



Road Winter Maintenance Management in Latvia

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Latvian State Roads



Country data

- Latvia is located in North-Eastern Europe, with area 64.6 thousand km²;
 - Population - 2.4 million;
 - State roads: 20.2 thousand km;
 - Other roads: 49.3 thousand km;
 - Registered vehicles: 898.1 thousand;
 - Cars: 686.1 thousand.
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Location



Climatic Conditions

- Climatic conditions vary from maritime to continental;
- In winter temperature ranges from $+14^{\circ}\text{C}$ down to -30°C (average in January is -5°C);
- Snow layer is 20 -126 cm;
- Up to 25 thaws during winter.

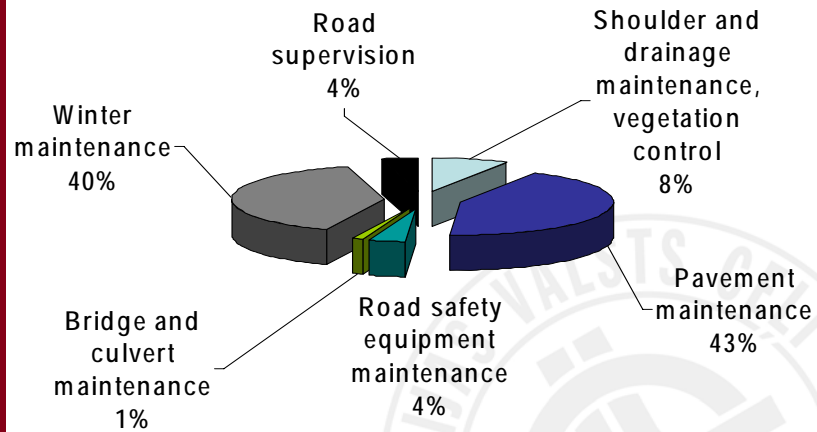
State Road Network

Roads	Asphalt pavement (km)	Gravel (km)	Total (km)
Main roads	1622	—	1622
1 st class roads	3981	1360	5341
2 nd class roads	2502	10762	13264
Total	8105	12122	20227

Financing of Winter Maintenance 2004

- Annual state road budget - 59 mill. EUR, including routine maintenance budget of 29 mill. EUR:
 - 12 mill. EUR for winter maintenance,
 - 16 mill. EUR for other works.

Structure of Routine Works in 2004



Winter Service Classes

Traffic flow AADT	Main roads	1 st class roads	2 nd class roads
>5000	A	A	-
1000 - 5000	A1	A1	A1
500 - 1000	A1	B	B
100 - 500	-	C	C
<100*	-	-	D

* The regular public bus is not served on the low volume road

Road Conditions in Normal Winter Weather

Road condition	Maintenance class				
	A	A1	B	C	D
	Acceptable conditions				
Average compacted snow depth, cm	-	-	4	10	*
Evenness of road surface	Even surface	Some uneven ice spots allowed	Ruts up to 20mm allowed	Ruts up to 40mm allowed	*

*snow ploughing 4 times in season

Class A Road 3 Hours after Snowfall



Road Conditions in Changing Winter Weather

Road condition	Maintenance class				
	A	A1	B	C	D
	Acceptable conditions				
Average loose snow depth, cm	6	6	8	10	No demand
Slush, cm	3	3	4	5	No demand
Evenness of road surface	Ruts <= 10mm	Ruts <= 20mm	Ruts <= 20mm	Ruts <= 40mm	No demand

Period of Validity of the Standard

Winter maintenance class	Period of validity
A	6.00 – 22.00
A1	6.00 – 20.00
B	6.00 – 18.00
C	6.00 – 18.00
D	–

Traffic Flow on the Main State Roads



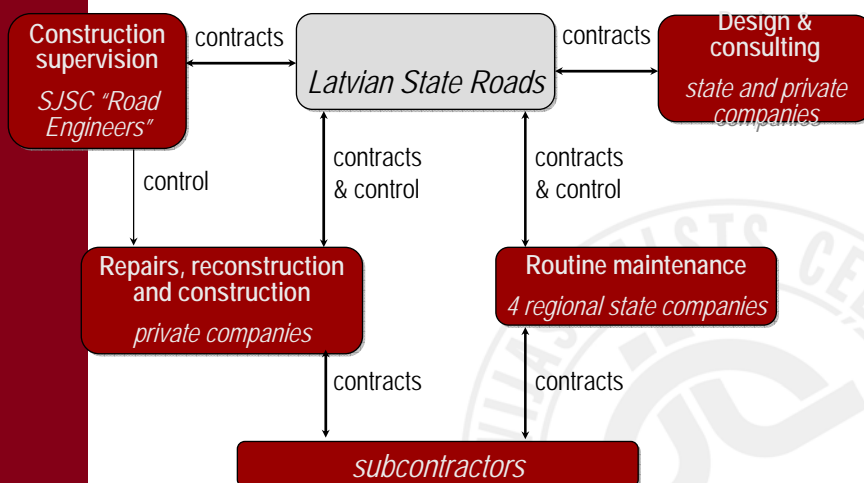
Level of Service



Winter Standard Implemented in 2004/2005

Standard class	Implemented, km	% from network
A	625.0	3.1
A1	1597.7	7.9
B	2713.7	13.4
C	12447.5	61.5
D	2843.1	14.1
Total	20227.0	100

Road management





Winter Maintenance Technologies in Use

- Wet salt technology started in 1996. Today it is the major technology on high traffic volume roads;
- Sand and salt mix on low volume roads;
- Scraping (wrinkling) of compacted snow coated road surface from 1998.



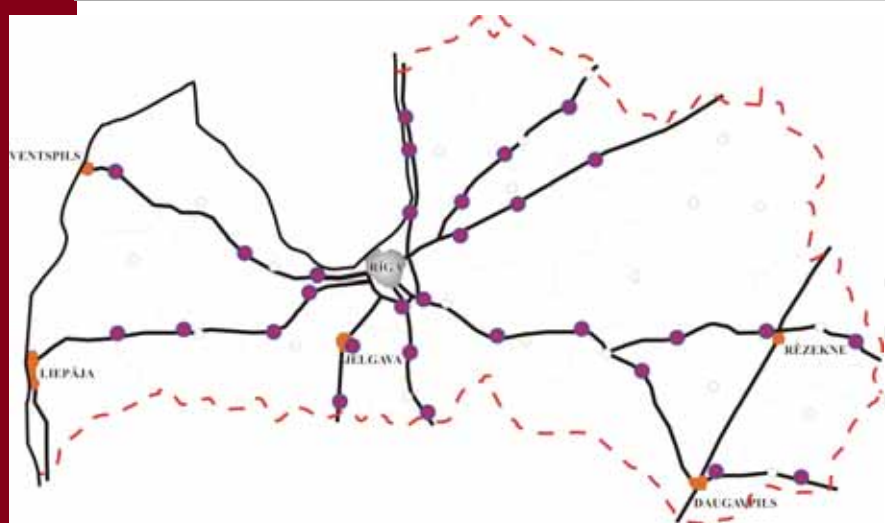
Wrinkled Surface of Class B Road



Road Weather Information System

- Latvian RWIS consists of 35 RMS, 6 workstations and a central computer;
- 4 winter maintenance dispatch centres;
- Common RWIS for road users in the Baltic States:
www.balticroads.net .

Latvian Road Weather Information System





References

- www.lvceli.lv;
- www.sam.gov.lv;
- www.meteo.lv;

