

## **ROCK CRUSHER CAMERA MONITORING SYSTEM**

Routt County, Colorado

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### **Problem Statement:**

Last fall, the Mining Safety and Health Administration issued a citation for noise violation on the county's gravel crushing operation. The operator on the primary crusher could run it only one hour per eight-hour shift to comply with MSHA noise regulations. This person was exposed to deafening noise levels, choking dust and flying rock chips. It was a hazardous work environment even in good weather. You had to stand on a shaking platform looking down into the jaws usually for eight hours a day.

### **Discussion of Solution:**

We had to do something to stay in business. Most of the rock crushers are set up with an operator's booth. The cost of an operator's booth was between \$10,000 and \$90,000. Cameras and monitor's allow you to operate this piece of equipment from a safe location. This option was clearly the most cost effective and safest choice. Labor, Equipment, &

### **Materials Used:**

The setup was installed and field-tested by two highly skilled mechanics in less than 100 hours. Two cameras were located on the primary crusher. One looking down into the jaws and another viewing the control speed setting were all we needed. A third camera was mounted on a nearby van to help keep an eye on the rest of the operation. One of the two control motors fabricated on this camera is a windshield wiper motor. It lets us scan the gravel pit for incoming inspectors and other VIPs. The camera cables were strung to the monitors mounted inside the van next to the rest of the control panels. The crusher boss can now run two pieces of equipment from inside the climate controlled van. We purchased a total of two monitors, four cameras, and enough camera cable to view any distant equipment in the pit. One monitor can view two cameras. The cameras have audio capabilities so we can tell when parts sound like they might be breaking. Cost: The cost of the cameras, monitors, and cables was about \$2,000.

### **Savings & Benefits:**

Our biggest savings were in eliminating an operator's position and salary. Nobody liked this dirty job anyway. It was a tough position to fill. The five-month crushing season per year costs \$18,545 in wages to pay someone to stand on the primary crusher. The first year we will save about \$16,545. Since the cameras and equipment are paid for, we should save at least \$18,545, possibly more depending on insurance and other cost increases next year.

