

# CEDEX

Madrid  
Spain

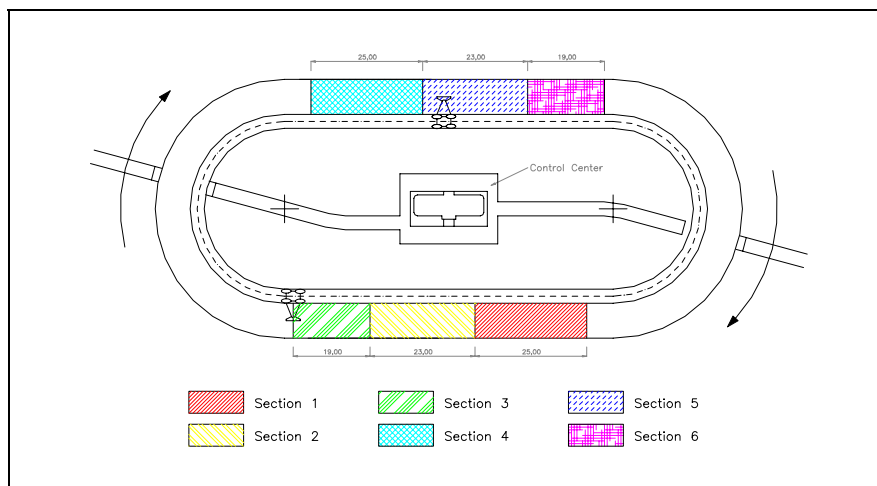
Centro de Estudios y Experimentación de Obras Públicas (CEDEX)

The CEDEX Test Track consists of two 75-m straight stretches joined by two circular curves with a radius of 25 m. A rail beam located on the inside perimeter of the track serves as a guide for two automatic vehicles. (Figure 1)



**Figure 1. CEDEX Test Track**

The testing of the pavement sections is carried out in the straight stretches, and therefore the results are comparable to those obtained in other linear test tracks. Six 20-25 m long complete pavement sections can be tested simultaneously. (Figure 2)



**Figure 2. Plan view**

A concrete box, 2.6 m deep and 8 m wide, enable the building of embankments of at least 1.25 m in height as well as the use of conventional machinery and the usual road-building procedures (Figure 3). The purpose of using concrete boxes is to isolate the performance of the pavements from that of the surrounding ground, allowing homogeneous support to the pavements throughout each test and between different tests in such a way that the results are comparable. It also allows the subgrade to be flooded for testing under different groundwater conditions.

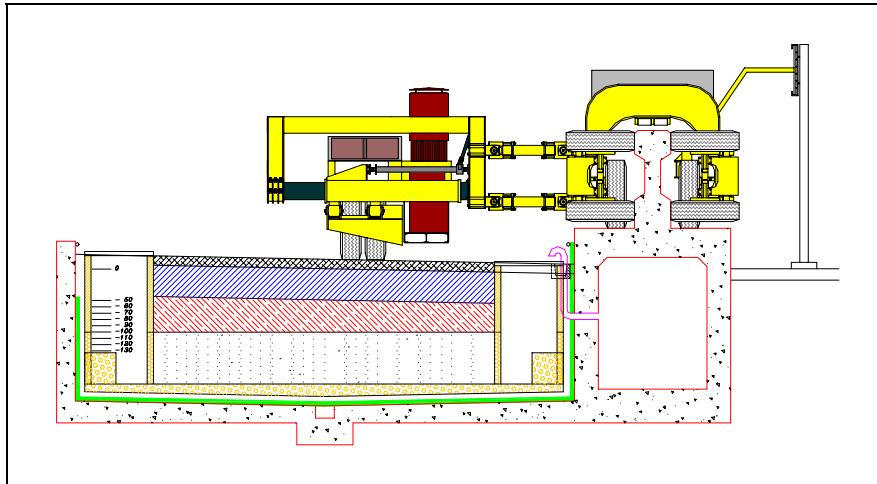
Finally, a shed enables the straight stretches to be covered if desired.

The Curves are not provided with concrete boxes, but with concrete slabs allowing the testing of 150 mm thick asphalt courses. Up until now, the curves have been used for testing surface

courses and road paintings, taking advantage of the high horizontal forces induced by the vehicles in these areas.

Loading is applied by means of two automatic vehicles running up to 60 km/h. The concrete rail beam located on the inside perimeter of the track serves as a guide and enables total control of the load path. (Figure 3)

Each vehicle has two distinct parts: the guiding cart and the load cart. The load cart applies the load, and also generate the movement of the whole unit by means of an electric engine. This cart has a load train with a conventional semi-axle, provided with tires and suspension similar to those used by heavy road vehicles. It is possible to use single, supersingle or twin wheels. The load is applied by gravity; its total weight being 55 kN, which can be increased with ballast up to 70 kN.



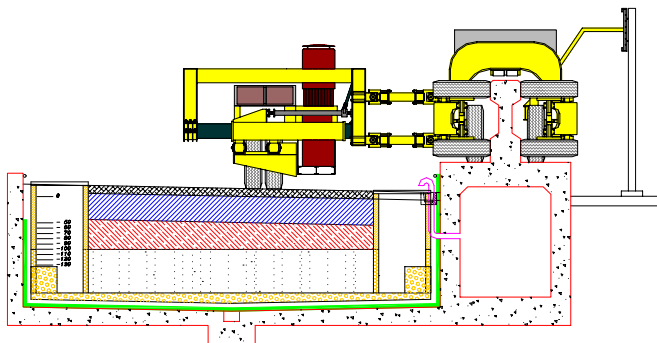
**Figure 3. Cross section**

The maximum output of the facility is  $2 \times 10^6$  loads per year, but in practice and because of the routine checking stops and periodic surveys, the usual output is 100,000 loads per month.

Id: <b>CEDEX</b>		Madrid
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**Type: Linear Test Track**

Construction (commissioned): 198



**Dimensions**

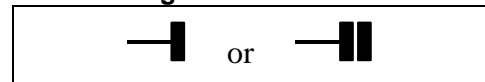
Pavement length	288 m
Useful testing length (at constant speed)	288 m

**Loading**

Range of Load <sup>(*)</sup>	110-140 kN
Transverse distribution	± 360 mm
Loading direction	⇨

<sup>(\*)</sup> Wheels loads (half axle) are converted to the corresponding axle loads.

**Axle configuration**



**Speed**

Vehicle Speed (max.)	60 km/h
Test frequency (max.) (passes/hour/section)	400
Practical output (loadings/month/section)	100000

**Sections**

No. of Sections	6
Thickness	2000 mm
Width	8000 mm

**Measured Variables**

	Surface	Asphalt	Unbound Layers	Subgrade
Temperature		X	X	X
Moisture content				
Suction				
Deflection (transient)	X			
Vertical Stress			X	X
Horizontal Stress				
Vertical Strain			X	X
Horizontal Strain		X	X	

**Environmental control**

Placement	Outdoors
Air temperature	←
Pavement temperature	←
Air moisture	-
Freeze-thaw cycles	-
Water table	→
Rainfall	→

← monitored  
 ↑ partially controlled  
 ↑\* indirect control (air temperature)  
 → totally controlled

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