WIM Data Dictionary

This document describes the fields contained in the raw traffic data files at the toll gantry on Highway #3, km 25.0 north of the Deh Cho Bridge. The raw data is used to generate reports based on parameters selected by the user. Each file contains data for a particular month in DCB YYYY-MM format, where:

YYYY is the calendar year; and

MM is the month.

Each row in the raw data corresponds to one vehicle record. For example, if 10,000 vehicles passed through the toll gantry in a particular month, there will be 10,000 rows of data. A record is created for every vehicle that passes through the toll gantry, regardless of whether the vehicle is private or commercial or travelling northbound or southbound.

The data consists of 42 columns or fields.

Column A – Year

This is the last 1 or 2 digits of the calendar year.

Column B – Month

This is the number of the month (1 = January, 2 = February, etc.).

Column C – Day

This is the day of the month.

Column D – Hour

This is the hour according to 24-hour clock.

Column E – Minute

This represents the minute.

Column F – Seconds

This represents the seconds.

Column G – Error Number

 This is stamped “0” for all vehicle records.

Column H – Status Code

 This indicates the type of error and is expressed in hexadecimal characters. If a vehicle was subject to two or more errors, the hexadecimal sum is shown. For example, if the warnings are:

Unequal axle count (40);

Tailgating (80);

The status will be 000000C0

|  |  |  |  |
| --- | --- | --- | --- |
| Error or Warning | Status Code | Error or Warning | Status Code |
| None | 0 | Overlength | 800 |
| Offscale Hit | 1 | Overweight | 1000 |
| Overheight | 2 | OverGVW | 2000 |
| Onscale Missed | 4 | Safety (Random) | 4000 |
| Significant Speed Change | 8 | Speeding | 8000 |
| Significant Weight Difference | 10 | Truck is Late to Station | 10000 |
| Vehicle Headway Too Short | 20 | Truck is Unexpected | 20000 |
| Unequal Axle Count on Sensors | 40 | Truck is Overdue | 40000 |
| Tailgating | 80 | Vehicle Not Matched | 80000 |
| Wrong Lane | 100 | Lateral Position Error | 100000 |
| Running Scale | 200 | No Compliance Information | 200000 |
| Truck Not In WIM Lane | 400 | Sort Override Failed | 400000 |
|  |  | Failed Credential Check | 800000 |

Column I – Record Type

This is stamped “11” for all vehicle records.

Column J – Lane

This is the direction and lane the vehicle was travelling in:

1 – northbound – northbound lane

2 – southbound – southbound lane

3 – southbound – northbound lane

4 – northbound – southbound lane

Column K – Speed

This is the vehicle speed in km/h.

Column L – Vehicle Class (Toll)

This is the toll class of the vehicle based on weight and number of axles.

|  |  |  |
| --- | --- | --- |
| Code | Toll Class | Description |
| 1 |  | Non-commercial vehicle – no toll applies |
| 2 | A | 2 to 4 axles or a pickup truck or bus with trailer |
| 3 | B | 5 or 6 axles (excluding pick-up truck or bus) |
| 4 | C, D | 7 or more axles (excluding pick-up truck or bus) |

Column M – Length

This is the total length of the vehicle in cm. This is the sum of the individual axle spacings for the vehicle plus front and rear over hang.

Column N – Gross Vehicle Weight (GVW)

This is the total weight of the vehicle in kg. This is the sum of the individual axle weights for the vehicle.

Column O – Equivalent Single Axle Loads (ESAL)

ESALs indicate the relative damage to a pavement structure due to various axle loads. The ESAL value is calculated on the site using the following AASHTO formula:

 *ESAL* = $\sum\_{k=1}^{n}[A\*L\_{k}+ B]^{(C+\frac{D}{Lk})} $

 Where:

 *n* = Number of axles on vehicle

 *A* = 0.1194 (ESAL Parameter #1)

 *B* = 0.0640 (ESAL Parameter #2)

 *C* = 4.0000 (ESAL Parameter #3)

 *D* = 0.9070 (ESAL Parameter #4)

 *L* = Load on axle *k* in 1000’s of kilograms

*ESAL* = Sum of values calculated for each axle of the vehicle, using the respective load (*L*) values.

Columns P through AP

These columns show the axle weight (in kilograms) and axle spacing (in centimetres) for the vehicle. Up to 14 axle weights and 13 axle spacings are shown.

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Description | Column | Description |
| P | weight of the 1st axle | AD | weight of the 8th axle |
| Q | spacing between the 1st and 2nd axle | AE | spacing between the 8th and 9th axle |
| R | weight of the 2nd axle | AF | weight of the 9th axle |
| S | spacing between the 2nd and 3rd axle | AG | spacing between the 9th and 10th axle |
| T | weight of the 3rd axle | AH | weight of the 10th axle |
| U | spacing between the 3rd and 4th axle | AI | spacing between the 10th and 11th axle |
| V | weight of the 4th axle | AJ | weight of the 11th axle |
| W | spacing between the 4th and 5th axle | AK | spacing between the 11th and 12th axle |
| X | weight of the 5th axle | AL | weight of the 12th axle |
| Y | spacing between the 5th and 6th axle | AM | spacing between the 12th and 13th axle |
| Z | weight of the 6th axle | AN | weight of the 13th axle |
| AA | spacing between the 6th and 7th axle | AO | spacing between the 13th and 14th axle |
| AB | weight of the 7th axle | AP | weight of the 14th axle |
| AC | spacing between the 7th and 8th axle |  |  |

Column AS – Temperature

This is the ambient air temperature in ⁰C.

Column AT – FHWA Class

This is the type of vehicle according to the Federal Highway Administration (FHWA) Classification Scheme. The classification codes are as follows:

|  |  |
| --- | --- |
| Vehicle Class | Description |
| 1 | Motorcycle |
| 2 | Passenger Cars |
| 3 | Other Two-Axle, Four-Tire Single Unit Vehicles. Includes pickup truck, small vans, sport-utility vehicles |
| 4 | Buses |
| 5 | Two-Axle, Six-Tire, Single Unit Trucks. Includes larger pickup trucks, large passenger vehicles, motor homes and small two-axle unit trucks. |
| 6 | Three-Axle Single Unit Trucks |
| 7 | Four or More Axle Single Unit Trucks |
| 8 | Four or Less Axle Single Trailer Trucks |
| 9 | Five-Axle Single Trailer Trucks |
| 10 | Six or More Axle Single Trailer Trucks |
| 11 | Five or Less Axle Multi-Trailer Trucks |
| 12 | Six-Axle Multi-Trailer Trucks |
| 13 | Seven or More Axle Multi-Trailer Trucks. Includes Super-B Trains. |

