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ISWIM

Introduction to Weigh-In-Motion

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ISWIM

Licensed and approved by:

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Introduction to Weigh-In-Motion

Content

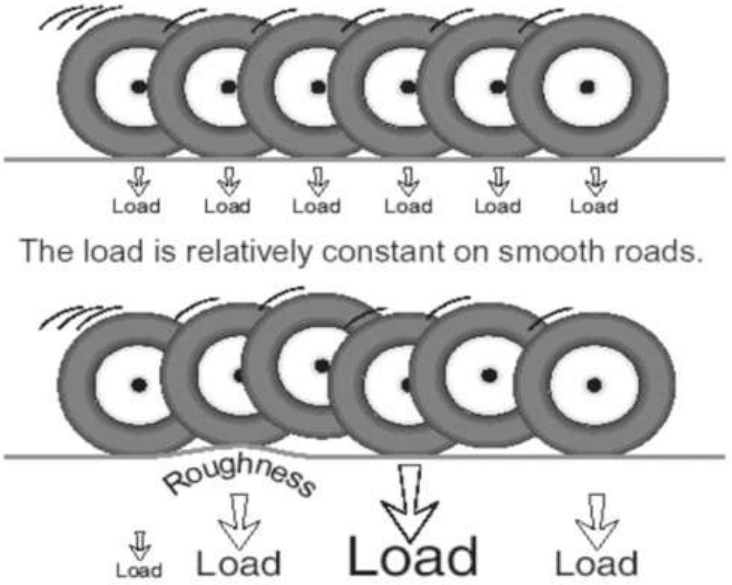
- Weighing-In-Motion
  - Measurements
  - Technologies
  - Advantages
- Applications of WIM data
  - Weight enforcement
  - Latest developments
- The best WIM system?
  - And other FAQ

Weigh-In-Motion

*Not Weigh**t**-In-Motion*

Weighing-In-Motion

- Measuring the Dynamic tire forces of a moving road vehicle and;
- Calculating the Gross Vehicle Weight (GVW) and;
- Wheel, axle and axle group loads
  - the portion of the GVW carried by each wheel, axle, and axle group of a corresponding Static vehicle.



Weigh-In-Motion Data

- Vehicle Record
- Weighing data:
  - Wheel loads
  - Axle loads
  - Axle group loads
  - Gross vehicle weight
- Additional data:
  - Unique record number
  - Location of measurement
  - Lane and direction of travel
  - Date and time of passage
  - Vehicle speed
  - Axle distances
  - Wheel base / Vehicle length
  - Vehicle classification

Weigh-In-Motion Data

- Often combined with
- Camera images of:
  - Overview of vehicle
  - License plate number
  - Registration number
  - Dangerous good shield
  - Driver
- ANPR / RF-Tag Reader:
  - Vehicle identification
- 3D-Scanner:
  - Vehicle dimensions
- Tire Anomaly:
  - Missing tires
  - Under/Over inflated tires

- Date
- Time
- Number
- Direction
- Location
- Class
- Speed
- GVW
- Axle loads

- Axle dist.
- Overview
- License Pl.

Introduction to Weigh-In-Motion

Why WIM?

Vehicle mass data is critical to the design, management and operation of the Road Infrastructure

and

is important in the support of Size & Weight Enforcement

2st Law of WIM:

Only a WIM system will provide a complete picture of the actual traffic loading at a particular location.

ISWIM Guide for Users of Weigh-In-Motion
www.is-wim.net

Introduction to Weigh-In-Motion

WIM Technologies

- Strips
  - Partial wheel load
- Scales & Plates
  - Full wheel load
- Bridge WIM
  - Response of bridge
- On-Board WIM
  - On vehicles

WIM Technologies

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Forget the Technologies!

Focus on the Applications!

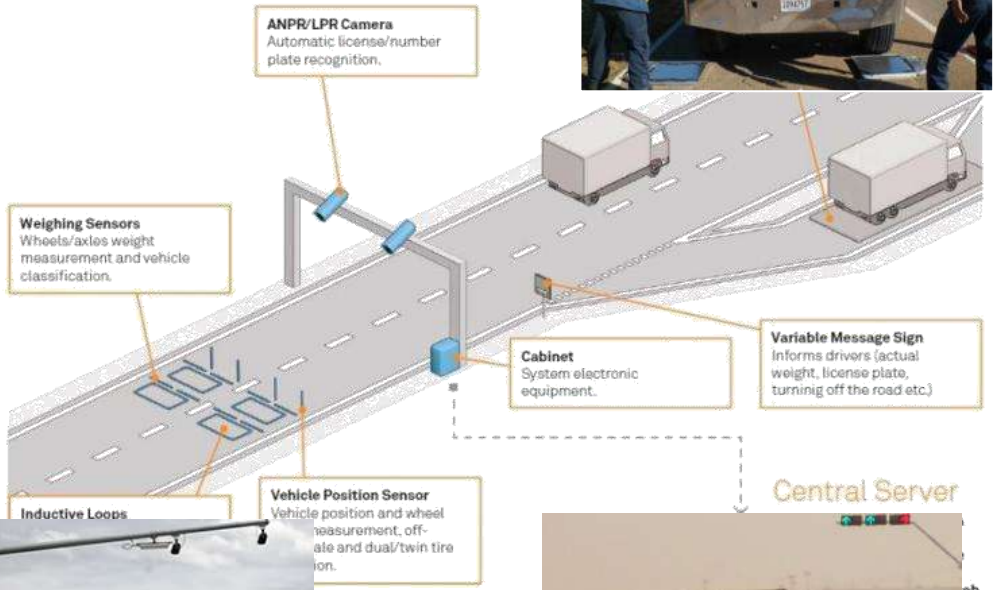
Applications of WIM

- Statistics of traffic loading
  - Input for design codes
  - Planning of maintenance
- Special transports
  - Matching of permits and routes
- Bridge protection
  - Avoiding damages

Introduction to Weigh-In-Motion

Applications of WIM

- Weight Enforcement:
  - Statistics & Planning
  - Pre-Selection for
    - Road side controls
    - Permanent weigh stations
  - Company Profiling
  - Direct Enforcement



Introduction to Weigh-In-Motion

Applications of WIM

- Weight Enforcement:
  - Statistics & Planning
  - Pre-Selection for
    - Road side controls
    - Permanent weigh stations
  - Company Profiling
  - Direct Enforcement
- Key Advantages:
  - Info on Where and When
  - Indication of Probable Overload
    - More efficient controls
    - No disturbance of Traffic flow
  - Focus on ‘bad’ Companies
  - Direct Proof of Overload

Direct Weight Enforcement

- Advantages:
  - High efficiency combined with high effectiveness.
  - High control rate (>99%), operational 24/7
  - Low number of staff required
  - Suitable for high volume highways

- But …
  - It is no magic solution for all overloading
  - It may be sensitive to evasion
  - Requires careful implementation!
  - More in next presentation

Implementation of WIM

- Selection of a proper location
  - Pavement conditions
  - Traffic conditions
- Carefull installation
  - Depending on technology
  - Use experienced installation crews
- Periodical maintenance
  - Depending on technology
  - Performance will deteriorate over time!

1st Law of WIM:

A WIM system installed on a good road may give good results; a WIM installed on a poor road will always give poor results.

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www.is-wim.net

FAQ about WIM

- What is the best WIM-sensor?
  - Who cares, as long as the data is good!
- What is the best WIM-system?
  - I don’t know! What is the best car?
  - Depends on application and conditions.
- What is the cheapest WIM-system?
  - No WIM system at all!
- How accurate should a WIM-system be?
  - Depends on your application.
  - Don’t forget about reliability!

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Questions?

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Moving Forward Together
Connecting Heavy Vehicles and Weigh-In-Motion

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