Poetry in motion

A more graceful approach to vehicle weight enforcement – using portable WIM systems – can have more success than easily avoidable permanent weighstations

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Portable law enforcement systems are available in both static and dynamic configurations as a tool to aid authorities in overweight enforcement. Used concurrently with high-speed virtual weigh-in-motion systems (VWIM), they regulate potentially overweight vehicles, in doing so increasing safety and reducing long-term road damage.

Portable scale technology also allows for enforcement and monitoring techniques to screen for probable overweight or oversized vehicles. Both of these types of portable systems are used throughout the world for citation-based purposes in high traffic areas as well as on secondary or rural roads.

Although permanent weighstations play an important role in enforcement, there are many common ways for drivers to avoid them, often simply by following alternative routes to bypass them. This exacerbates the problems associated with overweight vehicles because the roads around the permanent weighstations are typically smaller secondary roads that were not designed for the weights or sizes of the trucks – so the damage to the roadways is even more significant.

Alternative strategies

To regulate overweight vehicles that are avoiding permanent weighstations, some type of law enforcement has to be deployed on the smaller secondary roads or downstream from in-road VWIM installations.

Intercomp portable static systems include two portable scales, roll-up ramps/levellers and a wireless indicator – all of which can be transported in the boot of a vehicle and set up by one person in fewer than 15 minutes. The actual inspection of the vehicles does not have to be done on the motorway; all commercial vehicles can simply be diverted off the road to a convenient location. Additionally, the hours of operation and locations can be far more random than with permanent stations.

Weighing capacities of up to 30 tons per axle allow the system to weigh heavy vehicles on unimproved surfaces. The system will weigh axle-by-axle in static mode using just two scales, while roll-up ramps/levellers keep axle groups on a level plane, providing ±1% accuracy. Portability and ease of setup is enhanced with cable-free operation as the scales and CPU communicate via wireless weighing technology and are powered by commercially available batteries for up to 300 hours of use.

The advantages of the static portable wheel load systems include lower system cost and higher accuracy than dynamic systems. However, the time required to

(Above) **An Intercomp weigh scale** (Above right) **Truck drives over a roll mat** (Below) **Vehicles can be directed to a suitable location for inspection**

weigh each vehicle is increased as a result of the vehicle being required to stop on the scale as each axle is weighed.

Portable dynamic WIM systems

Portable dynamic systems offer the same features as static systems but with the added benefit of being able to weigh vehicles as they pass over the scales at up to 10mph, with between 2% and 3% accuracy.

Portable WIM systems can also be set up for operation virtually anywhere. This type of system consists of an indicator, two scales and roll-up ramps. Like its static system, Intercomp's dynamic system is fully portable in the boot of a vehicle and can be set up in fewer than 15 minutes.

These systems provide authorities with a fast, reliable and cost-effective solution to protecting roadways and concentrating enforcement almost anywhere required. Portable WIM allows authorities to monitor, screen and issue citations in areas not served by permanent weighstations.

VWIM can serve as a screening device for potentially overloaded trucks, allowing portable wheel load and portable WIM systems to be used for efforts downstream of VWIM installations.

VWIM systems are coupled with cameras that have OCR capabilities. The cameras are used to read the vehicle's numberplate, DOT number (or unique vehicle ID) and capture general vehicle images. The cameras play an essential role in VWIM as the data collected not only allows the vehicle to be clearly identified but also provides the information necessary to query central databases to gather more information about the vehicle.

Data captured by the cameras is used along with data collected by the HSWIM system, which automatically measures the axle weights, axle spacing and gross vehicle weight. This data is then transferred to a nearby CPU and processed to identify and classify the vehicle. Data and images can then be accessed in the officer's vehicle via the web from roadside locations for enforcement after violators bypass major roadway weighstations.

VWIM systems can provide many of the benefits of permanent weighstations at a fraction of the cost as they can function autonomously or with law enforcement downstream from the system. These systems are seen as a cost-effective solution because they do not require onsite staff, and can be installed in strategic locations.

The efficiency of vehicle weight law enforcement can be increased with portable wheel load and WIM systems. They can be used on roads that may be used to circumvent permanent weighstations. In areas without permanent scales, portable scales can be used and moved to different locations to increase the perceived enforcement area, which is an effective 'force multiplier'.

As law enforcement and various agencies begin to share information about the vehicle and operator, VWIM software is capable of querying central databases to determine if there are outstanding and/or a history of violations. This extra information enables authorities to expand their commercial vehicle inspection and enforcement capabilities.