion Resistance, UV Stabilized Dome, Designed to Evenly Distribute Light Across the Entire Face of the Lens to Provide a Uniform Illuminance Across the Face of The LED, Provide a Wide Angle For Viewing, And Eliminate any "Dotty" or Grainy Appearance.

LEDS: Interconnected to minimize the effect of single LED failures, Nominal Wattage: 5-6 W or less, Nominal Wavelength: 626-628nm, Shall Have a Full Profile Arrow Indication (No Outlined or 2 Row Indications)

Minimum Luminous Intensity (cd): 56-58

Product Warranty: 5 Year Replacement (Materials, Workmanship, and Intensity)

Added 05/27/2010

The assembly shall be capable of operating from 80 to 135 VAC with less than 10% variation in intensity, shall have an operating temperature range of -40° to 74°C, and shall be sealed and highly resistant to water intrusion.

The assembly shall conform to the latest applicable (Part II) ITE color requirements and meet ITE VTCSH LED Vehicle Arrow Traffic Signal Supplement July 1, 2007 specifications for LED traffic signals, including intensity requirements at -40° to 74°C.

The assembly shall be compatible with signal control equipment per NEMA TS-2, NEMA TS-1 standards, and include transient voltage protection and fusing to withstand high-repetition noise transients and low repetition high energy transients per NEMA standard 1992 per ITE VTCSH - STS Part 3.

YELLOW ARROW LED ASSEMBLY

Currently, only the following models are approved by the Department for use provided that they meet the minimum specifications listed below:

GELcore	Model DR6-YTAAN-17A
Dialight	Model 431-3334-001XOD

The LED assembly shall conform to the following minimum specifications:

Lens : 12” Diameter, Clear or Yellow, Hard Coated for Abrasion Resistance, UV Stabilized Dome, Designed to Evenly Distribute Light Across the Entire Face of the Lens to Provide a Uniform Illuminance Across the Face of The LED, Provide a Wide Angle For Viewing, And Eliminate any "Dotty" or Grainy Appearance

LEDS: Interconnected to minimize the effect of single LED failures, Nominal Wattage: 12 W or less. Nominal Wavelength: 590-592nm, Shall Have a Full Profile Arrow Indication (No Outlined or 2 Row Indications)

Minimum Luminous Intensity (cd): 141.6-146

Product Warranty: 5 Year Replacement (Materials, Workmanship, and Intensity)

The assembly shall be capable of operating from 80 to 135 VAC with less than 10% variation in intensity, shall have an operating temperature range of -40° to 74°C, and shall be sealed and highly resistant to water intrusion.

The assembly shall conform to the latest applicable (Part II) ITE color requirements and meet ITE VTCSH LED Vehicle Arrow Traffic Signal Supplement July 1, 2007 specifications for LED traffic signals, including intensity requirements at -40° to 74°C, except for when its terms are in conflict with the terms contained in this special provision. In such cases, this special provision shall supersede the contrary ITE specification.

Added 05/27/2010

The assembly shall be compatible with signal control equipment per NEMA TS-2, NEMA TS-1 standards, and include transient voltage protection and fusing to withstand high-repetition noise transients and low repetition high energy transients per NEMA standard 1992 per ITE VTCSH - STS Part 3.

GREEN ARROW LED ASSEMBLY

Currently, only the following models are approved by the Department for use provided that they meet the minimum specifications listed below:

GELcore	Model DR6-GCAAN-17A
Dialight	Model 432-2374-001XOD

The LED assembly shall conform to the following minimum specifications:

Lens: 12” Diameter, Hard Coated for Abrasion Resistance, UV Stabilized Dome, Designed to Evenly Distribute Light Across the Entire Face of the Lens to Provide a Uniform Illuminance Across the Face of The LED, Provide a Wide Angle For Viewing, And Eliminate any "Dotty" or Grainy Appearance.

LEDS: Interconnected to minimize the effect of single LED failures, Nominal Wattage: 5-6 W or less, Nominal Wavelength: 500nm, Shall Have a Full Profile Arrow Indication (No Outlined or 2 Row Indications)

Minimum Luminous Intensity (cd): 176

Product Warranty: 5 Year Replacement (Materials, Workmanship, and Intensity)

The assembly shall be capable of operating from 80 to 135 VAC with less than 10% variation in intensity, shall have an operating temperature range of -40° to 74°C, and shall be sealed and highly resistant to water intrusion.

The assembly shall conform to the latest applicable (Part II) ITE color requirements and meet ITE VTCSH LED Vehicle Arrow Traffic Signal Supplement July 1, 2007 specifications for LED traffic signals, including intensity requirements at -40° to 74°C.

The assembly shall be compatible with signal control equipment per NEMA TS-2, NEMA TS-1 standards, and include transient voltage protection and fusing to withstand high-repetition noise transients and low repetition high energy transients per NEMA standard 1992 per ITE VTCSH - STD Part 3.

YELLOW/GREEN BI-MODAL ARROW

Currently, only the following models are approved by the Department for use provided that they meet the minimum specifications listed below:

GELcore	Model DR6-ECA6-01A (Outline Profile)
Dialight	Model 430-6370-001

Added 05/27/2010

The LED assembly shall conform to the following minimum specifications:

Lens : 12” Diameter, Hard Coated for Abrasion Resistance, UV Stabilized Dome

LEDS: Interconnected to minimize the effect of single LED failures, Nominal Wattage: 10 W Green, 10 W Yellow or less, Nominal Wavelength: 505 -508 nm Green, 590-592 nm Yellow

Product Warranty: 5 Year Replacement (Materials, Workmanship, and Intensity)

The assembly shall be capable of operating from 80 to 135 VAC with less than 10% variation in intensity, shall have an operating temperature range of 40° to 74°C, and shall be sealed and highly resistant to water intrusion.

The assembly shall conform to the latest applicable (Part II) ITE color requirements and meet ITE specifications for LED traffic signals, including intensity requirements at -40° to 74°C.

The assembly shall be compatible with signal control equipment per NEMA TS-2, NEMA TS-1 standards, and include transient voltage protection and fusing to withstand high-repetition noise transients and low repetition high energy transients per NEMA standard 1992 per ITE VTCSH - STD Part 2.

SIGNAL HEAD, LED

This work shall be in accordance with Sections 880 and 1078 of the Standard Specifications except as modified herein.

The traffic signal heads shall consist of 12" polycarbonate sections and shall be equipped with LED assemblies for all red bulb, yellow bulb, green bulb, red arrow, yellow arrow, and green arrow indications.

The traffic signal heads shall have a yellow finish with black doors and tunnel visors.

The LED signal faces shall be equipped with spade connectors and connected to the traffic signal head terminal block.

The LED modules shall conform to the specifications listed under the section TRAFFIC SIGNAL LED MODULE SPECIFICATIONS.

The Contractor shall install the proposed signal head in a location approved by the Engineer to provide proper visibility for the movement.

In the event that the existing traffic signal heads need to be relocated to properly position the proposed traffic signal heads, the Contractor shall relocate the head and provide all materials (brackets, hardware, banding, etc.) that are required to relocate the head as a part of this pay item.

Added 05/27/2010

The Contractor shall remove the existing heads, brackets, and any "Left Turn Yield on Green Ball" signs on and deliver them to the city of Peoria Traffic Operations Facility. This work will not be paid for separately, but shall be included in the bid price for this pay item. The Contractor shall reflect the salvage value of this equipment in the bid price for this pay item.

Basis of Payment: This work will be paid for at the contract unit prices each for SIGNAL HEAD, LED of the type specified and shall be payment in full for all labor, materials, and equipment required to provide and install the traffic signal heads described above, complete.

FULL ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL

This work shall be in accordance with Sections 857, 1073, and 1074 of the Standard Specifications except as modified herein.

The Contractor shall perform the following items:

- The Contractor shall remove the existing traffic signal cabinet and deliver the cabinet and its contents to the IDOT Traffic Building located at 1025 W. Detweiller Dr., Peoria. The Contractor shall notify Paul Grant, Traffic Signal Technician, at (309) 671-4474 a minimum of forty-eight hours prior to delivery.

- The Contractor shall schedule the replacement of the traffic signal cabinet only during the hours of 8:30 AM to 3:30 PM Monday through Friday.

- The Contractor will be allowed to place the intersection into all-red flash mode and all way stop control only during the hours specified above to facilitate the installation of the proposed traffic signal controller cabinet.

- The Contractor shall furnish and install a minimum of two stop signs per approach when the intersection is operating in all-red flash mode or all way stop control.

- The Contractor shall ground and safety-bond the controller cabinet in accordance with NEC requirements.

The Contractor shall provide all labor, materials, and equipment required for the work described above. The cost of this work shall be included in the bid price for this pay item. There will be no additional compensation for this work.

The cabinet and controller shall be compatible with the existing Econolite closed loop system and Aries remote monitoring software.

The traffic signal cabinet shall have a NEMA TS-2 back panel. The cabinet shall include a malfunction management unit to allow enhanced fault monitoring capabilities. The malfunction management unit shall support flashing yellow arrow operation and be a Reno A&E model MMU-1600G equipped with a graphical display and Ethernet port.

The controller shall be an Econolite ASC/3-2100 NEMA TS-2 Type 2 controller.

Added 05/27/2010

The cabinet, controller, and malfunction management unit shall be configured by the manufacturer for flashing yellow arrow operation.

The malfunction management unit shall be equipped with the latest software and firmware revisions. The cabinet shall be equipped with a plexi-glass shield that covers the power panel which houses the mercury bus relay, line filter, circuit breakers, and other electrical components.

The cabinet shall be equipped with a plexi-glass shield that covers the thermostat and a fluorescent lighting assembly that turns on when the door is opened. The fluorescent lighting assembly shall be equipped with a cold weather ballast and mounted in a location that will not interfere with cabinet maintenance.

The traffic signal cabinet shall be equipped with a sixteen load switch back panel to accommodate future expansion.

The cabinet shall be furnished with a compact heater strip to be used for moisture reduction during cold weather. The heater shall be thermostatically controlled, operate at 120 volts, have a minimum wattage of 150 watts, a maximum wattage of 250 watts, have a shield to protect service personnel and equipment from damaging heat, be separately fused, and be mounted where it does not interfere with a person working in the cabinet.

The cabinet shall be equipped with a twenty-four fiber wall- mountable interconnect center and two six-fiber bulkheads. The cabinet shall also be equipped with any and all other components necessary to provide for a complete and functional fiber optic telemetry.

The cabinet shall be equipped with toggle switch guards for all switches located on the door to prevent accidental switching. The cabinet shall include a high quality deluxe pleated filter.

The cabinet shall be equipped with additional surge protection for the controller, malfunction management unit, and detector amplifiers, and/or video detection system. The surge protector shall be a Transtector model ACP100BWN3 and shall be included in addition to an EDCO SHA-1250 IRS protector. The EDCO SHA-1250 IRS surge protector is to be provided in accordance with Section 1085.47 A(4a) and shall be wired to provide surge protection for the controller, malfunction management unit, and detector amplifiers. The Transtector surge suppressor may be wired to the equipment protected power terminals of the EDCO SHA-1250 IRS unit provided that the controller, MMU, and detection system are protected.

The Contractor shall set up each cabinet in his or her shop for inspection by the Engineer. All phases that are utilized shall be hooked up to a light board to provide observation for each signal indication. The Engineer shall be notified when the set up is complete so that all pertinent timings may be entered into the each traffic signal controller. The facility shall be subject to a seven day burn-in period before installation will be allowed.

After installing the cabinet in the field, prior to resuming normal signal operation, the Contractor shall test the cabinet by connecting a jumper to the cabinet field terminals to ensure that all conflicting signals will place the cabinet into conflict flash and to verify that the cabinet, controller, and malfunction management unit are operating correctly. The Contractor shall make arrangements with the local police agency to provide traffic control during the conflict test.

Added 05/27/2010

Basis of Payment:

This work will be paid for at the contract unit price each for FULL ACTUATED CONTROLLER AND TYPE IV CABINET SPECIAL and shall be payment in full for all labor, materials, and equipment required to provide, test, and install the equipment described above, complete.

INDUCTIVE LOOP DETECTOR

This work shall be in accordance with Sections 885 and 1079 of the Standard Specifications except as modified herein.

The detector amplifier shall be equipped with an LCD display that is capable of displaying the loop frequency and inductance and shall conform to the following specifications:

- Custom LCD displays complete status and function settings of the detector.
- All functions are programmable from the front panel LCD "Menu" - no removing of detector to change function settings.
- LCD displays loop frequency, loop inductance, & -L/L% values.
- LCD displays the accumulated number of loop failure incidents since the detector was last reset - helps diagnose intermittent systems.
- LCD bar graph displays loop inductance change to verify ideal sensitivity level setting.
- Selectable "Continuous-CALL" and "Channel-Off" to aid system troubleshooting.
- 8 loop frequencies and 9 levels of sensitivity.
- 2 Selectable modes of operation: Presence or Pulse.
- 255 second CALL Delay and 25.5 second Extension timers.
- 999 second Max. Presence Timer. NEMA TS 2 Status Output.
- EOG (end of green) reset synchronization for Max. Presence timer.
- Super bright LEDS indicate vehicle detection or loop failure.
- Environmentally sealed push button switches to insure trouble-free service.
- Phase Green (Delay Override) input.

The detector amplifier shall be equipped with relay or solid state outputs to ensure that the detectors fail in a constant call mode.

The RENO A&E Model C-1200 Series and EDI Oracle Series are currently approved for use within the District.

Basis of Payment: This work shall be paid for at the contract unit price each for INDUCTIVE LOOP DETECTOR which price shall be payment in full for all labor, equipment, and materials required to supply and install the inductive loop detector described above, complete.

SIGN PANEL – TYPE 1 (SPECIAL)

This work shall be in accordance with Sections 720 and 1090, 1091, and 1092 of the Standard Specifications except as modified herein.

Added 05/27/2010

The Contractor shall furnish “Left Turn Yield on Flashing Arrow” signs as shown on the plan sheet detail and install them on the mast arms (to the right of the flashing yellow arrow signal head) at the locations indicated on the plan sheets.

The contractor shall supply all materials required to install the sign (stainless steel banding, brackets, hardware, etc.) as a part of this pay item.

Basis of Payment: This work shall be paid for at the contract unit price per square foot for SIGN PANEL – TYPE 1 (SPECIAL) which price shall be payment in full for all labor, equipment, and materials required to supply and install the sign panel described above, complete.

ELECTRIC CABLE IN CONDUIT, GROUNDING, NO. 6 1C

This work shall be in accordance with the applicable Articles of Sections 801, 806, 873, 1076, and 1088 of the Standard Specifications with the following modifications:

This work shall consist of furnishing and installing a grounding wire to bond all traffic signal handholes (lids and rings), mast arm assemblies, posts, light poles, cabinets and exposed metallic conduits.

The Contractor shall attach the proposed or existing ground wire to the existing traffic signal controller cabinets and lighting photocell relay cabinets to ground and safety bond them in accordance with NEC requirements. All labor, materials, and equipment required to bond the existing cabinets (wire, clamps, hardware, etc.) shall be included in the bid price for this pay item.

The Contractor shall also be responsible for locating all handholes and uncovering them as required to facilitate the work.

The proposed ground wire shall be an insulated #6 XLP copper conductor with green insulation.

Basis of Payment: This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, GROUNDING, NO. 6 1C which price shall be payment in full for all labor, materials, and equipment required to provide the grounding cable described above.

BOND TRAFFIC SIGNAL STRUCTURE

This work shall be in accordance with the applicable Articles of Sections 801, 806, 873, 1076, and 1088 of the Standard Specifications with the following modifications:

This work shall consist of attaching a grounding conductor to a traffic signal structure (mast arm, post, handhole, heavy-duty handhole, service riser) to bond the structure in accordance with NEC requirements.

The structure shall be bonded to the grounding conductor and its associated ground rod through the use of mechanical connectors. The grounding wire shall be made continuous by splicing in the adjacent handholes with compression lugs.

Added 05/27/2010

All connectors shall be UL listed and the use of split bolts will not be allowed. All hardware shall be stainless steel.

The grounding wire shall be bonded to the grounded conductor at the service disconnect in accordance with NEC requirements.

A five foot piece of green insulated #6 1/C XLP-USE cable shall be used to connect the handhole lid to the frame. The cost of this wire shall be included in the bid price for this item.

The lighting ground conductor may be utilized to provide the required signal equipment ground. All signal poles that are part of a lighting system are considered to be bonded as required by this provision.

The Contractor shall be responsible for locating and identifying the existing system ground wires in each handhole or structure. The Contractor shall also be responsible for locating all handholes and uncovering them as required to facilitate the work.

The Contractor shall check all existing combination mast arms and light poles located at signalized intersections to make sure that the ground wire is attached to the structure and the structure is grounded and safety bonded in accordance with NEC requirements.

The Contractor shall be responsible for repairing traffic signal post or mast arm handhole covers and bolts that are damaged during removal.

All clamps, hardware, and other materials required shall be included in the bid price.

Grounding of Metallic Service Risers

The following items pertain to all metallic service risers or portions of service risers not otherwise bonded to the equipment grounding conductor.

- The Contractor shall identify the grounded circuit conductor (Neutral) at the service riser weather head.

- The Contractor shall install a bonding jumper to the metallic service riser and attach the bonding jumper to the riser using a UL approved grounding clamp and grounding connector.

- The bonding jumper shall be sized in accordance with NEC table 250-66.

- The bonding jumper may be attached at the closest point possible to achieve grounding continuity of the riser. Where it is necessary to extend the bonding jumper to reach the attachment point, the bonding jumper shall be secured to the pole or conduit in a manner approved by the Engineer and in accordance with the applicable provisions of the NEC and the local utility companies.

- This work will not be paid for separately, but shall be included in the contract unit bid price for BOND TRAFFIC SIGNAL STRUCTURE.

Added 05/27/2010

Basis of Payment: This work will be paid for at the contract unit price each for BOND TRAFFIC SIGNAL STRUCTURE which price shall be payment in full for all labor, materials, and equipment required to bond an existing traffic signal structure to a ground wire in accordance with NEC requirements as described above, complete.

ADJUST EXISTING DETECTOR LOOP RISER

This work shall be in accordance with the applicable Articles of Sections 886 and 1079 of the Standard Specifications with the following modifications:

This work shall consist of the following:

- The Contractor shall locate all existing detector loop risers at an intersection prior to milling and mark their locations so that the loop risers can be located after the final bituminous surface is installed.

- The Contractor shall return to the intersection after the final bituminous surface has been installed and locate the detector loop risers.

- The Contractor shall chip out the bituminous surface as required to expose the detector loop risers.

- The Contractor shall fill the detector riser opening with Bondo so that the detector loop riser can be easily identified.

Basis of Payment: This work will be paid for at the contract unit price per each for ADJUST EXISTING DETECTOR LOOP RISER which price shall be payment in full for all labor, materials, and equipment required to locate and adjust a detector loop riser as described above.

Added 05/27/2010