Pavement in Japan

Kazuyuki Kubo
Leader, Pavement Team
Public Works Research Institute
Paved Rate
Road Networks and Paved Roads

Motorway 7,300km

**National Roads 22,100km**
(Managed by MLIT)

National Roads 32,000km
(Managed by Prefecture and Metropolitan Cities)

Prefectural Roads 129,000km

Municipal Roads 997,300km

Total 1,187,700km

Asphalt

Cement

Not-paved

(2004.4.1)

Asphalt 6,800km
Cement 500km

Asphalt 21,000km
(for Light Traffic 400km)
Cement 1,100km

Asphalt 30,600km
(for Light Traffic 4,700km)
Cement 1,000km
Not-paved 400km

Asphalt 122,200km
(for Light Traffic 47,600km)
Cement 1,700km
Not-paved 5,100km

Asphalt 698,000km
(for Light Traffic 573,500km)
Cement 50,800km
Not-paved 248,500km

Asphalt 878,600km
(for Light Traffic 626,200km)
Cement 55,100km
Not-paved 254,000km
Manuals for pavement technologies had been published and revised by Pavement Committee in Japan Road Association:
- Asphalt Pavement in 1950
- Cement Concrete Pavement in 1955
- Recycling in 1980
- Drainage Asphalt Pavement in 1995

In 2001, the Ministry of Land, Infrastructure, Transport and Tourism established “Technical Standard for Pavement Structure”, which is based on performance-based specification.
Recycling Ratio of Asphalt Concrete is Over 98%
• Recycle pavement by-products at a stationary mixing plant (recycling mixing plant)
• Reuse them as pavement materials
Plant Recycling

- Most popular in Japan
- Recently, the ratio of recycled asphalt mixture is close to 70%.
- Recycled asphalt mixture has already been promoted to use according to the following law
  - Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (*Law on Promoting Green Purchasing*), enacted in FY2000
Drainage Asphalt Pavement

Surface course; Porous Asphalt Mixture

Binder course; Dense-graded Asphalt Mixture / Coarse-graded Asphalt Mixture

**Typical Properties of Porous Asphalt Mixture**
- Maximum Particle Size: 5～13mm
- Air Voids: 17～23%
- High Viscosity Modified Asphalt

4~5cm

5cm
Advantage of Drainage Asphalt Pavement

- The place where requires some countermeasure for traffic noise
  - Attention to the performance of noise reduction
  - Performance specification by the noise level

- The place where the safe drive in rainy days is required
  - Attention to the performance of water drainage
Improve Road Safety in Rainy Days

- **Less water on road surface**
  - Improve skid resistance
  - Improve driver’s sight

- **More than 70% of Expressways are paved by Drainage Asphalt**
Thank you for your attention