From a distance

Ann Reinhart on the benefits of a remotely controlled weight enforcement station

"Why would I want to implement this technology?" "What benefits does this facility provide?" These types of questions always seem to cross one's mind prior to investing in any type of Intelligent Transportation System (ITS). Although ITS solutions come at a price, protecting road infrastructure from overweight loads is essential to limiting road maintenance expenses. One way to do this is through a Remotely Controlled Weight Enforcement Station (RCWS). RCWSs can be utilized by transportation agencies where weight and compliance enforcement is required on low volume roadways and where full time facility operation is not feasible as a result of staffing and funding limitations. An RCWS is a cost effective way to monitor commercial vehicles and enforce weight limits.

RCWS's are made up of sensors and network devices such as Weigh-in-Motion (WIM) scales, cameras, license plate readers, signs, and a communications link. An RCWS can incorporate many different kinds of ITS equipment.

HOW DOES AN RCWS WORK?

Each RCWS is made up of one or more monitoring sites, an inspection station and a central station.

As a commercial vehicle approaches an inspection station, it will first pass through a monitoring site. The monitoring site collects commercial vehicle data and advises the driver to either report or bypass the inspection station. At the monitoring site there are vehicle sensors, cameras, signs and a controller. The vehicle sensors may be loops, axle detectors or WIM scales. Side-fire cameras and license plate readers are used to record images of every vehicle that passes through the monitoring site.

Remotely controlled stations can prove a cost-effective way to monitor and enforce weight limits

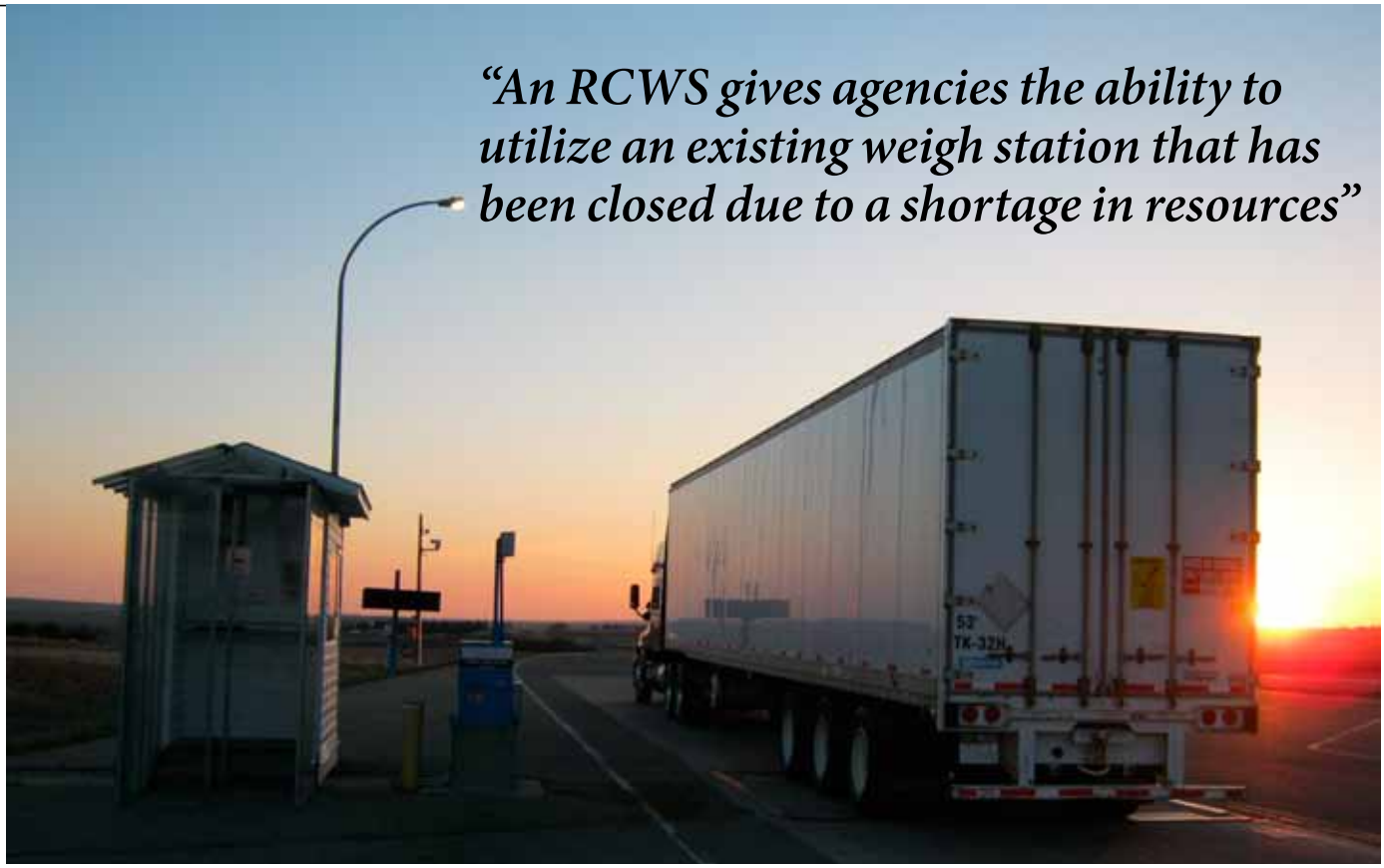
If the commercial vehicle is found to be overweight or otherwise non-compliant, an image of the vehicle will be captured along with the license plate, and the driver will be signalled by a sign to report to the inspection station. Otherwise, the driver is advised to bypass the inspection station.

At the inspection station, commercial vehicles are weighed on a static scale. Axle positioning sensors are used to notify the central station operator whether or not the commercial vehicle is positioning its axles correctly. Cameras provide the station operator with images of the vehicles at the inspection station that can be matched with those from the monitoring sites to check that all signaled vehicles have reported. The driver may be asked to present his log book and other credential information to the operator who is operating the site remotely. This is done in the inspection booth through the use of a Pan/Tilt/Zoom camera. If the central station operator needs to talk to the driver, this may be done through the communication link.

From the central station, vehicle data is viewed through an internet connection to an RCWS site. Multiple web browser windows allow the operator to view the monitoring sites, live video camera display, and static scale interface.

HOW DO THE CENTRAL STATION OPERATORS RECEIVE THE DATA?

Each monitoring site communicates to the inspection station through a wireless network connection. All data retrieved at each monitoring site is transferred to the inspection station. From the inspection station either a private or public network is set up to the central station. This allows the operator to view all data and information from the monitoring sites and inspection station.



The facility to operate weigh stations remotely allows agencies to carry out monitoring and enforcement on low-volume roads, widespread road networks or at locations where full-time monitoring is not required

HOW ARE CITATIONS ISSUED?

There are two ways that commercial vehicle enforcement is performed at an RCWS. Citations may be issued either directly to the driver at the remote site or via mail from the transportation agency.

A citation can be printed and provided to the driver directly at the time of the infraction. A citation can also be mailed from the central office directly to the commercial vehicle's business address.

WHEN SHOULD AN RCWS BE IMPLEMENTED?

Road systems with relatively low traffic volume are sometimes viewed as roadways where continuous enforcement is not economically feasible. However, no matter what type of roadway, overweight commercial vehicles will result in road deterioration. An RCWS provides transportation agencies with the ability to enforce commercial vehicle weights on low volume roads with less infrastructure than required by a traditional weight enforcement facility.

An RCWS is also beneficial in locations where full-time monitoring is not required. The inspection station can be opened and operated from an alternate location rather than having personnel travel to the site.

When there is a haul route that has one road constantly being used for operations, that roadway is susceptible to accelerated damage due to heavy hauling. These roadways greatly benefit from an RCWS, which ensures that the commercial carriers are following the weight limits of those roadways.

When a jurisdiction is in control of a large network of roadways, the amount of enforcement that is required very often outstrips the resources available. By implementing a system utilizing multiple RCWSs, the available resources have greatly expanded capability to monitor and enforce commercial vehicle weights over a large area.

Additionally an RCWS gives agencies the ability to utilize an existing weigh station that has been closed due to a shortage in resources. By adding a communication link and video camera, the site can be monitored from another fully operational weight enforcement facility. Therefore, as traffic patterns shift and/or staffing priorities change, agencies can implement an RCWS to ensure that enforcement is still occurring at an existing location.

CONCLUSION

An RCWS is a key solution when commercial vehicle enforcement is desired by any roadway agency. By deploying WIM and vehicle classification sensors, cameras and license plate readers, vehicle data may be collected from multiple monitoring sites and relayed to the inspection station to enforce commercial vehicle weights and compliance. An officer at at central station is able to retrieve the data from the site through an Internet connection. An RCWS is a practical solution for low volume roads, remote hauling roadways, widespread road networks, and existing weight enforcement facilities. Remotely Controlled Weight Enforcement Stations utilize ITS technologies and should be considered in order to maximize returns from weight enforcement operational funding.

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