

BOSTON TRANSPORTATION DEPARTMENT VIDEO MONITORING SYSTEM SPECIFICATIONS

May 22, 2025

General

This specification set forth the minimum requirements for a video monitoring (VM) system that monitors vehicles on a roadway via a traffic monitoring camera system with remote viewing capability.

The system shall consist of a pendant dome mounted traffic monitoring camera with remotely controlled pan/tilt/zoom.

Communications for remote monitoring/control at Boston City Hall shall be via direct fiber or copper communications as shown on the plans or as directed by the BTM Engineer. The Contractor shall install ethernet extenders and/or media converters, if needed, to provide communications between the proposed field location and the field located switch. Camera control protocols shall be compatible with the existing switching hardware/software and other control equipment at the Boston Traffic Control Center. Video images via direct copper shall be provided at a minimum of 10 frames per second unless otherwise approved by the BTM Engineer. Video images via fiber shall be visible by simultaneous users and provided at a minimum rate of 30 frames per second. All cameras supplied shall be IP based, the use of analog cameras shall not be allowed.

Environmental

The VM field equipment shall be designed to operate reliably in the adverse environment found in the typical roadside traffic cabinet. It shall meet the environmental requirements set forth by the NEMA (National Electrical Manufacturers Association), TS1 and TS2 standards, latest version. Operating temperature shall be from -35 to +74 degrees C at 0% to 95% relative humidity, non-condensing.

Electrical/Mounting

The cabinet equipment shall be plug connected and shelf mounted. IP output from the camera shall be via an RJ-45 connector, the use of analog cameras shall not be allowed. The camera shall be mounted as directed by the BTM engineer. When mast arm mounted, brackets shall be utilized to position the camera so it will not be blocked by signs or vehicle housings.

Image Sensor and pan/tilt system for Traffic Monitoring

All products shall be new and approved by the Engineer. All equipment shall be of the latest revision or product version under production by the equipment supplier. Obsolete, no-longer-supported, or no-longer-produced equipment will not be acceptable.

Closed Circuit Television (CCTV) Camera system camera assemblies, and all component parts shall be installed per BTB standards.

Each CCTV camera system shall consist of the following:

- A. Integrated IP Camera Assembly; including video camera, zoom lens, camera control equipment, pan/tilt positioning unit.
- B. Power distribution and conditioning equipment, including surge suppression devices on all communications and power lines.
- C. All power and signal cabling and connectors required between the IP CCTV camera and the traffic signal controller cabinet. The wiring and connectors shall be that recommended by the camera manufacturer and rated for outdoor use.
- D. The Contractor shall identify any special wiring or connectors required by the camera manufacturer in the shop drawings.

The Contractor shall furnish and install all hardware, tools, equipment, materials, supplies, and manufactured articles. The Contractor shall also perform all operations and equipment integration necessary to construct fully operational CCTV camera assemblies that meet the features, functions, and parameters as shown in Table 1. All conductor wire runs shall be continuous with no splices. Note that the PTZ CCTV Camera, positioning unit and sealed dome shall be supplied as an integrated unit. Additional Specifications for the Camera assembly are provided in Table 1 listed below.

Table 1: CCTV Camera Specification

No.	FEATURE	SPECIFICATION
1.	Zoom Ratio	The zoom ratio shall be 30x Optical and 12x Digital, Minimum
2.	Camera Type	The camera shall be an IP type CCTV camera.
3.	Auto Focus	The camera shall include auto focus with a selection for manual override of auto focus.
4.	Lens Aperture Ratio	Typical: F/1.6 to F/4.7 (wide to telephoto)
5.	Zoom Speeds	The camera and lens shall support variable zoom lens speeds.
6.	Variable Speed Tilt	The camera shall provide a variable speed tilt speed range of up to 180° per second.
7.	Variable Speed Pan	The camera shall provide a variable speed pan speed range of up to 180° per second.
8.	Proportional Pan/Tilt Speed	The camera Pan/Tilt mechanism shall provide a proportional speed Pan and Tilt ability, where the speed decreases automatically as the zoom level increases.
9.	Pan Range	The camera shall provide a 360° continuous pan rotation without mechanical interference.
10.	Tilt Range	The camera shall provide a 180° tilt range.
11.	Auto-Flip Camera Orientation	The CCTV camera assembly shall include an auto-flip function to automatically reposition the camera 180-degrees for uninterrupted viewing, in the correct orientation, as the camera moves to view objects beneath the dome.

Additional CCTV Installation, Assembly and Testing, Maintenance and Documentation Requirements

- A. In addition to the above items, the Contractor shall provide the following services and deliverables:
- Assembly. All camera components shall be assembled and factory tested prior to delivery to the site.
 - Installation. The camera assemblies shall be delivered to the site as complete units and installed as specified in the Contract Documents.
 - The contractor shall make all connections necessary to provide video and PTZ control at the Boston City Hall Traffic Management Center.

- The Contractor shall be responsible for fully configuring the camera settings as per the BTM specifications including but not limited to: camera resolution, camera address, default settings, and pre-set and home positions. The Contractor shall configure the cameras for D1 video resolution, or as directed by the BTM engineer. The cameras shall be configured in such a manner that they are fully compatible with the existing BTM video management system.
- B. The CCTV system furnished and installed shall be fully compatible in all respects with the existing Genetec Video Management System in the BTM traffic operations room.

Submittals

All proposed equipment shall be submitted to the BTM Engineer for approval.

Documentation

Wiring diagrams and manuals shall be supplied for all equipment installed and connections made to the BTM central control system or other video field hardware as part of the VM System. When copper pairs are utilized, the colors for pairs utilized shall be noted on the drawings. A block diagram shall be included which shows all devices installed as part of the system. Documentation shall include instructions for set up and troubleshooting of all components in the Video Monitoring System.

Installation

If Copper pairs are utilized to transmit IP encoded video they shall be permanently labeled in each adjacent cabinet from the camera location and adjacent to all adjacent traffic cabinets between the IP camera and the network data link point for integration into BTM video management system.

Warranty, Maintenance and Support

The video monitoring system shall be warranted by its supplier for two (2) years from the date of installation.