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Vehicle's Axial Weight Measuring Apparatus

1. Introduction

The Hanshin Expressway Public Corporation installs a vehicle's axial load measuring apparatus (a platform scale) at each tollgate and tollbooth. The introduction of the apparatus helps detect violations of vehicles' weight, which means prevention of damage to the road, and therefore contributes to the safe traveling of the vehicles.

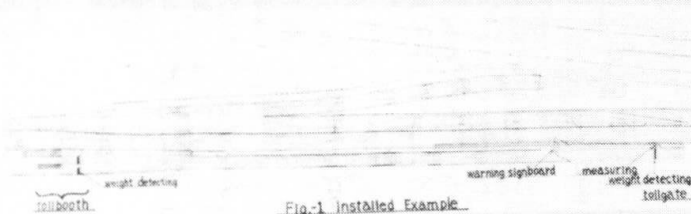


Fig-1 shows part of the Hanshin Expressway (Wangan Route, near Dejima tollgate, which is under construction), where a platform scale is installed.

Fig-2 illustrates the standard system of a platform scale, which consists of the following five functional sections:

(1) weight detecting section

The weight detecting section is buried in the pavement at the same level of the road surface.

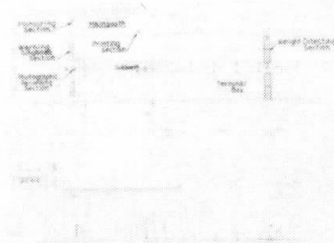


Fig-2 Standard System

When vehicles move over this part, it finds their axial load, and the detected weight is transformed into an electric signal. The loading plate (the detecting part) is 760 mm in width and 1,600 mm in length and two plates are used per traffic lane (3,200 mm). Its thickness

gauges 70 mm and 180 mm, one of which is used for overpass roads and, the other for ordinary roads. A loadcell is used for the converter, and when it is thin, twelve loadcells are used and when it is thick, eight.

(2) measuring section;

This is the control center of the scale, where the electric signal from the detecting section is turned into the weight value. This section judges whether the weight exceeds the limited figure or not, and thus is the core of the system sending various signals to other sections of the apparatus. The outer size of this section is 570 mm wide, 710 mm deep, and 1,000 mm (including the length of the caster) high.

(3) printing section in the booth;

On receiving the signal from the measuring section indicating that the measured weight figure exceeds the limitation set by the Vehicle Limitation Law, this section publishes a warning sheet, in which the weight figure and the date are printed. The warning sheet is handed to the driver of the vehicle. The outer size of this section is 250 mm in width, 335 mm in depth, and 340 mm in height.

(4) warning signboard section;

The driver is warned by both the warning sheet explained above and the electric signboard which shows the violating weight figure. The outer size of the signboard is 1,600 mm wide, 500 mm deep, and 650 mm high.

(5) photographic recording section;

If the weight figure exceeds the limitation, the measuring section (control center) directs this section to take photographs of the vehicle's license plate number, the driver, and the car body. At the same time, the date, the vehicle's axial weight, and the name of the measuring place are recorded on the same photographs taken here. The outer size of this part is 315 mm x 295 mm x 560 mm.

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