Commercial Vehicle Pre-Clearance and Compliance Best Practices

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Commercial Vehicle Compliance Best Practices Agenda

- Weigh Station Configurations – Mainline, Ramp, Virtual
- Weigh in Motion (WIM) - Technology Options / Infrastructure Requirements
- Technology Options
  - Over Dimension Measurement – width, height
  - Imaging – Overview, License Plates (tractor, trailer), DOT Numbers, Hazmat Placards, CVSA Decals
  - Infrared Imaging for faulty brakes / tires
  - Vehicle Tracking / Signaling
- Advanced Weigh Station Operational Features
  - Static Scale Auto Weigh
  - WIM Auto Calibration
  - Ramp / Station Back Up Detect
  - Truck Inspection / Vehicle Referral
  - Statewide Enterprise Reporting
  - Intelligent Maintenance Management (iMMS)
  - Statewide Enterprise Reporting
- Evolving Technologies
  - WIM Accuracy Improvements with lane position measurement
  - Tire Anomaly Detection (at highway speeds)
  - Improved Vehicle classification (super single tires)
Ramp Weigh Stations with Preclearance

- Mainline WIM system can be integrated with existing Ramp WIM system
Mainline Weigh Stations with Pre-Clearance

- Weight (axle, GVW, Bridge Formula)
Virtual Weigh Stations with Pre-Clearance

- Virtual Weigh Stations provide alternatives – identify trucks on bypass routes, integrated with portable weighing operations
Credential Compliance Screening

The screening system validates electronic credentials including:

- CVISN / Safer Status
- Prism Status
- IFTA / IRP Status
- State Credentials
- Oversize / overweight permits

Integrated electronic credential screening systems between different programs

- NCPass and PrePass bypass programs currently integrated to operate at the same site
Weight Compliance Screening

The WIM system checks to ensure a vehicle complies with legal requirements for maximum allowable length and maximum allowable weights using the measurements from the vehicle.

The WIM algorithm takes the measured vehicle information and adds the following types of violation indicators to it:

- Over length
- Over GVW
- Steering axle too heavy
- Single axle too heavy
- Tandem group weight too heavy
- Tridem group weight too heavy
- Quadrem group weight too heavy
- Individual axle within group too heavy
- Weight in group not distributed properly
- Combination of axles too heavy (bridge violation)
- Individual axle in combination too heavy
Technology Options – Over Height Detection

- Light Beam, one or two lanes
Technology Options – Over Dimension

- Dual Laser Scanners – truck and trailer/load width and height
Technology Options – Imaging

[Image of a truck with text and data]

- Carrier Safety Failure, Failed Screening Check
- LPR Overview
- USDOT Overview
- LPR Patch
- USDOT Patch
- WimSideFire
- RampSideFire

[Technical data and images related to imaging technology]
Imaging Technologies - Overview Images

- Day and Night Images
Imaging Technologies - LPR Front and Rear

- Day and Night Images with visible and near visible illumination

<table>
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<tr>
<th>Vehicle</th>
<th>Class</th>
<th>Axle</th>
<th>Length (ft)</th>
<th>Speed (mph)</th>
<th>GVW (lb)</th>
<th>Max GVW (lb)</th>
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Max GVW (%) License Plate Jurisdiction
57 SK

License Plate Number
523JQA
482IFK

(kips) 19.3 21.3 10.1
Imaging Technologies - USDOT Reader

• Image and Optical Character Recognition
Imaging Technologies - Hazmat Detection

- Automatic hazmat placards identification – Hazmat Carrier identification
Imaging Technologies - CVSA Decals

- Identify safety inspection certificates
- Slower speed installations
Technology Options - Truck Tracking / Signalling

- Pre-Pass ICN Pole
- Camera (optional)
- Message Signs
Technology Options - Truck Tracking / Signalling

- Camera for Illegal Bypass Vehicles
- Tracking Sensors
- Roadside Electronics Cabinet
Imaging Technologies – Infrared

Slow speed identification of:

- Automated cold brake identification
- Overheated wheel hubs
- Under inflated tires
- Integrated with weigh station operator interface
Advanced Features - Static Scale AutoWeigh

• AutoWeigh sets the VMS to display **NEXT TRUCK**.
• When weight detected on the steering axle platform, the VMS changes to **PULL FORWARD SLOW**. When the system detects that the vehicle has reached the position range calculated for proper weighing, it changes the VMS to **STOP**.
• If the vehicle operator drives too far forward, the system will not direct the vehicle to back up but will alert the scale operator that vehicle is out of position.
When the weight on all the static scale sensors is stable, the system will check that all axles are positioned within the calculated placement zone; if so it will take the weight readings and determine the platform weights and display them in the weight fields.
Advanced Features - WIM Auto Calibration

- Weigh Station system compares WIM and static scale weights.
- Calibration factors for the WIM are updated for each valid comparison between the Static Scale and WIM for the exact same commercial vehicle detected at Mainline WIM, Ramp WIM (if present) and Static Scale locations.
- This will keep the WIM system(s) operating at peak performance and reduce the need for WIM calibration service calls.

- WIM Monitor monitors WIM accuracy per vehicle.
- Alerts officers when performance is outside of configured tolerance.
- Automatically adjusts the WIM calibration factors.
Advanced Features - Backup Detect

- Weigh Station system constantly monitors for an excessive number of vehicles stopped on the ramp, which can create a hazardous condition for vehicles on the Interstate.
- If this condition is detected, the system will automatically direct vehicles to bypass until the backup has cleared.
Vehicle Referral allows the station operator to refer a vehicle to the inspection bay or to the parking lot for further processing.
Evolving Technologies

WIM Accuracy Improvements
- Lane Position Measurement – ability to identify lane position of each vehicle and adjust measured weight to consider across lane variances due to:
  - Lane roughness
  - Adjust cross scale measurement variances

Tire Anomaly Detection
- Identifies missing or underinflated tires at highway speed
- Can be used as a selection input for identifying trucks with potential braking and handling deficiencies

Improved Vehicle Classification
- Identification of trucks with super single tires
- Provides cross lane loading for pavement maintenance and design considerations
Contact Information

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