

## Minimum Requirements for a Camera Lowering System

### GENERAL DESCRIPTION

The camera lowering system shall be designed to support and lower a standard closed-circuit television dome camera or standard camera, lens, housing, PTZ combination, and other interfacing field components without damage or degradation of electronics operations, including video quality and data integrity. The camera lowering system device is independent of the pole and should be considered a separate entity. It is the Contractor's responsibility to ensure that the lowering device and pole are compatible.

The lowering system shall consist of a suspension contact unit, divided support arm, and a pole adapter for attachment to a pole top and tenon. The divided support arm and receiver brackets shall be designed to self-align the contact unit with the pole center line during installation and insure the contact unit cannot twist under high wind conditions. The lowering device arm must be able to compensate for non-plumbness of pole installations in both the tilt and pitch axis. Round support arms are required; square support arms are not acceptable. Weight capacity must be 200lbs. with a 5:1 safety factor. The camera-lowering device shall withstand wind forces of 120mph with a 1.3 gust factor.

The camera-lowering device to be furnished shall be the product of manufacturers with a minimum of 3 years of experience in the successful manufacturing of camera lowering systems. The lowering device provider shall be able to identify a minimum of 3 previous projects where the proposed system has been installed successfully for over a one-year period of time each. The camera-lowering device shall be a CLS CDP-HD16 or approved equal, as explicitly pre-approved by the agency.

The lowering device manufacturer shall furnish a factory representative or a trained, qualified manufacturer's representative to assist the electrical contractor with the assembly and testing of the first lowering system onto the pole assembly. The manufacturer shall furnish the applicable DOT engineer 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 applicable maintenance personnel "on site" operational instructions.

### SUSPENSION CONTACT UNIT

The suspension contact unit shall have a load capacity of 200 lbs. 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 device and its mounted equipment. 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 gasket provided to seal the interior from dust and moisture.

The prefabricated components of the lift unit support system shall be designed to preclude the lifting cable from contacting the power or video cabling. The Contractor shall supply internal conduit in the pole for the power and video cabling if required by the Engineer. **The only cable permitted to move within the pole or lowering device during lowering or raising shall be the stainless steel lowering cable. All other cables must remain stable and secure during lowering and raising operations.**

The female and male socket contact halves of the connector block shall be made of Polymer bodies with all wires and contacts sealed from the external environment with Silicone Adhesive Sealant (SAS). The lead terminations shall be Beryllium copper spring retained encapsulated connections.

There shall be a minimum of 16 contacts, all of 12ga. or larger. All contacts shall be Mil-spec gold plated over nickel plated copper to ensure optimum conductivity. Brass contacts will not be allowed. The composite cable from the CCTV control cabinet will be continuous from the control cabinet and wired directly into and sealed within the connector. No pole top splices or junctions will be required.

### **MATERIALS**

All pulleys for the camera lowering device and portable lowering tool shall have sealed, self lubricated bearings, oil tight bronze bearings, or sintered bronze bushings. The lowering cable shall be a minimum 1/8-inch diameter stainless steel aircraft cable with a minimum breaking strength of 1740 pounds with (7) strands of 19 wires each. All electrical and video coaxial connections between the fixed and lowerable portion of the contact block 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 dome environmental controls.

The interface and locking components shall be made of stainless steel and/or aluminum. All external components of the lowering device shall be made of corrosion resistant materials, powder coated, galvanized, or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment.

### **CAMERA JUNCTION BOX**

The Camera Junction box, which connects the camera to the lowering device, shall be a two piece design with a 1.5" NPT pipe receptacle for easy camera mounting. No special mounting hardware other than 1.5" pipe will be required to mount any camera. Both sections shall be made of corrosion resistant cast aluminum. The top half shall be mounted with a weatherproof gasket to the bottom of the disconnect unit. Inside the top half, it shall have provision to mount additional weights for lightweight cameras or other equipment. All parts shall be made of extra heavy construction. The two piece construction shall feature a lower box that hinges down for easy access to wiring. It shall contain a large capacity-splicing compartment for camera power, signal leads, and connectors.

The lowering unit will have sufficient weight to disengage the camera and its control components in order that it can be lowered properly.

### **COMPOSITE CABLE**

The camera lowering device will be supplied with a direct run of composite cable, wired and sealed directly to the top connector, for a continuous run to the CCTV cabinet. Standard cabling will consist of RG-6 coax cable, low capacitance data cable with individually shielded pairs with a common shield and drain and 18 ga. wires for all other pins. Special cables can be ordered as required.

### **LOWERING TOOL**

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. As an option, a variable speed industrial duty electric drill motor may be included. This tool shall be compatible with accessing the support cable through the hand hole of the pole. The lowering tool shall attach to the pole with one single bolt. The tool will support itself and the load assuring lowering operations and provide a means to prevent freewheeling when loaded. The lowering tool shall be delivered to the applicable DOT engineer upon project completion.

The lowering tool shall have a reduction gear to reduce the manual effort required to operate the lifting handle to raise and lower a capacity load. The lowering tool shall be provided with an adapter for operating the lowering device by a portable drill using a clutch mechanism. The lowering tool shall be equipped with a positive breaking mechanism to secure the cable reel during raising and lowering operations and prevent freewheeling. The manufacturer, if required, shall provide a variable speed, heavy -duty reversible drill motor and a minimum of one lowering tool plus any additional tools required by plan notes. The lowering tool shall be made of durable and corrosion resistant materials, powder coated, galvanized, or otherwise protected from the environment by industry accepted coatings to withstand exposure to a corrosive environment.