

**ITEM 599.2211 10 M - MISCELLANEOUS ELECTRICAL REPAIRS – NB BRIDGE**

**DESCRIPTION**

This work shall consist of removing, furnishing and installing existing traffic sirens on the existing traffic gates and of miscellaneous repairs of the existing traffic gates, the span-mounted navigation lights, the sidewalk junction boxes and of other equipment in accordance with the details indicated in plans and as directed by the Engineer.

**MATERIALS**

**A. General.** The Contractor shall submit for approval the manufacturer’s shop drawings, catalog cuts, product specification and dimension sheets prior to ordering the materials.

Materials shall be as described herein and shall meet the requirements of the following sections of the New York State Department of Transportation Standard Specifications:

Flexible Liquid-Tight Steel Conduit 723-24

**B. Navigation Light Lens.** The lens shall be of the standard marine fresnel type, 180-degree red or green, and rigid, heat-resistant glass. The size of the lens shall match the existing lens to be replaced as indicated in plans. Shock absorbing synthetic rubber shall be furnished with the lens.

**C. Hardware.** Hardware such as bolts, wing-bots, wing-nuts, hold-down screws, vent screen and fuse holders furnished for the replacement of broken, bent, defective, corroded or missing hardware on the existing navigation lights, traffic gates as indicated in plans shall be of the exact size and intent for use as of the existing hardware and shall be bronze or stainless steel.

**D. Electrical Flexible Cable.** The cable shall be type SOOW, U.L. listed, rated 600 volts, designed for hard usage with oil, weather and sun-light resistant, chlorinated polyethylene jacket suitable for outdoor use. Conductors shall be bare annealed copper per ASTM B-3, flexible, bunch-stranded per UL-62, and shall have a minimum of three AWG #12, color-coded black-white-green conductors with synthetic rubber (ethylene propylene diene monomer) insulation. Temperature range shall be 105 degrees Celsius to -50 degrees Celsius.

**E. Traffic Siren.** The siren shall be U.L. listed, Nema 3R, motor driven, maintenance-free with rugged and corrosion-resistant construction for outdoor use. The siren shall produce an approximately 1060 Hertz, continuous sound of 113 dB at 1 meter. The siren housing shall be coated with powder coating. The operating voltage shall be 120 volts AC. The siren shall be model A similar to the existing siren to be replaced as indicated in plans, as manufactured by the following, or approved equal:

Federal Signal Corporation, Electrical Products	Edwards Signaling & Security Systems, Type 315A-AH	Tomar Electronics Type 1002WEP-120
2645 Federal Signal Drive University Park, IL 60466 708-534-3400	90 Fieldstone Court Cheshire, CT 06419 203-699-3300	2100 West Obispo Avenue Gilbert, AZ 85233 800-338-3133 480-497-4400

**CONSTRUCTION DETAILS**

This work shall be in accordance with the applicable requirements of the latest edition of the following codes and standards:

- a. National Fire Protection Association, National Electrical Code (NEC)
- b. New York State Department of Transportation Standard Specifications
- c. National Electrical Contractors Association, NECA 1, Standard Practices for Good Workmanship in Electrical Contracting
- d. Any other applicable local rules and regulations.

**Basis of Acceptance**

All shop drawings submitted shall follow the general guidelines and procedures given in the New York State Steel Construction Manual. No installation or rehabilitation work may take place until the shop drawings and procedures have been approved by the Engineer.

The work of miscellaneous electrical repairs shall include, but not be limited to, the following:

**A. General.** The Contractor shall perform all required miscellaneous repairs as described herein, as shown in plans and as directed by the Engineer. All equipment, devices and appurtenances required for replacement shall be removed, shall become properties of the Contractor and shall be properly disposed of away from the construction site.

The navigational lighting shall be operational at all times during construction. If the navigational lighting is needed to be out of service for construction, the Contractor shall provide and maintain a temporary navigational lighting system operational at all times until the permanent lighting system has been installed and is operational. The temporary navigational lighting, when needed, shall conform to the requirements of the U.S. Coast Guard, Code of Federal Regulations, CFR 33 Part 118. The provision and maintenance of the necessary temporary navigational lighting shall be incidentals of the work described herein.

**B. Sidewalk Junction Boxes.**

The Contractor shall:

- a. Provide a drain hole for existing sidewalk junction boxes without drain by drilling a 13 mm diameter through-hole in the bottom at the low end of each box.
- b. Clean the drain of existing boxes to clear any clog.
- c. Furnish appropriate stainless steel cover bolts to replace missing cover bolts on all sidewalk junction boxes, and repair the existing threaded holes as necessary for the new bolts.

**C. Off-going (northeast) Traffic Gate.**

The Contractor shall:

- a. Record the ratings of the three existing transformers in the gate housing for the gate arm lights and replace in kind with transformers with the same ratings.
- b. Replace the fuse holders and fuses in the gate housing. Fuses and fuse holders shall have the same ratings as the existing fuses.
- c. Replace the broken front door latch bolt and wing-nut.

**D. Off-going (northwest) Traffic Gate.**

The Contractor shall:

- a. Record the ratings of the three existing transformers in the gate housing for the gate arm lights and replace in kind with transformers of the same ratings.
- b. Replace the fuse holders and fuses in the gate housing. Fuses and fuse holders shall have the same ratings as the existing fuses.
- c. Replace existing gaskets for both front and rear access doors of the gate housing to prevent water entry.

- d. Repair the mal-function gate arm lights.
- e. Replace the existing flexible cable for the gate arm lights with type SOOW cable.

**E. Oncoming (southeast) Traffic Gate.**

The Contractor shall:

- a. Repair the hand crank interlock arm such that it will not jam into the hand crank when pressed in.
- b. Reposition and provide supports for the power cables in the gate housing such that the cables will not tangle on the transformers.
- c. Securely mount flasher assembly and transformer to the gate housing.

**F. Span-Mounted Navigation Lights.**

The Contractor shall:

- a. Install an insect screen to replace the missing screen on the vent of the navigation lights.
- b. Replace the missing wing-bolts on the access cover of the navigation lights.
- c. Replace the lens of the green section of the west light on the north leaf.
- d. Provide synthetic rubber around the lens for shock absorbing as recommended by the light manufacturer.

**G. Traffic Siren.**

The Contractor shall:

- a. Remove the existing traffic sirens and the connecting flexible conduit on the northwest and southwest traffic gates.
- b. Install the siren and liquid-tight flexible conduit on top the traffic gate at the same location as the existing siren.
- c. Provide necessary silicon sealant and make all connections of the siren and conduit to the gate housing water-tight.
- d. Connect wiring such that the sirens are interlocked with the operation of the bridge as indicated in plans.
- e. Test to ensure proper operation and interlock of the sirens.

**H.** The Contractor shall redress the wiring of the heater in the disconnect switch in the south auxiliary drive room so that the cover can be secured in place.

**I.** The Contractor shall remove all dust accumulation on components, sand, grit and debris within all traffic gate housings.

**J.** The Contractor shall replace all missing hand-hole covers on the existing roadway lighting poles and on the existing traffic signal poles. The cover shall be of the same material as the pole and shall properly fit the poles. Hardware for the attachment of the covers shall be stainless steel.

**K.** The Contractor shall replace the brake disconnect switches with new disconnect switches as shown in plans. Attachments of the disconnect switches shall be made with stainless steel hardware.

**METHOD OF MEASUREMENT**

This work will be measured for payment on a lump sum basis.

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**BASIS OF PAYMENT**

The lump sum price bid shall include the costs of furnishing all necessary labor, materials, and equipment to satisfactorily complete the work, including the cost for the removal of existing equipment, and the temporary navigational lighting.