

The Use of Photoluminescent Safety Way Guidance Systems in Tunnels



Current situation

Serious incidents have shown lately that appropriate safety way guidance in road and train tunnels as well as the adjoined emergency pass ways - if they exist at all - are deficient or non existent. The final report of the tunnel task force, which has been employed by the Swiss federal road office (ASTRA), comes to the same conclusion.

Objectives

In case of a total power failure and in particular in case of fire break out and smoke formation the optimal visibility of safety way guidance must be ensured. The same applies to traffic tunnels as well as for the pass ways to exits or emergency tunnels. Special attention must be drawn to SOS niches and possible safety rooms.

Current solutions

Electrical or battery-run emergency lights are in use in many places. Their disadvantages are known such as burning out at higher temperatures, susceptibility of break downs, lighting at only a few spots or bad visibility in case of smoke formation.

Experiences - possible solutions

Photoluminescent products have not the disadvantages of electrically or battery run systems. The activation is effected by the existing lighting. The photoluminescent pigments can be reactivated indefinitely. In case of a corresponding incident the photoluminescent effect ensues immediately without any possible failure. Photoluminescent escape route markings are reliable and do not need any special maintenance.

LONGLITE MEGA HS2 - a mega step

In view of an optimal usage in traffic tunnels we have forced the development of pigments together with our partners. At the same time the coating technique was refined. The latest generation is called LONGLITE MEGA HS2. It permits a strikingly better activation even in a low ambient light and guarantees therefore a significantly higher visibility.

Conclusions and notices

In case of an incident escaping people panic and need guidance by means of an efficient safety guide way system. On condition of a correct application escaping people can be led safely out of danger areas by means of LONGLITE tunnel plates.

In order to achieve a reliable guiding effect prime importance has to be given to the distance between the individual elements. Practical tests have shown that the optimal cost benefit ratio lies at a distance of about 10 metres.

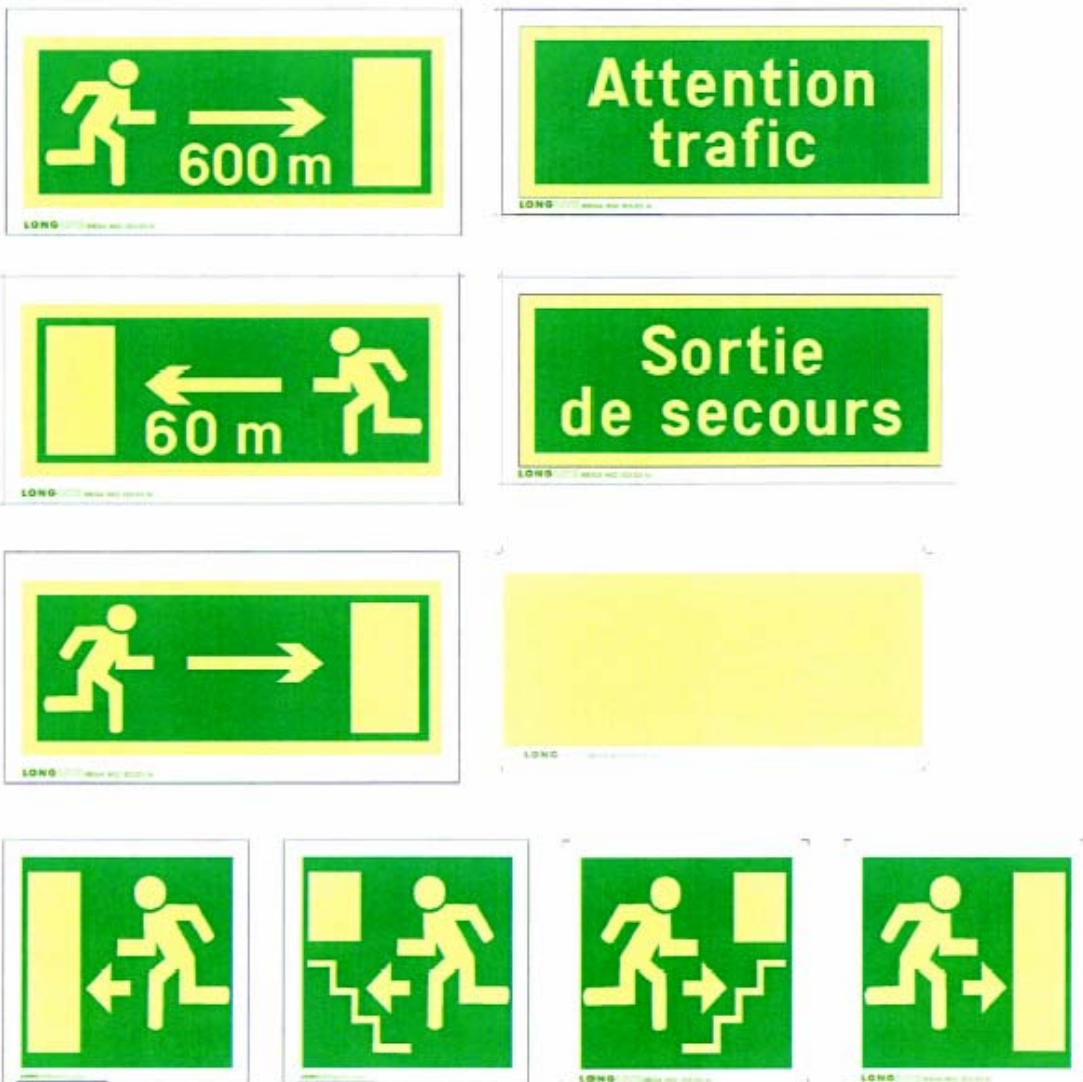
EXAMPLES

☛ **Road tunnels between airport Geneva (Cointrin) and the French border**

Completed: December 2001

Supporting beam: Chromium-nickel Molybdenum steel, 1.4404, thickness 1 mm

Coating: LONGLITE MEGA HS2 with a filth rejecting coating-layer



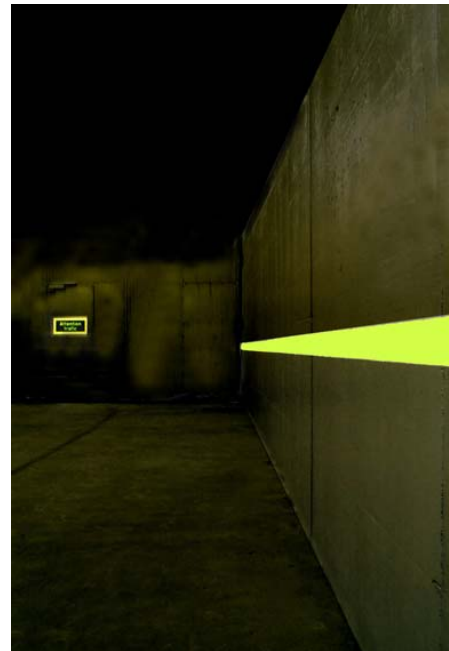
PHOTOS

- ☛ Road tunnels between airport Geneva (Cointrin) and the French border



PHOTOS (safety tunnel)

- ☛ Road tunnels between airport Geneva (Cointrin) and the French border



TECHNICAL DATA

Supporting beam

- Chromium-nickel Molybdenum steel, 1.4404, thickness 1 mm or 0,6 mm
- Aluminium Peraluman®-300 (AL-Mg 3), thickness 1,5 mm or 2,0 mm

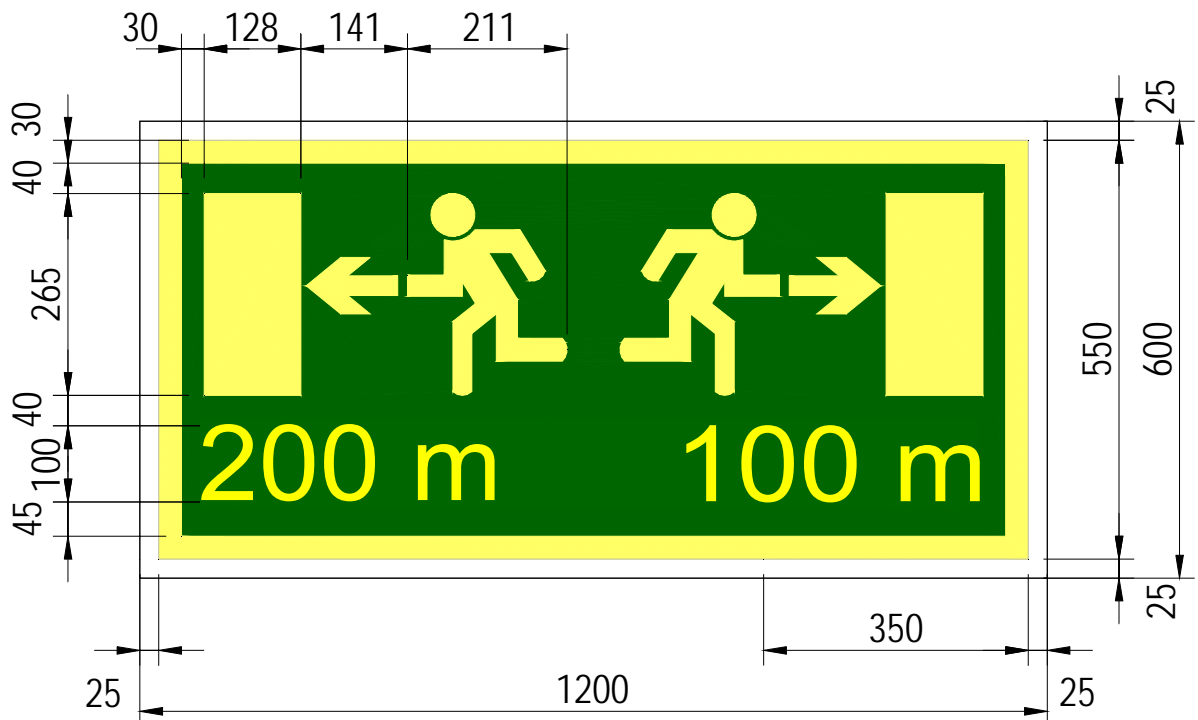
Photoluminescent system (LONGLITE MEGA HS2)

Primer: White annealed lacquered and reflecting primer

Coating: High performance pigment with special high sensitiveness of activation and high photoluminescence

Protection varnish Chemical resistant and filth rejecting coating-layer

Measures for distances



References (Tunnelprojects)

A1	Baregg	2000	Switzerland
A5	Pieterlen 1.Etappe	2000	Switzerland
A1	Genf (Cointrin) – französische Grenze	2001	Switzerland
A1	Vernier	2001	Switzerland
N5	Areuse	2001	Switzerland
N417	Sils	2001	Switzerland
N417	Solis	2001	Switzerland
N2	Nordtangente Basel	2002	Switzerland
A2	Gotthard - Strassentunnel	2002	Switzerland
A9	Gamsen	2002	Switzerland
A13	Mappo –Morettina (1.Etappe)	2002	Switzerland
N5	Vaumarcus	2003	Switzerland
A9	St.Maurice	2003	Switzerland
A9	De l'Arzillier	2003	Switzerland
N6 –	Soliswaldtunnel	2004	Switzerland
N8	Giessbachtunnel	2004	Switzerland
	Chüebalmtunnel		
	Senggtunnel		
	Unterführung Lütschinen		
	Rugentunnel		
	Leissigentunnel		
	Spiezwilertunnel		
	Allmendtunnel		
A9	Tunnel de Sierre	2004	Switzerland
A9	Tunnel de Mont-chemin	2004	Switzerland
A9	Galerie de St.Maurice	2004	Switzerland
A9	Tunnel Arziller	2004	Switzerland
	Sortie de Lausanne		
N2	Nordtangente	2004	Switzerland
N2	Osttangente	2004	Switzerland
N1/N5/ N16	Rüdtlingen-Alchenflüh	2005	Switzerland
	Ligerztunnel	2005	Switzerland
	Pieterlen (2.Etappe)		
	La Rochette		
	Piere Pertuis		
	Côte Chauv		
	La Heutte		
	Schweizermais /	2002	Austria
	Amberg / Vorarlberg	2002	Austria
	Ytram		NL
	Caland		NL