

## Closing remarks Farewell

### The First International Seminar on Road Tunnel Operation, Management and Safety

Chongqing, 18-19 October 2006



### Closing remarks

- On behalf of the PIARC Technical Committee C 3.3 "Road Tunnels Operation"
- Thank you very much for your hospitality
- We are very glad to have had the opportunity to co-organise and to attend this Seminar
- We are very glad to have had the opportunity to spend these days with you in Chongqing, China

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### Closing remarks

- On behalf of the PIARC Technical Committee 3.3 "Road Tunnels Operation"
- Special thanks to:
  - Chongqing Communication, Research and Design Institute (CCRD)
  - Tunnelling Engineering Society of China (TESC)



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### ENCOUNTER



St. Barbara (old picture)  
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Quan Yin, Goddess of mercy (Dazu carving)

*ENCOUNTER  
In CHONGQING,  
a city of  
encounters*



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Chongqing People's Square

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Tunnels are very old



Wuzhen 3300 ft toll tunnel, Switzerland, 1875



Old roman mine (Spain)



Austrian catacomb



Egyptian Tomb

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They have been always made by men...



Lotchsberg Tunnel

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They have been always made by men...



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...for men to use 1/2



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Madeira island (Portugal)

...for men to use 2/2



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But tunnel technology can be very modern 1/2

- New High Speed Railway Tunnel at Guadarrama (Spain)
- 28 km long
- Two tubes
- Under construction
- In operation at 2008



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## But tunnel technology can be very modern 2/2

- Back view of Dulcinea EPBS (biggest in the world at this moment)
- M-30 road ring (Madrid)
- South bypass
- 2 tubes
- 3 lanes each
- ~ 2 km long
- Operation in 2007



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## The 1st International Seminar on Road Tunnel Operation, Management and Safety

- About 200 participants
- Proceedings (english version)
  - 278 pages
  - 29 papers
    - 23 chinese papers
    - 6 overseas papers
- Oral presentations at the Seminar
  - 17 presentations
    - 8 chinese presentations (5 from the proceedings)
    - 9 overseas presentations (4 from the proceedings)

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## The Seminar

- “A seminar is a place to learn and communicate ”
  - Zhou Fengjun, at the beginning of his presentation at the Seminar on 18/10/2006
- What have I learned at the Seminar?
  - About tunnels in China?
  - About the questions treated by chinese colleagues?
  - About chinese roads tunnel technology?
  - About some issues actually in study/discussion?

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## Road Tunnels in China (according Duan Guoqing, page 112)

- At the end of 2004
  - 2.495 tunnels
  - with a total length of 1.246 km
- Actually (in operation and/or construction)
  - 60 tunnels with length > 3 km.
  - 14 tunnels with length > 5 km
  - 9 tunnels with length > 6 km
  - 7 long underwater tunnels
  - Qinling tunnel with a length of 18,4 km, the longest one in Asia

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### Tunnels referred to by Chinese authors

Tunnel	Length (km)	Observations	1 <sup>st</sup> Author	Page
MARIA DE MOLINA	2,800	Urban/Madrid (Spain)	KENG ZHANG	23
QINLING	~18,4	Longest in Asia	LI YUTONG	137
XUEFENG	~ 7		LIU WEI	152
XIAMEN	5,9	3,8 Km under sea	LIU WEI	157
XI HUALING	4,291/4,312		LI WEI PING	167
CANGLING	7,536/7,605	3.350 m over sea level	WU DEXING	198
ZHEGUSHAN	4,424		HE CHUAN	207
ERLANG	No data		HE CHUAN	207
QINLING	~18	Longest in Asia	XIE JONGLI	214
YANMENJIE	3,785/3,705		REN HUI	223
WU SHAOLING	4,861	GZ45th Nat Highway 2.200-2.800 m over sea level	HAN YOUXU	230
AN YUAN	7,107			
GAOLING	6,268			
KAO YISHAN	~ 3	NAN Freeway	WENG XIAOXIONG	241
YANG GIAO	No data	Tunnel group	PENG GIANKAN	254
YAN LIESHAN	3,771	Tunnel group	HUANG ZHENG	272
CHONGQING HWY	No data		LI ZHUWEI	NO
CHENGYOU HWY	No data		LIU XIANMING	NO

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### Basic questions discussed by chinese authors in the oral presentations

- Natural risks
  - (Zhou Fengjun)
- Illumination
  - (Han Shi)
- Assessment of fire damage to structure
  - (Zhou Rengqiang)
- Ventilation
  - (Qu Shihao)
- Tunnel operation management
  - (Liu Xianming)

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### Chinese Standards mentioned in Proceedings

- Technical specifications for construction of highway tunnels (1995)
- Specifications for design of ventilation and lighting of highway tunnels (1999)
- Technical standards of highway engineering technology (2003)
- Traffic engineering design specification of highway tunnels (2004)
- Safety standards of road engineering(2004)

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### Issues are the same all over the world 1/2

- Use of spraying sprinklers against fire
  - **Yes** Study on fire preventing technology for subsea tunnel of Xiamen east passage
    - Liu Wei, Zeng Chao, Tu yun, Huang Hongyuan (page 157)
  - **No** Research on new fire-fighting technology
    - Sun Yiyang, Yan Jingyi (page 190)
- An assessment of fixed fire-fighting systems
  - Report of Working Group 6 of PIARC Technical Committee C 3.3
  - Discussed in PIARC C 3.3 meeting at Chongqing (17 October 2006)

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Issues are the same all over the world 2/2

- Passive fire protection for concrete
  - Study on fire preventing technology for subsea tunnel of Xiamen east passage
    - Liu Wei, Zeng Chao, Tu Yun, Huang Hongyuan (page 157)
  - Assessment of fire damage in tunnel structure
    - Zhou Renqiang, Wang Mingnian, Guo Chun (page 183)
- Passive fire protection for concrete
  - Workshop co-organised by ITA and the British Tunnelling Society (BTS)
  - London 6th October 2006
  - Similar points of view

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Workshops/Seminars of PIARC TC 3.3 in China

- 1<sup>st</sup> in Beijing, 2003
- 2<sup>nd</sup> in Chongqing, 2006
- 3<sup>rd</sup> in \_\_\_\_\_?, 200\_?
- We are awaiting



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AIPCR  
PIARC  
World Road Association

2006 公路隧道运营管理与安全国际学术会议  
The First International Seminar on Road Tunnel Operations Management and Safety

Dear friends and colleagues:  
On behalf of the PIARC  
Technical Committee C 3.3  
Road Tunnels Operation

**See you again**

**Thank you very much**

**Farewell**

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