

The Safety Officer role in Sweden according to the directive 2004/54/EC.

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Safety Coordinator for :

- Götatunneln, Gothenburg, in operation
- Norra länken, Stockholm, in construction stage
- Western Bypass of Stockholm, in design stage
- Masmotunneln, Stockholm, in design stage

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Contents:

Brief description of the Swedish situation

- Tunnels, Regulations, Responsibilities

Safety Coordinator

- Role, Organisation, Duties

Key Issues - Challenges

The Swedish TEN-road net, 1692/96/EC and 884/2004/EC

The law on
road tunnel safety
is valid for

- existing tunnels on TEN
and
- non-TEN tunnels,
designed after April 2006

if the tunnels are
longer than 500 m.



The Swedish road tunnels are concentrated to

-the Stockholm region

-the Göteborg and west coast region



Road tunnels in operation, central Sweden (1)

No	Name	Road no	Length (m)	Rock/Concrete	Single/Double	Lanes	Vehicles per day
	Blekholmstunneln	City of Stockholm	340	C	T	1+1+2	
	Söderledstunneln		1 550	R+C	D	2+2	
	Klaratunneln		880	C	D	2+2	
67	Fredhäll	E4	200	R	D	4+4	103 000
1657	Häggvik	265	300	C	D	2+2	17 000
1671	Eugenia (N Länken)	E4	235	R	D	2+2	69 000
	Norra Länken	E4	78	R	S	2	35 000
	Södra Länken	75	3600+ 900	R	D	2	75 000
1079	Muskötunneln	539	2 960	R	S	2	1700
1696	Lindö/Tappström	261	180	R	S	3	17 000
1626	Åkersberga	267	300	C	D	1+1	19 000
Yellowmarked tunnels are on the TERN							

Road tunnels in operation, western Sweden (2)

No	Name	Road no	Length (m)	Rock/Concrete	Single/Double	Lanes	Vehicles per day
638	Viskan(Åskloster)	E6	265	R	D	2+2	10 000
581	Tingstadstunneln	E6	454	C	D	3+3	100 000
987	Sörgård (Uddevalla)		210	R	D	2+2	16 000
969	Kärra (Uddevalla)		350	R	D	2+2	16 000
924	Gnistängstunneln	E6.20	712	R	D	2+2	35 000
860	Gårdsten	E6.20	415	R	S	2	13 000
649	Stenungsön	160	120	R	S	2	13 500
702	Vindön	160	485	R	S	2	5 000
641	Nösund/Boxvik	740	75	R	S	2	700
1476	Lundby	E6.21	2 550	R	D	2+2	38 000
1588	Grind	E6	149	R+C	D	2+2	4 000
761	Jeriko	E20	110	R	D	2+2	27 000
729	Stadsberg, Krångede	87	153	R	S	2	1 040
Yellowmarked tunnels are on the TERN							

Road tunnels in Sweden

Youngest, longest

Sub sea

*Heaviest traffic,
immersed*

Oldest; 50 years

Name	Road no	Length (m)	Rock/Concrete	Single/Double	Lanes	Vehicles per day ⁽¹⁾
Bleholmstunneln ⁽²⁾		340	C	D	1+1+2	
Söderledstunneln ⁽²⁾		1 550	R+C	D	2+2	
Klaratunneln ⁽²⁾		880	C	D	2+2	
Karlbergstunneln ⁽²⁾			C	S		
Fredhäll ^(TEN)	E4	200	R	D	4+4	103 000
Häggvik	265	300	C	D		17 000
N länken Eugenia ^(TEN)	E4	235	R	D	2+2	69 000
N länken, ramp ⁽²⁾	E4	78	R	S	2	
Södra Länken	75	4 500 ⁽⁵⁾	R	D	2	80 000
Muskötunneln	539	2 960	R	S	2	1 700
Lindö/Tappström	261	180	R	S	3	17 000
Åkersberga ⁽³⁾	267	250	C	D		19 000
Stuvsta (Huddinge) ⁽⁴⁾		150	C	D		
Skulptorp/Skövde	48	374	C	D		
Viskan(Åskloster)	E6	265	R	D	2+2	10 000
Götatunneln ^(TEN)	45	1600	R+C	D	3+3	65 000
Tingstadstunneln ^(TEN)	E6	454	C	D	3+3	100 000
Sörgård (Uddevalla)	E6	210	R	D	2+2	16 000
Kärra (Uddevalla)	E6	350	R	D	2+2	16 000
Gnistängstunneln	E6.20	712	R	D	2+2	35 000
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Nösund/Boxvik	740	75	R	S	2	700
Lundby	E6.21	2 550	R	D	2+2	38 000
Grind ^(TEN)	E6	149	R+C	D	2+2	4 000
Jeriko	E20	110	R	D	2+2	27 000
Åre ^(TEN)	E14	135	C	S	2	
Stadsberg, Krångede	87	153	R	S	2	1 040
	Σ	ca 20km				

The general layout of the implementation of 2004/54/EC

- A new law comprising the more general articles in the directive
- A corresponding ordinance that includes texts from articles, not stated in the law, and from annex 2
- Addendums to the existing law on video surveillance in public areas and to the traffic sign regulation
- A regulation for the more detailed requirements, mainly annexes 1 and 3

The detailed references for these documents are listed in the ITA COSUF *Survey of existing regulations and recognised recommendations (road tunnels)*

Responsibilities

Administrative Authority

2006-2008: The County Administration Board in the county where the tunnel or the largest part of it is situated or planned.

From 1 Jan. 2009: The Swedish Transport Agency

Regulatory responsibility

2006-2008: The Swedish National Board of Housing, Building and Planning (Boverket)

From 1 Jan. 2009: The Swedish Transport Agency

Responsibilities

Tunnel Manager

- **State roads:** the Regional Offices of the Road Administration,
(the tunnel owner according to the Law for roads)
From 1 April 2010 the Swedish Road Administration will merge into a new authority for roads, railways and seaways.
- **Municipal roads:** the Municipality,
(the tunnel owner by the Planning and Building Act)
- **Other roads:** Tunnel Manager will be appointed by the Administrative Authority

Safety Officer and Inspection Entity

The duties are not specified in more details than in the directive.

Implementation of the Safety Officer role in Sweden.

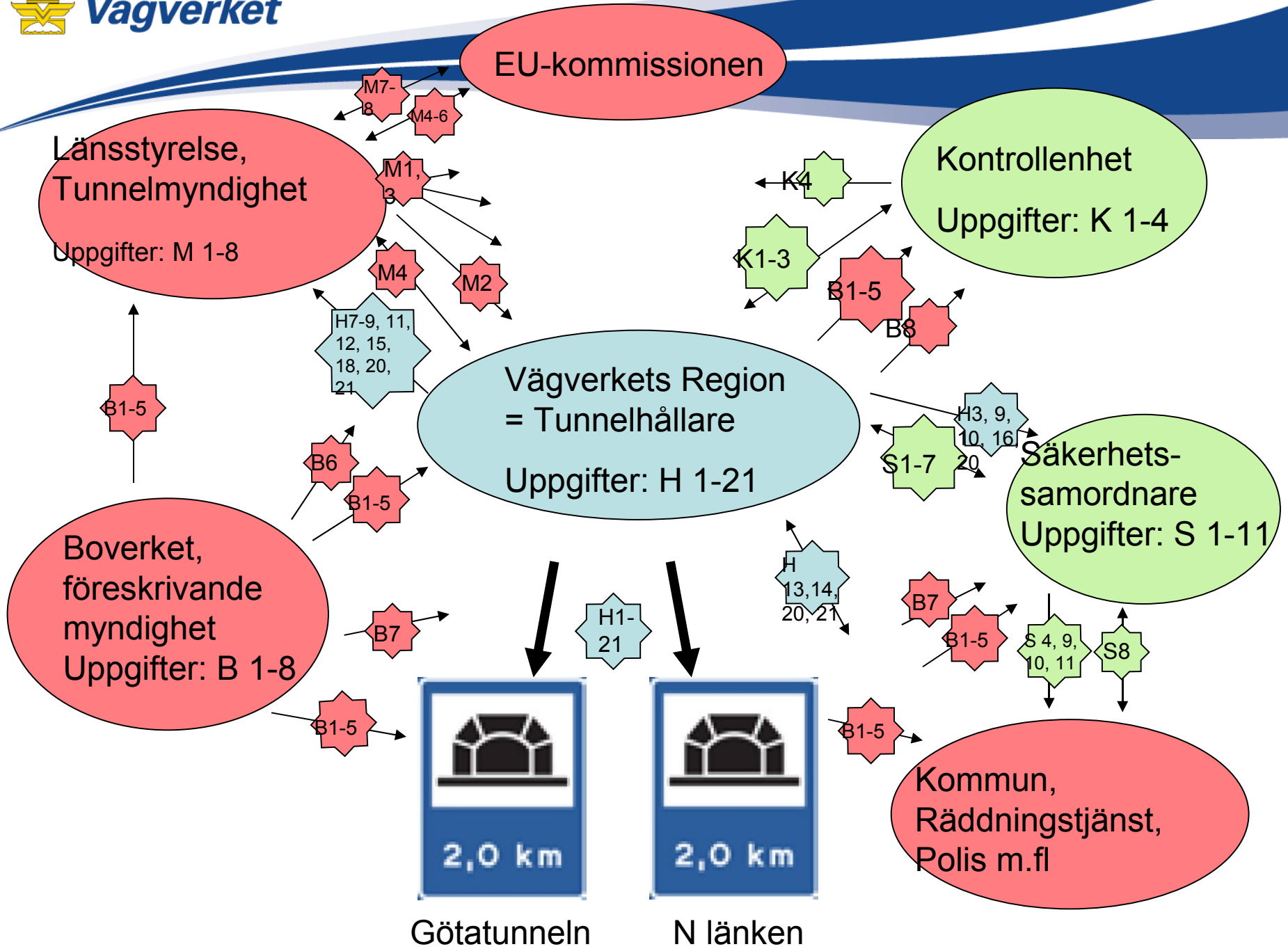
The SRA decided to create a tunnel safety group and the person in charge is the official Safety Coordinator for the SRA tunnels.

This group is placed centrally in the SRA organisation and not in connection with the TM's.

The group was planned to consist of four persons with main experiences from infrastructure, installations, fire and rescue, geometrical design/traffic safety and operation.

Each tunnel will have one appointed officer from the group and this officer is working geographically near the tunnel.

The outcome of the every day work is logged in an internal "diary". Final decisions and approvals are discussed within the group and decided upon by the person in charge.



Tasks for the Safety Coordinator:

2.medverka i tunnelsäkerhetsfrågor

3.delta i utarbetandet av planer för driften av tunneln

4.delta i utarbetandet av säkerhetsplaner och specifikationer för stomme, utrustning och drift

5.kontrollera att tunnelhållaren ger driftspersonal och räddningspersonal den utbildning som behövs

6.ge råd när stomme och utrustning tas i drift samt vid driften av tunneln i övrigt

7.kontrollera att stomme och utrustning underhålls och repareras

8.ge yttrande över planerade ombyggnadsarbeten eller större ändringar i driften

9.bistå den kommunala organisationen för räddningstjänst vid planeringen, genomförandet och utvärderingen av räddningsinsatser

10.säkerställa samordningen med den kommunala organisationen för räddningstjänst

11.delta i utvärderingen av alla olyckor och olyckstillbud

12.upprätta en rapport över varje övning i samarbete med den kommunala organisationen för räddningstjänst och polismyndigheten och sända rapporten till tunnelhållaren.

Independence of the Safety Coordinator

From the Swedish Law SOU 2006:418; 7§:

... Säkerhetssamordnaren skall medverka i frågor som rör tunnelsäkerheten. Varken tunnelhållaren eller övriga arbets- eller uppdragsgivare får hindra eller försöka påverka säkerhetssamordnaren i fullgörandet av dennes uppgifter.

The Safety Coordinator shall take part in the tunnel safety issues.

Neither the Tunnel Owner nor any other person may hinder or try to interfere in the fulfilment of the tasks of the Safety Coordinator.

Very strict wording!

Implementation of the Safety Coordinator role in Sweden.

Remember:

- Need for very good knowledge and experience on tunnel safety
- Do not take over the responsibilities of the Tunnel Manager
- Be distinct in your advice
- Be positive in your work and try to create win-win situations

Implementation of directive 2004/54/EC in Sweden.

KEY ISSUES/CHALLENGES:

- Attitudes-resources
- Standard levels; minimum or for new/future projects
- Safety Documentation
- Ensuring cooperation with emergency services
- Costs for other parties in emergency exercises

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The Tunnel Safety Regulations are the minimum requirements.

The existing internal regulations within the SRA are focussing new projects.

Also a question what to apply for a 490 m tunnel.

KEY ISSUES/CHALLENGES:

- Safety Documentation

Aim at creating a master document that summarizes and refers to the other documents in the tunnel design process.

Make the structure adaptable for changes. Especially in the design stage there are frequent changes.

Undertake spot checks regularly to find out if the Safety Doc. is updated.

KEY ISSUES/CHALLENGES:

- Ensuring cooperation with emergency services

Active support to other organisations.

Demanding!

KEY ISSUES/CHALLENGES:

- Costs for other parties in emergency exercises

Discuss with the other parties to get a common understanding of the need for these exercises and the need for the active support from other parties, within their roles in the society.

The biggest tunnel projects in Sweden 2009:

Norra länken, northern part of the inner ring road in Stockholm.

Under construction, opening in 2015, cost ~1 billion €. Information:

http://www.vv.se/PageFiles/11109/norra_lanken_broschyr_eng_1.pdf

Western Bypass of Stockholm.

17 km tunnel with Aadt 140 000.

In planning/design stage. Opening in 2020. Cost ~2,5 billion €.

More info on both tunnels:

<http://www.vv.se/Andra-sprak/English-engelska/Road-construction-proje>



Thank you for your kind attention!

Questions, please!

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Swedish Road Administration

Safety; emergency exits

Hjälprum

Brandsluss

Hjälprum

100-150 meter mellan nödutgångar



Accident evaluation for the Swedish road tunnels, 1994-2002

318 persons involved:

- 1 fatality,
- 21 people with severely injured and
- 296 people with minor injuries.

The average injury accident rate for the state owned tunnels is 0,39 accidents for 10^{-6} veh.km.

No fires are registered but fires in passenger cars have occurred.

Reporting of Fires, accidents and significant incidents.

By now we have tunnel specific routines but we will try to use

STRADA, the Swedish Traffic Accident Data Acquisition.