ITEM 25651.020015M - CCTV CAMERA MOUNTING POLES

1. DESCRIPTION:

1.01 This item consists of furnishing and installing 15.2m poles for mounting CCTV cameras in accordance with the Contract Drawings, Specifications, Standard Sheets and as directed by the Engineer. Furnishing and installing a camera lowering device is also included.

2. MATERIALS:

2.01 Materials used in the fabrication and erection of CCTV mounting poles shall meet the requirements of the following Subsection included in the NYSDOT Standard Specifications:

| Traffic Signal Poles | 724-03 |

2.02 In addition the camera lowering device furnished with the 15.2m poles shall meet the following requirements:

A. All pulleys for the camera lowering device and portable lowering tool shall have sealed, self lubricated bearings or oil-tight bronze bearings. The lowering cable shall be a minimum 3.2mm diameter stainless steel aircraft cable with a minimum breaking strength of 7740N with (7) strands of 19 wire each.

B. The interface and locking components shall be made of stainless steel. All external components of the lowering device shall be made of corrosion resistant materials. All components fabricated from steel or cast iron shall be galvanized in accordance with Subsection 719-01 – Galvanizing and Repair Methods Type II.

C. The contact unit housing shall have a replaceable neoprene gasket.

D. The lowering tool shall be made of steel, cast iron or aluminum components. Steel and cast iron parts shall be galvanized in accordance with Subsection 719-01 – Galvanizing and Repair Methods Type II.

E. The multiple socket and contact connectors on the camera lowering device shall be constructed using brass pin contacts permanently molded into a polymer Hypalon body.

3. CONSTRUCTION DETAILS:

3.01 The Contractor shall stake-out the CCTV pole locations for approval by the Engineer prior to any prefabrication or related construction.

3.02 Poles:

A. Poles shall be erected as specified on the Plans, Standard Sheets, and as directed by the Engineer.

B. The maximum allowable pole top deflection, with camera(s) and lowering device installed and a 13mm ice coating under sustained 50 km/h wind gusts shall be 25mm. The entire device shall withstand wind forces of 160 km/h with a 30 percent gust factor using a 1.65 safety factor.
CONSTRUCTION DETAILS: (cont’d)

3.02 Poles: (cont’d)

C. Pole and camera locations shown on the Contract Plans shall be field checked for any condition that may affect their placement. Where changes are necessary the exact location will be determined by the Engineer.

D. Pole erection shall include installation of camera lowering devices and attachment of fittings as specified on the Plans and Standard Sheets as follows:

1. Anchor bolt covers if specified.
2. Weather heads and couplings.
3. Pole cap.
4. Cabinet mounting fittings, plates, brackets as needed.
5. Reinforced couplings for wire entrances to cabinets.

E. In addition the Engineer may require the Contractor to submit, at any time, design computations for any or all of the CCTV poles and mounting plates in the Contract. The design computations must be approved, stamped, and signed by a Professional Engineer licensed in New York State. The Engineer shall have twenty (20) working days to review the design computations for one CCTV pole and an additional two (2) for each additional CCTV pole.

F. If the Engineer’s review of a pole’s design indicates a problem, the Contractor will be notified within the time allotted for review.

3.03 Grounding:

A. A copper clad ground rod, ground wire and fittings shall be installed as shown on the Plans, Standard Sheets, or as directed by the Engineer. The ground system shall be electrically connected to the grounding terminal on the pole or cabinet.

B. The grounding system when completed shall be tested in accordance with Subsection 680-3.15 of the Standard Specifications. If the requirements of the test are not met additional ground rods, ground rod extensions, electrical bonding of metallic conduit or other means may be required as directed by the Engineer.

3.04 Camera Lowering Device:

A. The lowering device shall be manufactured by:

MG Squared, Inc.
3233 Oak Hill Drive, Suite 201
Birmingham, AL 35216

No Substitutions will be accepted.
3. **CONSTRUCTION DETAILS:** (cont’d)

3.04 **Camera Lowering Device:** (cont’d)

B. The camera lowering device shall be designed to support and lower a cylindrical non-dome closed circuit television camera, lens, housing, PTZ mechanism, cabling, connectors and other supporting field components without damage or causing degradation of camera operations. The lowering device shall consist of a suspension contact unit, support arm and a pole adapter to attach standard mast arm signal pole. The support arm and receiver brackets shall be designed to self-align the contact unit with the pole center line during installation and to insure the contact unit cannot twist under high wind conditions.

C. The lowering device manufacturer shall furnish a factory representative to assist the electrical Contractor with the assembly and testing of the first lowering system onto the pole assembly. The manufacturer shall furnish documentation certifying that the electrical Contractor has been instructed on the installation, operation and safety features of the lowering device. The Contractor shall be responsible for providing NYSTA maintenance personnel “on site” operational instructions.

D. The lower device’s suspension contact unit shall have a load capacity of 91 kg. with a 4 to 1 safety factor. There shall be a locking mechanism between the fixed and moveable components of the lowering device. The movable assembly shall have a minimum of 2 latches. This latching mechanism shall securely hold the camera and its control equipment free of vibration or motion between the components. The latching mechanism shall operate by alternately raising and lowering the assembly using the winch and lowering cable. When latched, all weight shall be removed from the lowering cable. The fixed unit shall have a heavy duty cast tracking guide and means to allow latching in the same position each time. The contact unit housing shall be weatherproof with a replaceable gasket provided to seal the interior from dust and moisture.

E. All electrical and video coaxial connections between the fixed and movable lowering device components shall be protected from exposure to the weather by a waterproof seal to prevent degradation of the electrical contacts. The electrical connections between the fixed and movable lowering device components shall be designed to conduct high frequency data bits and one (1) volt peak to peak video signals as well as the power requirements for operation of environmental controls.

F. The prefabricated components of the lift unit support system shall be designed to preclude the lifting cable from contacting the power, camera control cables or video cabling. The only cable permitted to move within the pole or lowering device during lowering or raising shall be the lowering cable. All other cables shall remain stable and secure during lowering and raising operations.

G. The Contractor shall provide weights and/or counterweights as necessary to assure that the alignment of pins and connectors are proper for the camera support to be raised into position without binding. The lowering unit will have sufficient weight to disengage the camera and its control components in order that it can be lowered properly.
3. CONSTRUCTION DETAILS: (cont’d)

3.05 Lowering Tool:

A. The camera lowering device shall be operated by use of a portable lowering tool. The tool shall consist of a lightweight metal frame and winch assembly with cable as described herein, a quick release cable connector, an adjustable safety clutch and a variable speed industrial duty electric drill motor. This tool shall be compatible with accessing the support cable through the hand hole of the pole. When attached to the hand hole, the tool will support itself and the load assuring and hoisting lowering operations and provide a means to prevent free wheeling when loaded. The lowering tool shall be operable either manually with a handle supplied with the lowering tool or by a heavy duty drill motor described herein.

B. Two lowering tools shall be delivered upon project completion. Only two lowering tools shall be provided per contract, regardless of the number of items. The lowering tools shall have a reduction gear to reduce the manual effort required to operate the lifting handle to raise and lower a capacity load. They shall be provided with an adapter for operating the lowering device by a portable drill using a clutch mechanism. Lowering tools shall be equipped with a positive locking mechanism to secure the cable reel during raising and lowering operations. The Contractor shall provide a variable speed (500 rpm maximum), heavy duty drill motor and any additional tools required by plan notes for each lowering tool. The heavy duty drill motor shall operate within the power supplied by the convenience outlet in the field cabinet.

3.06 “C” Bracket: A “C” shaped bracket shall be provided for mounting the camera to the lowering device. The bracket shall be fabricated of 64 mm square steel tubing. Dimensions shall be as illustrated in the contract plans. A camera mounting plate shall be affixed to the top face of the bottom of the arm as indicated on the plans. The bracket shall have a rust resistant finish such as powder coating or hot-dipped galvanizing.

4. METHOD OF MEASUREMENT:

4.01 CCTV poles shall be measured as the number of complete poles furnished and erected in accordance with the Plans, Specifications, Standard Sheets, and directions of the Engineer.

5. BASIS OF PAYMENT:

5.01 The unit price bid for each CCTV pole shall include all materials, labor, equipment, tools, incidentals, and meeting of the U.S. Department of Labor Occupational Safety and Health Standards as necessary to complete the work as described in this specification. The item installed in place shall meet all testing requirements to the satisfaction of the Engineer. The installation of the necessary grounding system, anchor bolts, lifting devices, pole assembly, erection and field galvanizing as required shall be included in the bid price.