



Dispositions Constructives et Sécurité des Usagers des Tunnels routiers/Road Tunnels Structural Design and User's Safety

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Underground Space Association

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ABOUT ITA/AITES - MEMBERSHIP

- **Non-Profit and Non-Governmental Organization - Founded in 1974**
- **Federation of 52 Member nations**
- **In addition 9 nations only represented by affiliate members**
- **140 Corporate affiliate members**
- **144 Individual affiliate members**
- **11 Prime Sponsors and 5 Supporters**

ABOUT ITA/AITES – MISSION and MEANS

ITA Mission

Promotion of the Use of Underground Space: « Why Go Underground? »

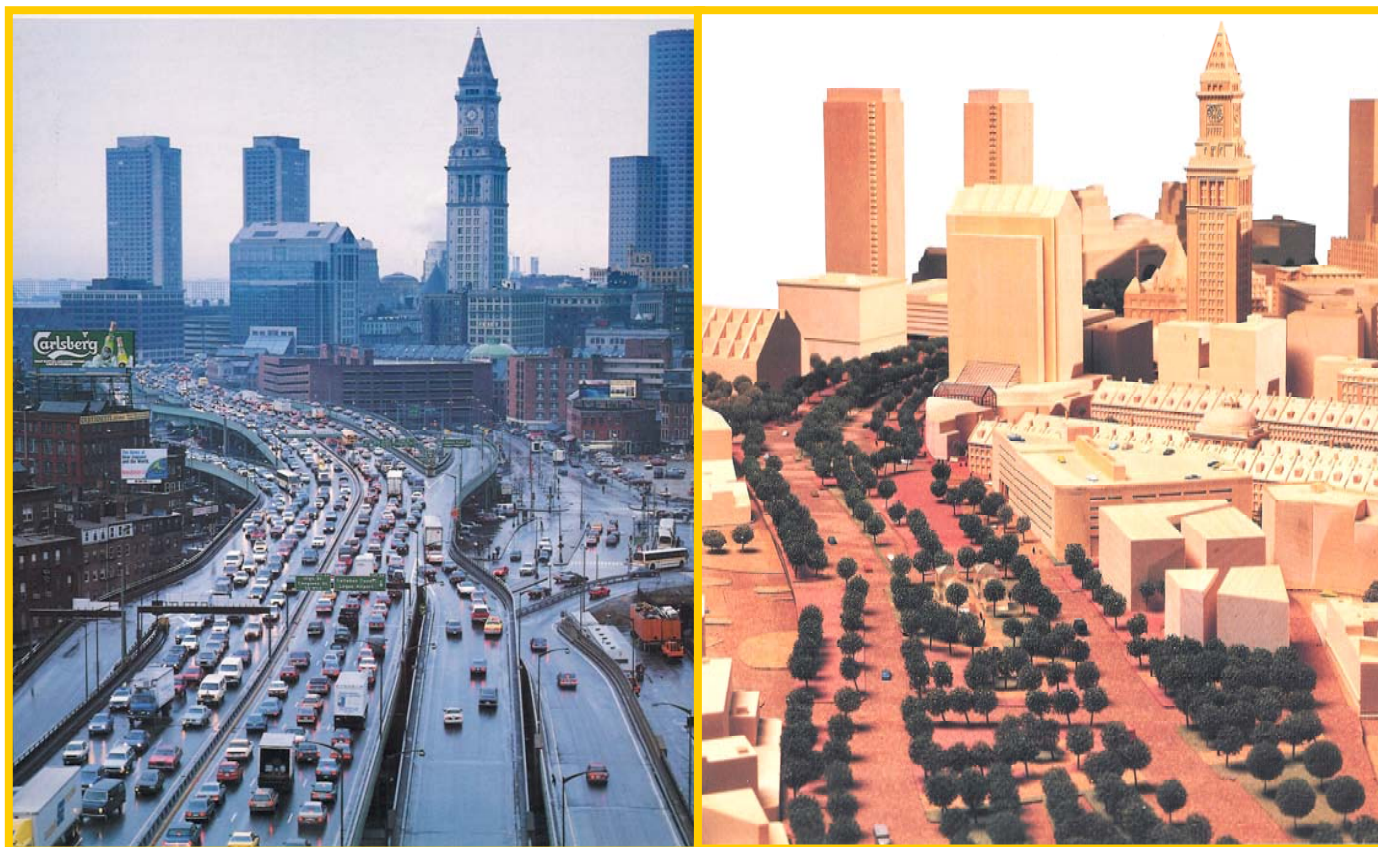
ITA activities:

- **Working Groups reports**
- **Organization of Seminars and Conferences**
- **Organization of Training Sessions**
- **Close relationship with the International Institutional Organizations like UN and EU and with the International Technical Associations, like PIARC**
- **Communication with the General Public**

WHY GO UNDERGROUND

CENTRAL ARTERY – BOSTON (USA)

City traffic tunnels clear vehicles from surface streets, traffic noise is reduced, air becomes less polluted



WHY GO UNDERGROUND

CAR PARK IN MARSEILLE (FRANCE)

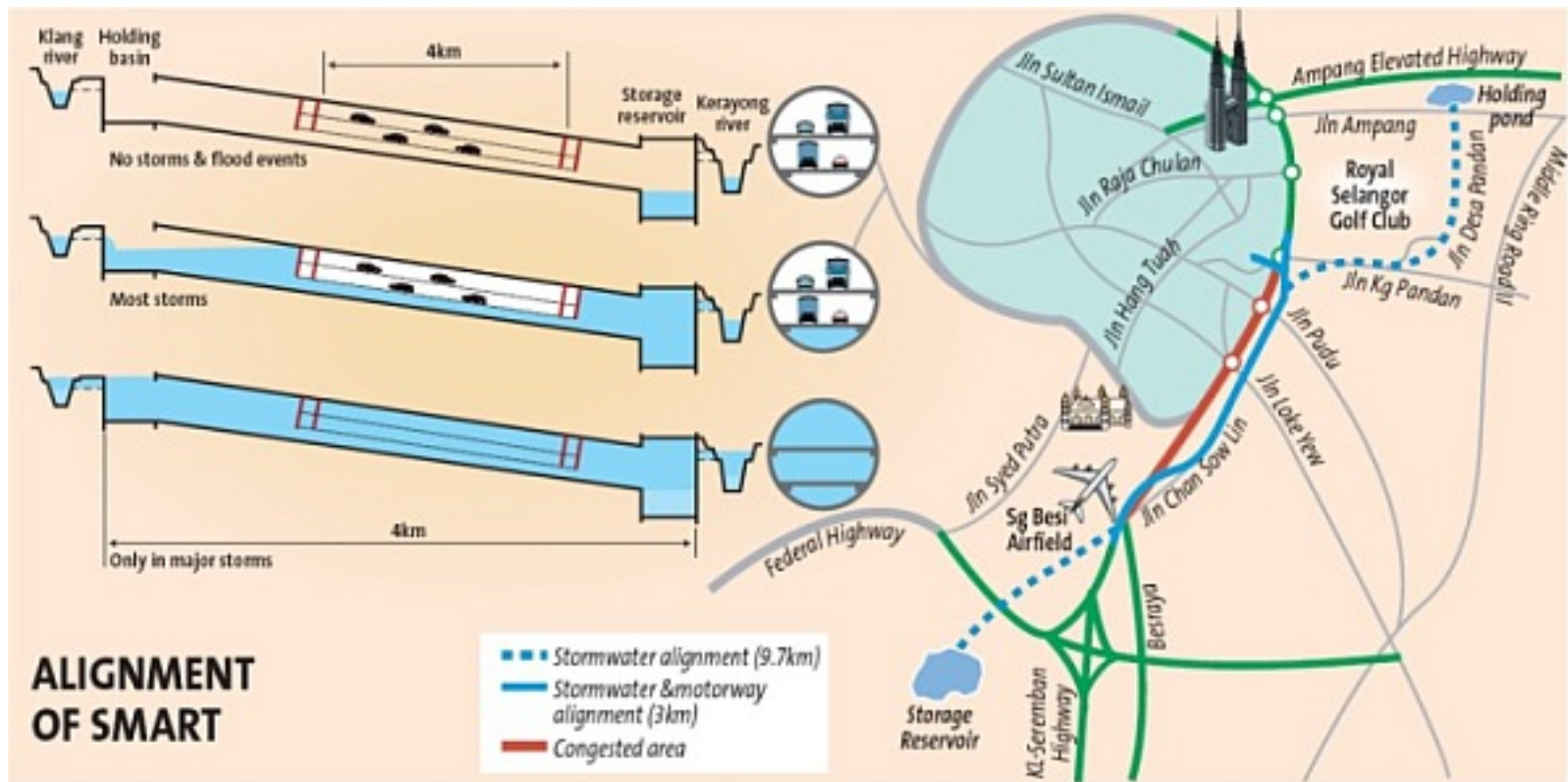
Situation «before» and «after» the construction of the underground car park



WHY GO UNDERGROUND

SMART TUNNELS IN KUALA LUMPUR: ROAD + OVERFLOW

Road Tunnel occasionally Water Tunnel in case of flood



AIPCR/PIARC TC 3.3 AND ITA/AITES


- Relationship developed since the creation of ITA in 1974 (common Secretariat up to 1989)
- M.O.U. signed in 2005 for reciprocal participation and promotion of the activities
- PIARC TC 3.3 President is also ITA-COSUF Vice-President (Committee on Operational Safety of Underground Facilities)
- Roads/Routes N° 323 – July 2004 on Fire Safety in Tunnels
- Joint Guidelines for Structural fire resistance for Road Tunnels (2004)

SAFETY AND STRUCTURAL FIRE RESISTANCE


Association mondiale de la Route

AIPCR
VIA
VITA
PIARC

World Road Association



ITA - AITES



La sécurité incendie dans les tunnels
Fire safety in TUNNELS

UN NUMERO SPECIAL
TUNNELS
A SPECIAL ISSUE

PRESENTED BY the WORLD ROAD ASSOCIATION
and the INTERNATIONAL TUNNLLING ASSOCIATION.

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INTERNATIONALE DES TRAVAUX EN SOUTERRAIN
AITES

ASSOCIATION
INTERNATIONAL
TUNNELING
ASSOCIATION
ITA

Towards an improved use of underground space

In Consultative Status, Category II with the United Nations Economic and Social Council
<http://www.ita-aites.org>

International Tunneling Association
Association Internationale De Travaux En Souterrain

*GUIDELINES FOR STRUCTURAL
FIRE RESISTANCE
FOR
ROAD TUNNELS*

*DIRECTIVES POUR LA RESISTANCE AU
FEU DES STRUCTURES DE TUNNELS
ROUTIERS*

BY
Working Group No.6 Maintenance and Repair

SAFETY AND STRUCTURAL FIRE RESISTANCE



2 BAB-Tunnel-Moorfleet, Hamburg nach dem Lkw-Brand im Jahre 1968



Courtesy STUVA

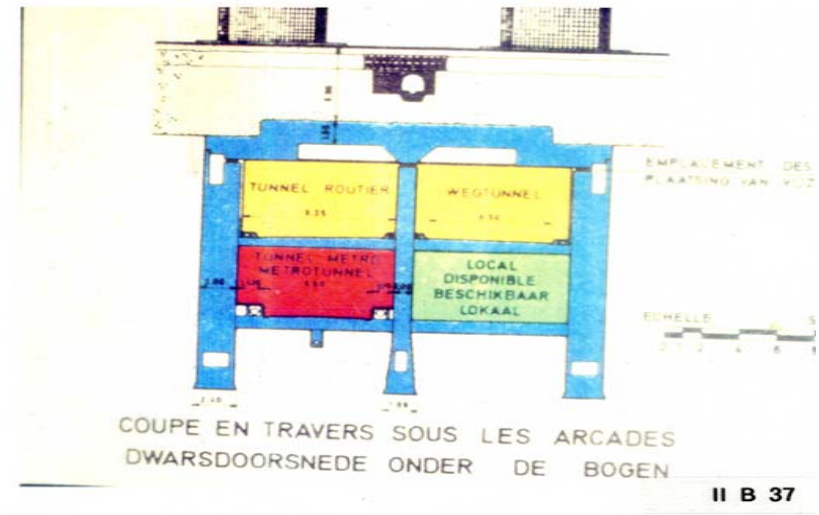
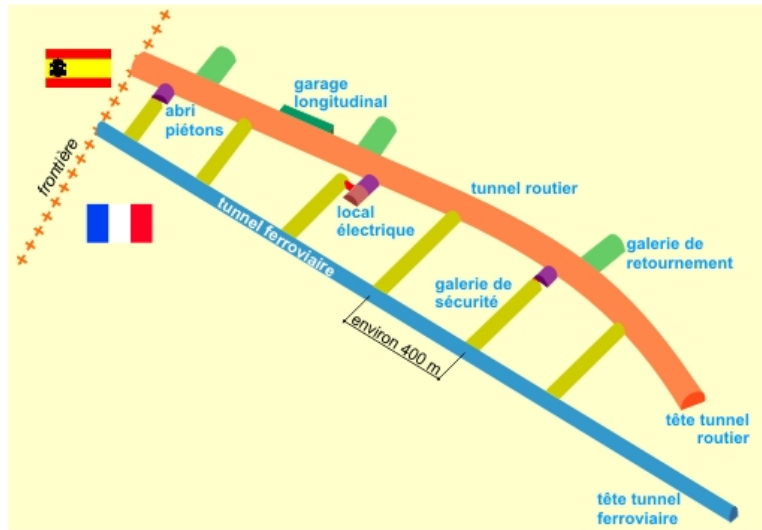
SAFETY EXITS

Examples of
Emergency Exits in
Belgium and
Malaysia

Consequences on
the excavation

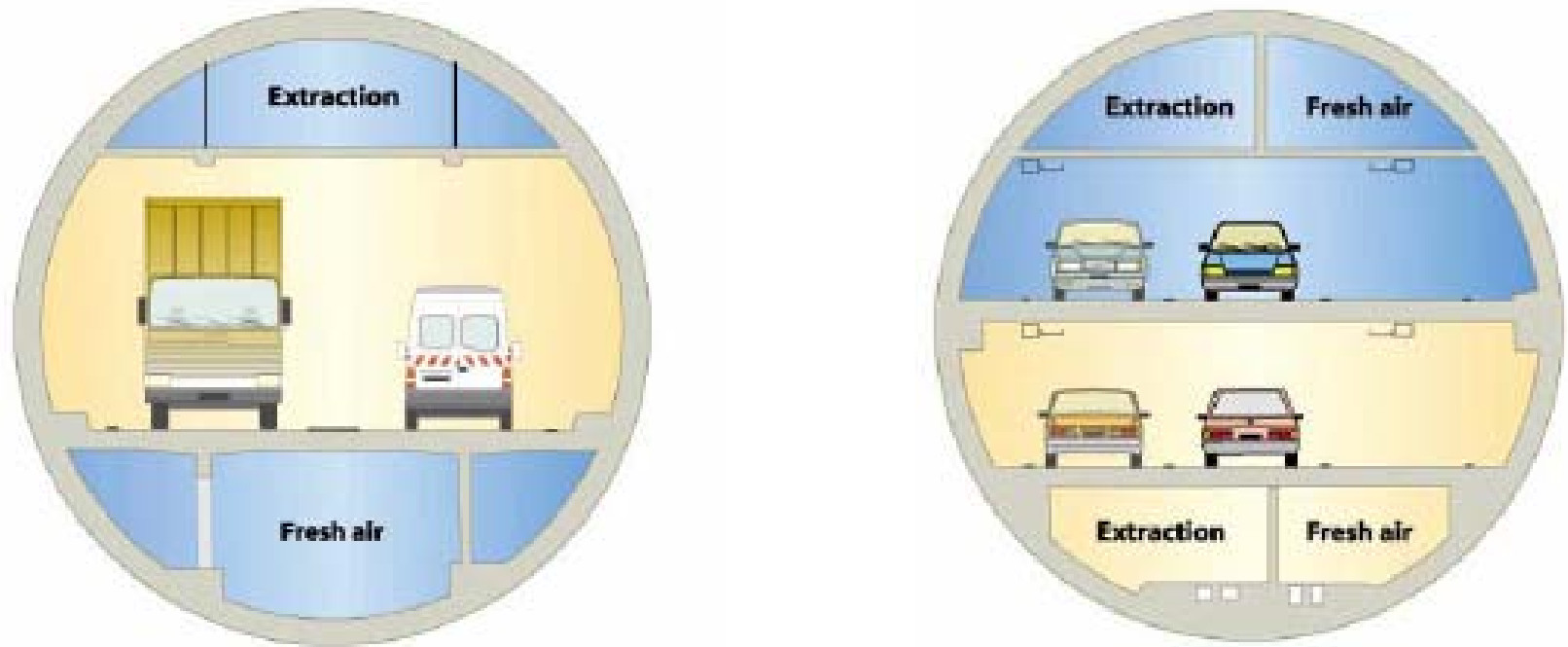


SAFETY AND OWNERS COORDINATION



- Examples of good coordination:**
- Somport Tunnel (Spain – France)
 - Bruxelles (Belgium)

SAFETY AND GEOMETRY



Same Excavation – Different Geometry

SAFETY AND PAVEMENT

TWO TUNNELS:

Similar colour of lighting

Similar colour of walls

Different Geometry

**TWO TYPES OF
PAVEMENT**

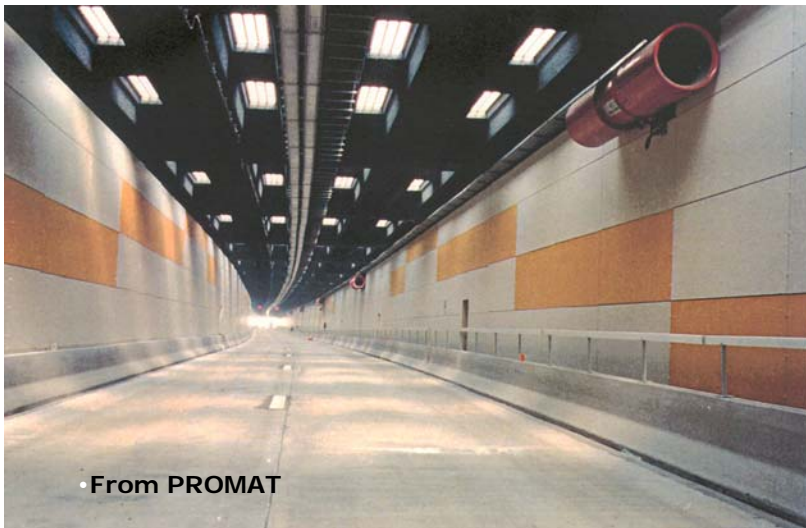
**TWO RESULTS IN
TERM OF CONTRAST**



SAFETY AND CHOICE OF MATERIALS



CLEANING = MAINTAIN
VISIBILITY



SURFACE RESISTANCE TO
MULTIPLE CLEANING

COLOR STABILITY = SAFETY

From PROMAT

SAFETY AND VISIBILITY AT THE ENTRANCE



Courtesy CETU



TO CONCLUDE

Construction time: around 5 years
Operating time: 100 years (at least)

The users cannot understand that they are facing risks linked to costs savings during construction

ITA and PIARC are working together in order to integrate the question of Users Safety already during Design and Construction