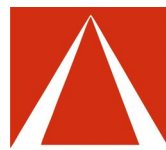


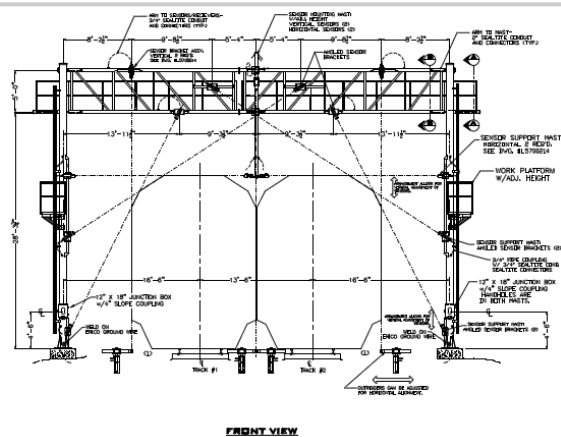
High-Wide Load Detector System (HWL)



PROGRESS

RAIL INSPECTION & INFORMATION SYSTEMS

A Caterpillar Company



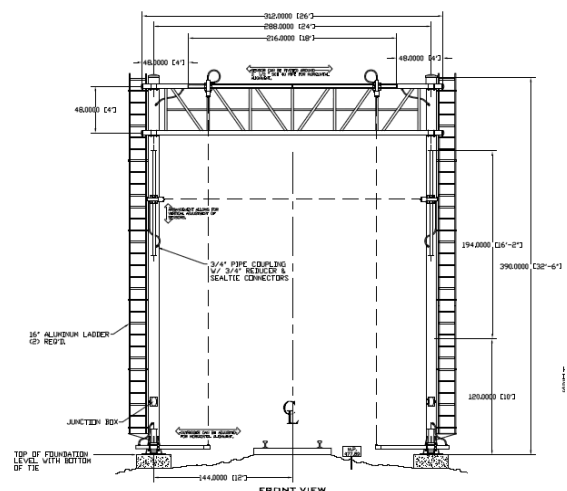
Out-of-Gauge rolling stock represents a big risk in case of lines with restricted zones like tunnels and bridges. The loading gauge provides the size of passenger and freight trains which can be conveyed on a specific section of the railway line. On the other hand the structure gauge, which is the lowest and narrowest tunnels or bridge, complements the loading gauge which is the tallest and widest vehicle. The gap between the two profiles and some allowance needs to be considered for the dynamic movements of the train (clearance).

gauge of the line. Therefore the detection profile of the system is highly customizable depending on specific customer requirements.

The increasing use of trains to move goods and the extensive use of containers has provided a trend to increase the rolling stock loading gauge with obvious implications in terms of risks associated to :

- Derailments
- Collisions

The **High-Wide detector** is composed by a number of IR sensors sets. Each sensor set is composed by a couple of transmitter/receiver. The sets are mounted on a structure bridge (can be an existing one, see examples on Figure below). The position of the sensors on the bridge has to be defined based on the loading



Specification

The sensor couples provide a laser barrier whose infringement by an obstacle (i.e. an out of gauge load) would determine a reported information to the **Control Logic**.

In order to eliminate false alarms, the **Control Logic** will take in consideration only alarms when a train has activated one the wheel sensors (that means the train is actually is inside the monitoring section).

The performances and technical characteristics of the **HWL sensors** are reported in the table aside

HWL sensors		
Intrusion Protection		IP 67
Operating Temperature		-40 °C to +70 °C
Operating frequency		Near Infrared
Decoupling		Modulating Frequencies
Operating Voltage		10 to 30 VDC @20mA, 10% max ripple
Working Mode		ON/OFF
Response Time		10ms ON / 10ms OFF
Detectable size	Objects	14 cm @ 50Km/h 30 cm @ 100Km/h 70 cm @ 250Km/h 83 cm @ 300Km/h



Number of tracks:	1 standard, 2 or 3 tracks custom track spacing.
Standard Detectors:	Over height, Over width Left , Over width right
Custom Detectors :	Multiple beam, tunnel profiles
System Outputs:	Contact Closure
Signal Timing:	Dependent on train speed, object size.
Minimum Object Detection:	Dependent on train speed, object size.
Sensors:	Break Wire and / or Infrared Emitter / Detector Pair.
Foundation requirements:	Forms Provided, Customer supplied Concrete.
Maintenance Required:	Periodic cleaning of transmitter / receiver pair, break wire taugt, check battery.