

Keeping the Traffic Flowing

Colorado Department of Transportation Uses Mobile Video System to Monitor Signal Light Changes

A March Networks™ mobile digital video recording system is helping to keep the traffic flowing in Denver, Colorado.

Like many jurisdictions in North America, the Colorado Department of Transportation (CDOT) uses traffic control systems to trigger traffic light changes at intersections. Images from cameras mounted on overhead structures are fed to a processor that employs contrast to detect the presence of vehicles waiting for a green light.

The traffic control systems usually work well, but glare, shadows, and reflective paint on the roadway can incorrectly activate signal changes or keep motorists waiting for a green light for an extended period of time.

Technicians can be dispatched to monitor the systems in person, but it's much more efficient and cost-effective to use a recording device to capture the video and review it back at the office.

"For newly installed traffic control systems, we would want to record a complete 24-hour cycle and review video from all four directions at key times of the day and night – usually dusk, dawn, noon and in the middle of the night," explains CDOT District 6 traffic signal supervisor Jeff Lancaster.

Initially, Lancaster used a VCR to capture video from the traffic control systems, but was only able to record six hours on a tape. It didn't make sense to dispatch technicians at all hours of the day and night to monitor the traffic or change tapes, so there was a pressing need for a better solution.

Intersections

The traffic signal crew responsible for the Denver

region consists of seven field technicians and two supervisors who look after traffic signals at 330 intersections.

Video detection systems are used to control traffic at approximately one-third of the region's signalized intersections. The remainder use inductive loop systems buried underneath the pavement.

"The technician simply takes the unit to the location, connects the cables, turns it on, closes the door and walks away."

Jeff Lancaster
District 6 Traffic Signal Supervisor,
Colorado Department of Transportation

Determined to find a better way to record and review video from the traffic control systems, Lancaster turned to the Internet. There, he discovered March Networks through an online search, which led him to JEM Communications, a March Networks reseller based in Colorado Springs.

"When I set out to look for a recording device, I knew digital would be the way to go, but I had a difficult time finding a digital recorder hardened for extreme operating conditions."

JEM Communications, Inc.

JEM Communications Inc. (www.jemcom.com) is a telecommunications and digital video surveillance vendor based in Colorado Springs, Colorado. The company has a diverse clientele and serves their needs throughout the United States. To contact a sales representative regarding this application or any other, please call 1.800.284.0399 or email information@jemcom.com.

Traffic signal controller cabinets at intersections are used to shelter recording devices from rain and snow, but that still leaves Denver's freezing temperatures to contend with.

The March Networks 5000 Series Mobile DVR (MDVR) was the perfect solution, says Lancaster. Built to meet the demands of light rail, bus and emergency response vehicles, as well as harsh environments, the ruggedized system can withstand intense shock, vibration, dust, water and other hazardous conditions. Its hard-drive also features an integrated heating and cooling capability for reliable performance at extreme temperatures.

The hardened March Networks product gave Lancaster confidence that it would stand up to the rigors of constantly being moved from one location to another for temporary troubleshooting and operating year-round in outdoor, street corner cabinets.

"There's nothing to it," says Lancaster. "The technician simply takes the unit to the location, connects the cables, turns it on, closes the door and walks away."

High performance

The MDVR captures video from four cameras at an intersection and allows technicians to quickly search through and play back archived video using March Networks DVR viewing software. Lancaster and his colleagues zero in on specific times of the day to check the performance of the traffic control systems. Traffic signal changes triggered by the system are superimposed on the video, so CDOT staff can easily identify problems.



In some cases, the traffic control processor might not recognize a vehicle waiting for a green light, or perhaps a light change is triggered in the absence of any traffic. Using the MDVR, traffic signal staff can usually determine the cause of the problem and adjust the traffic control system at the intersection to take account of any unusual lighting conditions.

The traffic control software can self-adjust for high contrast backgrounds where traffic signage is painted on the road

surface, for example, but even this intelligence is at the mercy of the weather.

“If you get a wind and the camera starts moving, the background changes and the

traffic control system will think it’s a vehicle,” says Lancaster.

With the March Networks mobile video system, troubleshooting the traffic control systems is easier and more cost-effective. Traffic signal staff don’t have to monitor the system or change tapes at all hours of the day and night in inclement weather, drivers are less likely to be inconvenienced by malfunctioning traffic control systems, and the CDOT saves money by reducing overtime expenses. ✨

Colorado Department of Transportation

The Colorado Department of Transportation (www.dot.state.co.us) is responsible for 9,156 miles (14,735 km) of highway and 3,714 bridges.

Each year, the state’s highway network handles more than 26.1 billion vehicle miles (42 billion km) of travel. The department’s maintenance personnel take care of the highway system, including snow plowing and pavement repairs.