Development and Practice of Road Infrastructure Safety Facilities in China

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1. Road Transport Development

◆ A Huge Highway Network in China

◆ End of 2015:
  ◆ 4.57 million km highway
  ◆ 123,500 km expressway
Vehicles and Drivers

- **Number of Vehicle**: 279 million
  - Automobile: 174 million
- **Number of Driver**: 280 million

*Vehicle in the End of 2015: 279 Million*

*Licensed drivers 280 Million*
Transportation affects all aspects of China

- Provide the basic condition for people to live, work, study and travel
- Promote the unity and prosperity of the national market
- Contact China with the world, and support China's economic development miracle

Everyday the road transportation system

- Provides the inter-city travel services for 44 million people
- Achieves the freight volume of 86 million tons

Change the life of Chinese people

- Support more than 40 million families realize the “dream” to have their own cars, and enrich their life
2. Overview of Road Traffic Safety

- Traffic accidents decrease continually
  - **2013 VS. 2003:**
    - Number of fatality decrease: 43.91%
    - Number of injured decrease: 56.75%
Main measures and work in past 15 years

Law and Measure
- Issued “Road Traffic Safety Law” in 2004
  - Revised in 2007 and 2011
- “School Bus Safety Management Regulations” (issued in 2012)
- Driver supervision: built national commercial vehicle monitoring system

Highway Safety Improving Engineering
- Highway Safety Facility Standards

Education
- “Civilized Traffic Action”
- “National Traffic Safety Day”: From 2012, each 2th December

Enforcement of traffic laws
- Penalize traffic violation
- Install technical equipment of enforcement
3. Development of Road Safety Infrastructure Facility

3.1 Specifications & Standards

- “Technical Standard of Highway Engineering (JTG B01-2014)”
  - Revision standard of highway engineering (first one issued in 1954), Including:
    - General rules: classifications, traffic volume, design vehicle, design speed etc.;
    - Design criteria: road geometric alignment design parameters, loading standards, road base, road surface, bridge and culverts, tunnels and interchanges;
    - Rules for road affiliated facilities.


Traffic Signs & Road Markings

- Systematic regulations of road traffic signs and markings (1951)
2008: Guideline for Implementation of Highway Safety Enhancement Project


Road Safety Audit

- First introduce to China in middle of 1990s:
- “Guidelines for Safety Audit of Highway” issued in 2004
- “Specification for Highway Safety Audit” issued in 2015
3.2 Demonstration projects

- Coverage: 17 Provinces
  - e.g. Jiangsu, Zhejiang, Yunnan, Guizhou etc.
  - Length: 11,400 kilometers
  - Established: Road traffic safety technique support system

- Road traffic safety risk assessment system
  - Anhui, Guizhou, Yunnan and Shanxi Provinces

- Various low-cost, high cost-effectiveness safety protection facilities
  - Fokai motorway, Jingjintang motorway, parts of Yunnan-Guizhou-Chuan mountainous highways

- Road safety audit: widely promoted and conducted
3.3 Examples of traffic safety engineering effects

(1) Infrastructure improvement and reconstruction

Before the improvement and reconstruction
After the improvement and reconstruction

(Containment )
(2) Improving of Signs and Road Markings
Rumble stripes
- Update Engineering of Expressway Guide Sign
  - Renumbering of National Expressway in 2011
  - Update Engineering in 2012
(3) Improving of Roadside Barrier

Before improvement
After improvement

Safety barrier end treatment
Before improvement
After improvement
（4） Channellization
（5）Improving Field of Vision (Sight Distance)
（6）Emergency Escape Ramp
(7) Comprehensive Improvement

- Slowdown By Markings
- Sign
- Improving field of vision
- Barrage
4. International Collaboration & Service

- Join ISO PC241/TC241 Work
  - Road Traffic Safety Management Systems

- China Sweden Research Center for Traffic Safety
  - 2011: China-Sweden signed MOU
- RIOH & MIROS, Malaysia Signed MoU in 2011
  - RIOH and Malaysia Institute of Road Safety

- Sino MOT-US DOT MoU on Road Traffic Safety Management

- Road Assessment: iRAP & ChinaRAP
  - 2007: Signed framework with iRAP
  - 2012: Established ChinaRAP team
  - ChinaRAP inspected more than 100,000km roads in 15 provinces of China
  - Over 20 projects, 2 continents (in Asia & Pacific)
Other International Collaboration
5. Look into the Future

More complete road infrastructure safety facilities

Rational Specifications
- Performance Evaluation
- Design & Setting
- Others

Reliable Facilities
- Improve in-use performance
- Develop new types safety facilities
- Others

Reduce to minimum damage & loss
Specifications Improvement

✓ Specification for Design of Highway Safety Facilities (JTG D81-2006);

✓ Technical Specification for Construction of Highway Safety Facilities (JTG F71-2006);

✓ Revise of Road Traffic Signs and Markings (GB5768-2009)

NOW draft stage

Expected publish 2017
Thank You!

Eliminate hidden dangers, Cherish life