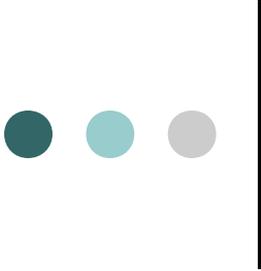




Generalitat de Catalunya  
Direcció General de Carreteres

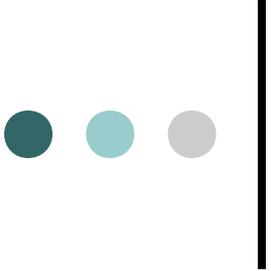
# GENERALITAT DE CATALUNYA TUNNELS SAFETY OFFICER

NOVEMBER 4/5th 2009



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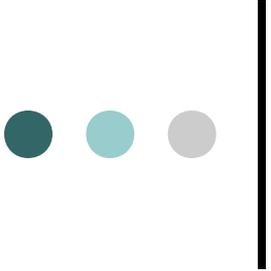
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# 1.- Tunnels legislation

The regulations apply to tunnels operated directly from the Generalitat de Catalunya (Catalonia Government) is the following:

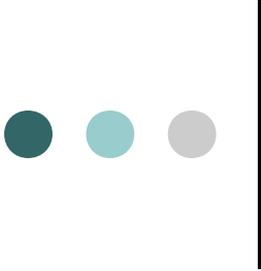
- European Directive 2004/54/EC for tunnels in the trans-European road network (before was applicable the normative IOS 98)
- Draft transposition from the European Directive on the Catalonia laws.
- Other reference Spanish Technical standards and self-protection plans.



# 1.- Tunnels legislation

Significant differences between the European Directive and the transposition of the Generalitat de Catalunya.

- The European Directive applies to trans-European routes. The transposition of the Generalitat de Catalunya is applicable to all tunnels competence of the Catalonia Government.
- The transposition of the Generalitat de Catalunya provides the minimum requirements for tunnels in length between 100 and 500 meters.
- The transposition of the Generalitat de Catalunya have the Control Center requires for all tunnels > 500 meters. The European Directive requires the Control Centre of the tunnels > 3.000 meters and greater traffic of 2.000 vehicles per lane.
- The transposition of the Generalitat de Catalunya applies to all urban tunnels the same characteristics as the length of intercity traffic tunnels  $\geq 1.000$  metres and 2.000 vehicles per lane.



## 2.- Generalitat de Catalunya tunnels

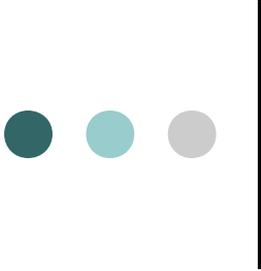
The 85 % tunnels in Catalunya are adapted to the European Directive 2004/54/EC.

Administrative Authority in Catalunya is the Generalitat de Catalunya (Catalonia Government), except in some cases depending on the Spanish state.

Tunnel manager in some cases are private concessions. Tunnels whose concession is Generalitat de Catalunya are:

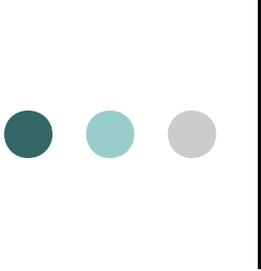
Coll de Nargó tunnels (C-14) 1 tub:

Lo Coscollet	244 m
Remolins	288 m
Obaga Negra	792 m
Espluvins	937 m
Aubenç	333 m



## 2.- Generalitat de Catalunya tunnels

Montant de Tost (C-14) 1 tub	636 m
St. Esteve d'En Bas (C-63) 1 tub	892 m
Amadeu Torner (C-31) 2 tubs	375 m
Parpers (C-60) 2 tubs	2.013/2.010 m
Figaró (C-17) 2 tubs	213/195 m
Montcada i Reixac 2 tubs	250/250 m
Granollers (C-352) 2 tubs	390/390 m



## 2.- Generalitat de Catalunya tunnels

Bracons i Codina tunnels (C-37) 1 tub:

La Cavorca	155 m
Corbs	90 m
Les Salines	157 m
La Sala	508 m
La Vola	500 m
La Rierola	106 m
Bracons	4.610 m
La Carrera	122 m
La Famada	94 m
La Codina	1.448 m

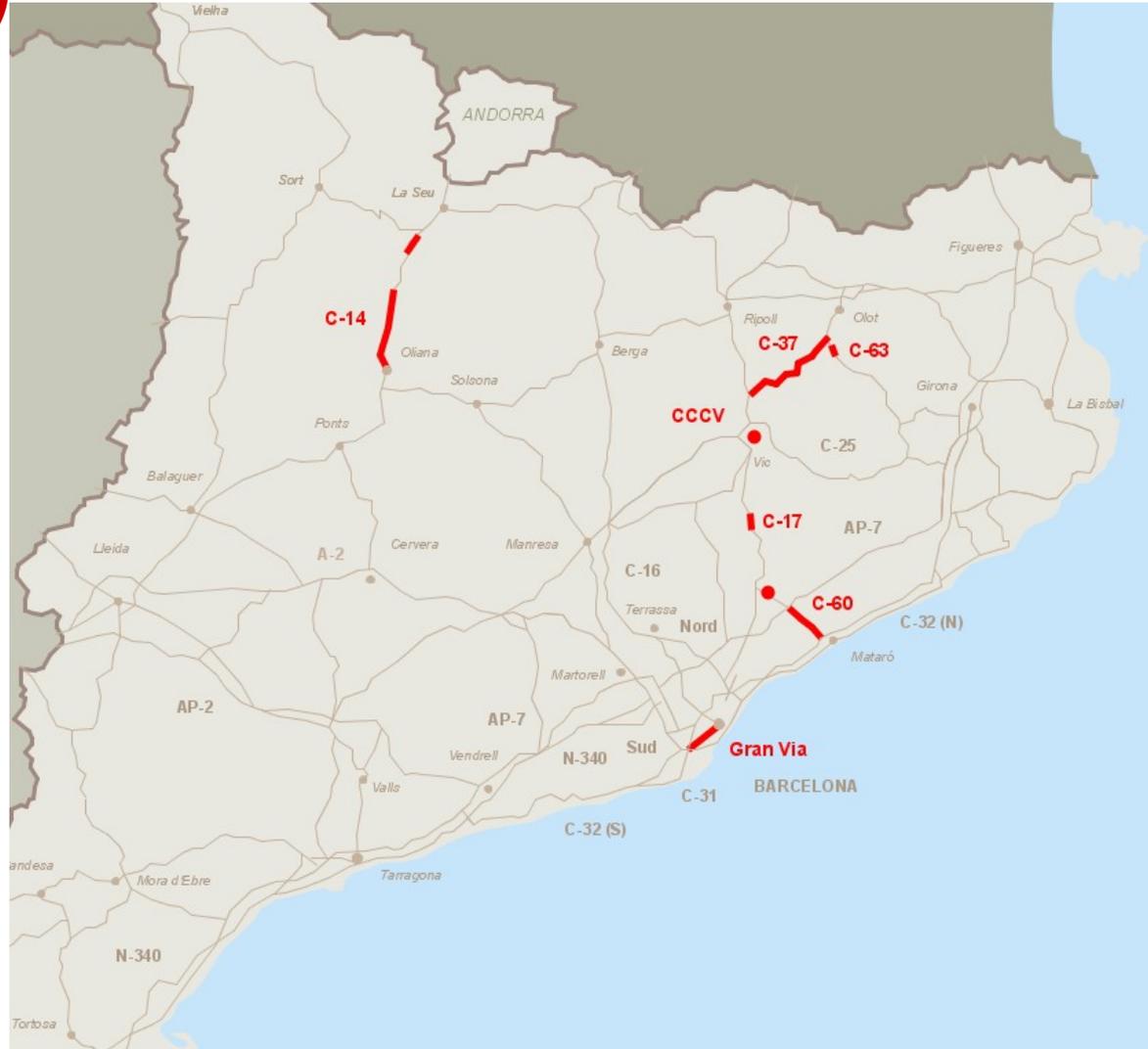
Total length Generalitat de Catalunya tunnels 18.391 m

# 3.- Vic Control Centre Roads (CCCV)

Vic Control Centre Roads inaugurated in 1995 is located in the geographic centre point.

It was one of the first roads remote centres in Europe and the first one in Spain.

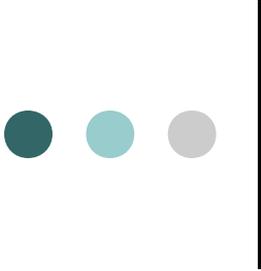
Tunnel management operations from CCCV.



# 3.- Vic Control Centre Roads (CCCV)

Communications are available with gigabit optic fiber or radio link and lets take control of the installations.

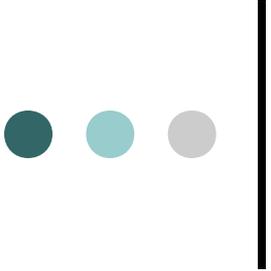




## 4.- Assistance to maintenance, Healthy and Security and Safety Officer

The type of contract with the administration, is an assistance to maintenance, Healthy and Security and Safety Officer, and tasks to inspection, technical support, maintenance and operations management, administrative tasks, economic criteria, organization and monitoring plan work, quality control, preparation of studies, programming, analysis and reporting of results.

The consultant contracted, Auding's company, specialized in the field of civil engineering and consulting, with a range of professional services related to the study, definition and implementation of infrastructure and public services, such as technology and facilities, geological engineering, urban planning and building, structures, transport and environment.

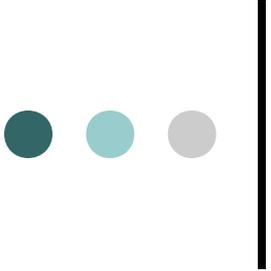


## 4.- Assistance to maintenance, Healthy and Security and Safety Officer

To carry out the contract referred to, Auding makes available on the Vic Control Centre Roads (CCCV) of all human and material resources needed to perform the work.

Work place for the assistance is the CCCV, with the following schedule dedication:

- a manager responsible for contract supervision and inspection of maintenance tasks 100%
- a Healthy and Security manager 25%
- a Safety Officer 100%
- a Safety Officer assistance 50 %
- an administrative 100%
- two people support 40%
- the participation of specialized staff when needed

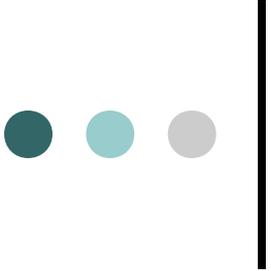


# 5.- Safety Officer's tasks

Safety Officer task's are what tells the European directive.

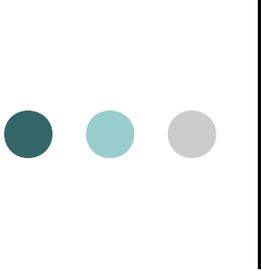
## 1. Existing tunnels

- Initial report that compares the tunnel with the legislations and specifies the points to be improved.
- Safety documentation, review and update operating manuals.
- Risk analysis confection in tunnels with transport of dangerous goods (Coll de Nargó tunnels).
- Emergency operations plans and self-protection plans, implementation and updating.
- Exercises, participation in the design and implementation with the emergency services and operational staff.
- Monthly reporting, scheduled visits to the tunnels for inspections.



# 5.- Tasks of Safety Officer

2. New tunnels (Bracons, Granollers and Montcada i Reixac, april-june 2009)
  - Project verification with the requirements of European Directive.
  - Works Monitoring.
  - Active participation in testing protocols.
  - Risk analysis confection in tunnels with specials features (Bracons i Codina tunnels).
  - Initial agreement report necessary to open the tunnel.
  - CCCV staff training.

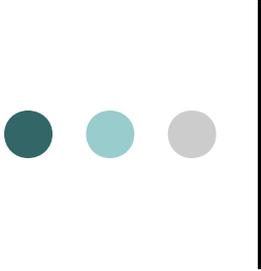


## 6.- Administrative protocol for the management of serious incidences. Detachments in Obaga Negra tunnel

In case of a serious incident, the tunnel manager deliver all information through his report.

The Safety Officer inspects the tunnel together with the maintenance staff and deliver the corresponding report to the tunnel manager, and also to the administrative authority.

The report of the Safety Officer make the necessary recommendations to reduce risks and indicates whether it is appropriate to reopen it.

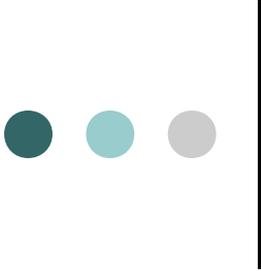


## 6.- Administrative protocol for the management of serious incidences. Detachments in Obaga Negra tunnel

In the 1st Saturday August a little detachment happened in Obaga Negra tunnel (792 m) located in the C-14, causing the close tunnel traffic.

During 8 days temporary performances to solve the problem were made, and the Safety Officer delivered an agreement report with 24 hours full time vigilant (forced by the reopened press of Administrative Authority), instead of several little areas were free of concrete, with the risk of small detachments of the land.

The tunnel was reopened 9th October at 9 a.m, and closed at 22:30 on the same day, as after a strong storm was a little detachment.



## 6.- Administrative protocol for the management of serious incidences. Detachments in Obaga Negra tunnel

After that, tunnel was closed for 5 days more, time needed to solve the problem temporarily.

Nowadays, Obaga Negra tunnel is being studied to determine the causes of ground and concrete “disease” and proceed with necessary corrective measures.