

December 10, 2024

ADDENDUM NO. 4

**RE: Item #1, December 11, 2024 Letting - NH-CR 0014(185)229, PCN 026Z, Hughes County -
Urban Grading, Curb & Gutter, Sidewalk, Signals, Storm Sewer, Lighting, Asphalt
Concrete Surfacing, PCC Surfacing**

TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made a part of your proposal for the referenced project.

SPECIAL PROVISIONS: NO CHANGE

SDEBS BID PROPOSAL: NO CHANGE

PLANS: Please destroy sheets L4 & L5 and replace with the enclosed sheets, dated 12/10/24.

FOR INFORMATION ONLY: After further consideration regarding specified products the following changes were made.

Sheet L4: TRAFFIC SIGNAL CONTROLLER notes, paragraph 2 was revised. *McCain ATC, Econolite or approved equal traffic signal control cabinets may be used.* BATTERY BACKUP CABINET note was revised. *Reference to Clary product was removed.*

Sheet L5: ACCESSIBLE PEDESTRIAN SIGNAL notes, paragraph 2 was revised. *Reference to Polar product was removed.*

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/cj

CC: Jason Humphrey, Pierre Region Engineer
Dean VanDeWiele, Pierre Area Engineer

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0014(185)229	L4	L78

Plotting Date: 12/10/2024

REV DATE: 12/10/2024 INITIAL: LRM

SIGNAL POLES

Cantilever traffic signal supports, including anchor bolts, will be designed for fatigue in accordance with Fatigue Importance Category III without galloping and truck induced gusts.

The pole fabricator will be responsible for the determining the diameter, length, and number of anchor bolts.

Signal poles will have rotatable mast arms.

SIGNAL HEADS

All new vehicle signal heads will have a 0.160" wall / housing thickness throughout the signal head and will be constructed of 10% fiberglass reinforced polycarbonate.

SIGNAL HEAD BRACKETS

All new vehicle signal head brackets will be Astro-Brac Galaxy Assy, 1-Way Cable Mount as manufactured Pelco or approved equal.

SIGNAL BACKPLATES

All new vehicle signal heads will have backplates with retroreflective border. The vehicle signal head backplates will have a factory applied 3-inch wide yellow retroreflective border. Sheeting for the border will be Type XI or Type IX in conformance with ASTM D4956. Backplates will be polycarbonate, aluminum, or aluminum-composite. Minimum material thicknesses are:

- Polycarbonate, 0.10-inch
- Aluminum, 0.06-inch
- Aluminum-Composite, 0.08-inch

Signal backplates will extend not less than 5 inches from the edge of the signal head at the top, bottom, and sides. The bottom of the backplate on vehicle signal faces mounted directly above pedestrian signal indications will be sized to permit the separate adjustment of the vehicle and pedestrian signal indication and may be less than 4 inches.

All costs involved with furnishing and installing backplates with retroreflective border for the new vehicle signal heads will be incidental to the contract unit price per each for the appropriate type and size of signal head.

MULTICONDUCTOR CONTROL CABLE FOR SIGNAL CIRCUITS

The Conductor Jackets for the multiconductor control cables will be color coded in accordance with ICEA S-73-532 Table E2.

METER SOCKETS FOR TRAFFIC SIGNALS

The meter sockets provided for traffic signals by the Contractor will be a 200-amp, positive by-pass.

TRAFFIC SIGNAL CONTROLLER

The proposed traffic signal controllers and cabinets will meet the following requirements. For further information, contact Nick Waters (#605-773-7439) of the City.

The traffic signal controller cabinets will be Econolite, McCain ATC HV 350i or approved equal. The cabinets will include a 32 channel CMU, switchpacks, and auxiliary equipment to provide for a fully functional traffic signal cabinet system.

The controller will be Cobalt as manufactured by Econolite or approved equal. The controller will have a 7" touch screen. The controller will be compatible with the existing controllers installed within the City of Pierre, SD.

The UPS system will be tested to comply with UL 1778, CSA 22.2 No. 107.3 and must bear the UL CSA mark. The UPS inverter/charger unit will include a 4.3" backlit LCD Touchscreen display for viewing all status and configuration information. The UPS will have pre-configured performance logs that run continuously and automatically, viewable on a web browser. There will be separate charts for Seconds, Minutes, Hours, and Days that shows the Average, Minimum, and Maximum values for each sample. A daily log that has the Average, Minimum, and Maximum values will be logged and be downloadable as a csv file by web browser.

The Contractor is responsible for programming controllers with the signal timings provided in these plans.

Anchor bolts for traffic signal cabinets may have hooked ends.

All costs for the detector units necessary to operate the signal as shown in these plans, constructing the concrete pad and footing, materials, labor, and furnishing and installing the controller cabinet will be incidental to the contract unit price per each for "Traffic Signal Controller".

CONTROLLER PROGRAMMING

Existing controllers will be reprogrammed to use the patterns and timings specified on the Signal Timing Sheets by a qualified technician. Costs for reprogramming the controllers will be incidental to the contract lump sum price for "Miscellaneous, Electrical".

BATTERY BACKUP CABINET

The Contractor will supply cabinets with concrete pad and footing for housing the battery backup system for traffic signal systems at all locations where a new signal cabinet is being installed. The cabinets will be an aluminum NEMA 3R type. The cabinet will have a thermostatically controller exhaust fan. The cabinet will be securely attached to the concrete pad with steel anchors and to the back wall of the controller cabinet using chase nipples as approved by the Engineer. Anchor bolts for battery backup cabinets may have hooked ends.

All costs for constructing the concrete pad and footing, materials, labor, and furnishing and installing the battery backup cabinet will be incidental to the contract unit price per each for "Battery Backup System for Traffic Signal."

EMERGENCY VEHICLE PREEMPTION SYSTEM

The proposed emergency vehicle preemption system will be infrared Opticom brand manufactured by Global Traffic Technologies or approved equal. The emergency vehicle preemption system will be compatible with the existing emergency vehicle preemption systems and hardware installed throughout the City of Pierre, SD. Contact Nick Waters (#605-773-7439) of the City for further information.

FISHEYE VIDEO CAMERA DETECTION SYSTEM

The Fisheye Video Camera, Processor Unit, and Cables will be furnished and installed by the Contractor to meet the specifications discussed below. The Fisheye Video Camera Detection System will be as manufactured by GRIDSMART or approved equal. The Fisheye Video Camera Detection System will be compatible with the existing fisheye video camera detection systems installed within the City of Pierre, SD.

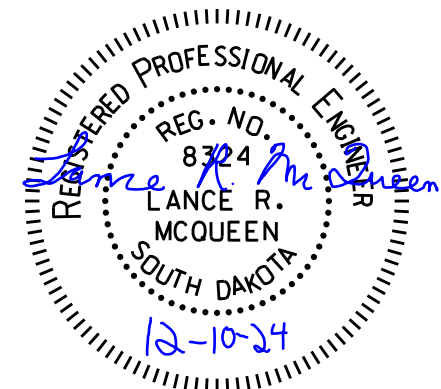
All costs to furnish and install the complete Fisheye Video Camera Detection System will be included in the contract unit price per each for "Video Detection System". These costs will include, but not be limited to:

- fisheye camera, mounting brackets, and hardware
- processor unit, cabling between processor and controller, Shielded CAT-5e cable, and antenna
- all equipment required in the controller cabinet to provide a fully functioning fisheye video vehicle detection system

The Fisheye Video Camera Detection Systems will also be furnished and installed with a module capable of traffic counting and enhanced pedestrian and cyclist detection, as well as functionality for generating reports for traffic counts, length-based classifications, turning movements, red and green occupancy, and cycle lengths. The module will be incidental to the contract unit price per each for "Video Detection System". Any perpetual subscription / license required to allow for the module to work on an annual basis will be included in the contract unit price per each for "Video Detection System".

The Shielded CAT-5e cable for the Fisheye Camera will be installed from the controller cabinet to the camera unit without splices. The Contractor will use only shielded cable approved by the camera manufacturer to protect against Electromagnetic Interference (EMI). Cable will be rated for outdoor use and installed according to the manufacturer's recommendations. All costs for the Shielded CAT-5e cable will be incidental to the contract unit price per each for "Video Detection System".

The Contractor will coordinate with the City prior to determining the final video camera mounting location. Contact Nick Waters (#605-773-7439) of the City.



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0014(185)229	L5	L78

Plotting Date: 12/10/2024

REV DATE: 12/10/2024 INITIAL: LRM

ACCESSIBLE PEDESTRIAN SIGNAL

The work will consist of furnishing and installing accessible pedestrian signals (APS). Each APS will consist of an interactive vibrotactile pedestrian pushbutton with speaker, an informational sign, a latching light emitting diode (LED) indicator light, a solid-state electronic control board, a power supply, wiring, and all necessary mounting hardware. The operation and performance of the APS units will meet the requirements of MUTCD Sections 4E.08 to 4E.13. and the applicable sections of NEMA Standards Publication TS-2.

The APS units will be capable of supporting a minimum of 16 push button stations.

All mounting fasteners will be stainless steel; all threads will be coated with anti-seize compound meeting the requirements of USA Dept. of Defense specification MIL-PRF-907F.

The push button component of APS will meet the requirements of Section 985.1 S of the Specifications except that all housings and external hardware will be aluminum, powder coated yellow.

The APS control unit will include capability to monitor the push buttons and pedestrian signal head displays. Conflicts will cause the channel to be powered off.

The APS control unit will include capability to monitor communications with the push buttons. Communication faults will automatically reset the control unit.

Two licensed copies of any APS programming software will be furnished. All software programming, firmware updates, and audio message programming of the APS will be through USB port or Ethernet connection.

All costs for furnishing and installing the accessible pedestrian signal including labor, materials, and equipment, will be incidental to the contract unit price per each for "Accessible Pedestrian Signal".

PEDESTRIAN PUSH BUTTON POLE

Pedestrian push button poles will be aluminum and will conform to the following requirements:

Aluminum will conform to ASTM B221, Alloy 6061, and Temper T6.

Poles will be round with a minimum outside pole diameter of 4 inches, and the pole assembly will have a square, cast aluminum base with aluminum access door. The base will conform to the breakaway requirements of MASH.

The pole to base connection will be a threaded connection; threads will be 8 TPI, NPT. All bolt and connection threads will be coated with a commercially available anti-seize compound intended for use in aluminum-to-aluminum and steel-to-aluminum connections.

The pole finish will either be brushed satin or spun. The top of the pole will be sealed by an aluminum cap.

Anchor bolts for pedestrian push button poles may have hooked ends.

INNERDUCT

The innerduct conduit will be red in color. The innerduct bid items will include furnishing and installing the innerduct, as well as all work to seal the traffic interconnect conduit within the junction boxes. Innerduct ends will be sealed using a mastic style tape wrapped around the end of the innerduct and fiber optic cable. If innerduct is empty, a heat shrinkable cap will be installed over the end of the innerduct.

All costs for the innerduct will be included in the contract unit price per foot for "2" Innerduct, Schedule 40".

FIBER OPTIC CABLE

The fiber optic cable will be a 24 strand fiber optic cable with 24 singlemode with each buffer containing six fibers. The buffer tubes will be color coded according to TIA specifications.

Fiber optic cable provided on this project will meet the latest applicable TIA Specifications for multimode and RUS PE-90-a Specifications for single mode. All fiber optic cable will be rated for outdoor use.

Singlemode optical cable will have the following optical and physical characteristics:

- Cladding diameter of 125µm +/- 2µm.
- Zero dispersion slope will be 0.092 ps/ (nm²•km) or less.
- Zero dispersion wavelength, 1300 to 1322 nm.
- Cutoff wavelength, less than 1250 nm.
- Maximum attenuation at 1310 nm will be 0.4 dB per Kilometer.
- The outside diameter will be less than 22.1 nm.
- One factory fusion splice per kilometer per fiber will be allowed.

The fiber optic cable will have a seven-core configuration, dielectric central strength member, and thermoplastic tubes. The minimum bending radii of the cable will be 10X cable diameter under a static load and 20X cable diameter during installation. The installation tensile load rating will be 2.7 kN.

The cable core interstices will be filled with water blocking material. If a gel compound is used, the gel compound will be readily removable with a nontoxic solvent.

Fiber optic cable will be terminated in the controller cabinet with a wall mounted distribution enclosure. The distribution enclosure will be dust and moisture resistant. The size of the distribution enclosure will be adequate for the number of fibers to be used. The distribution enclosure will be mounted in the controller cabinet where it does not interfere with normal cabinet maintenance. The fiber optic cable will be prepared in accordance with the manufacturer's recommendations and have sufficient length to reach the interface panel. Only fibers needed to operate the equipment plus two spares will be terminated with LC connectors with less than 0.1 dB loss for multimode and with less than 0.2 dB loss for singlemode. The connector loss after 1000 matings will be less than 0.2 dB. The connector return loss will not be greater than 50 dB for singlemode and greater than 30 dB for multimode. All other fibers will be capped and sealed in accordance with the manufacturer's recommendations.

The fiber optic cable will be installed in accordance with the manufacturer's recommendations and the NEC. Slack cable will be left in each controller and junction box. All junction boxes except for the junction at the controller will have 6.5 feet of slack. The junction box at the controller cabinet will have 19.5 feet of slack. Controller cabinets will have 2 feet of slack. Slack cable will be coiled and tied in a minimum of three places around the coil. No splices will be allowed in the fiber optic cable except in the controllers. Splices will be of the epoxy/polish type.

The contractor will test the fiber optic cable after the installation to verify the integrity of the fiber.

The payment for supplying, installing, and testing will be incidental to the contract unit price per foot for "24 Strand Fiber Optic Cable".

FIBER OPTIC CABLE MODEM

New controller cabinets will be equipped with a fiber optic modem.

All costs for furnishing and installing fiber optic modems in new and existing controllers will be incidental to the contract unit price per each for "Traffic Signal Controller".

FIBER OPTIC ETHERNET SWITCH

The Contractor will supply an environmentally hardened, managed layer 2 field Ethernet switch and all required mounting hardware, power supplies, cable, patch cords, and jumpers, in the new traffic signal cabinets.

The switch will be configurable using a web browser or graphical user interface. The switch will have the following:

- An operating temperature range of -40 degrees C to 70 degrees C.
- An operating humidity range of 10% to 95% relative humidity.
- A minimum of eight copper ports with RJ-45 connectors that are capable of 10/100Base-TX communications.
- A minimum of two small-form pluggable (SFP) ports capable of 1000Base-LX or 1000Base-ZX communications.

All costs for furnishing and installing three Ethernet switches will be incidental to the contract unit price per each for "Traffic Signal Controller".

FIBER OPTIC PATCH CORDS

Patch cords used within the controller cabinets for the fiber optic work will be factory-manufactured assemblies and will be fully compatible with the fiber interconnect cable.

The patch cords and pigtailed will be equipped with connectors and will be 6' in length or as required. The length will be sized to preclude possible damage in the installation and of moving of equipment.

All costs, materials and labor to furnish and install the patch cords will be incidental to the contract unit price per each for "Traffic Signal Controller".

FIBER OPTIC CABLE TERMINATION ENCLOSURES

Fiber optic cable termination enclosures will be furnished and installed by the Contractor.

Fiber optic cable will be terminated in a wall mounted termination enclosure. The termination enclosure will be dust and moisture resistant. The size of the termination enclosure will be adequate for the number of fibers to be used. The termination enclosure will be mounted in side mounted cabinets, as shown on the fiber cable wiring diagrams. Termination enclosures will be Corning WIC-04P, Panduit FWME4 or approved equal. LC type connectors will be used for the fiber strand terminations.

The Contractor will test the fiber optic cable after the installation to verify the integrity of the fiber.

All costs for the fiber optic cable termination enclosures, fiber optic cable terminations, patch cords, related equipment and testing will be incidental to the contract unit price per each for "Traffic Signal Controller".

