Solution winter and summer routine maintenance of motorways.

Head of Financial Assistance project Handling division
Remigijus Lipkevičius
shape public policy, organize, coordinate and oversee its implementation of all-tipe transport

Lithuanian Road Administration
organizing and coordinating the reconstruction, maintenance and development of the state roads

State Enterprises
delegated authority and responsibility to carry out maintenance, repair and inventory of state roads
State Roads statistic

Main 1 750 km

National 4 927 km

Regional 7 416 km

Total length 21 263 km

Asphalt 14 093 km (66%)
Gravel 7 170 km (34%)
Asphalt pavement: 97,70 km²
Gravel pavement: 56,32 km²
Paths: 2,52 km²
Traffic signs: 198306 vnt.
Lighting: 7906 vnt.
Bridges: 1234 vnt.
Viaduct: 268 vnt.
Culvert: 26535 vnt.
Road barriers: 1947 km
Bus Stops: 10183 vnt.

and others
Winter maintenance levels

- 1st level of Main roads (M1)
- 2nd level of Main roads (M2)
- 1st level of National roads (K1)
- 2nd level of National roads (K2)
- 3rd level of National roads (K3)
- 1st level of Regional roads (R1)
- 2nd level of Regional roads (R2)
- 3rd level of Regional roads (R3)
Road Management Structure

Ministry of Transport and Communications

Lithuanian Road Administration

State Enterprises

Alytaus RK
Kauno RK
Klaipėdos RK
Marijampolės RK
Panevėžio RK
Šiaulių RK
Tauragės RK
Telšių RK
Utenos RK
Vilniaus RK

Road No A1
Road No A2

Total 415 km
Statistical data on motorways:

- **Road No. A1**
  - Distance: 296 km
  - Traffic density average: approximately 25,000 vehicles per day
  - Max traffic: 50,253 vehicles per day
  - Min traffic: 9,458 vehicles per day
  - Key cities: Vilnius, Kaunas, Klaipėda

- **Road No. A2**
  - Distance: 119 km
  - Traffic density average: approximately 15,000 vehicles per day
  - Max traffic: 29,562 vehicles per day
  - Min traffic: 7,325 vehicles per day
  - Key cities: Vilnius, Panevėžys

- **Road Categories**:
  - M1: 1st level of Main roads maintenance in Winter
  - M2: 2nd level of Main roads maintenance in Winter
  - M3: 3rd level of Main roads maintenance in Summer
## Winter Maintenance Requirements

### Winter Road Maintenance Requirements 2016 m.

<table>
<thead>
<tr>
<th>Level of Road Maintenance in Winter:</th>
<th>M1 🥶</th>
<th>M2 🥶</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length of motorways:</td>
<td>105 km</td>
<td>310 km</td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>75%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Winter service working time</th>
<th>0-24 h</th>
<th>4-22 h</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>During the snowfall or blizzard the permitted layer of snow on the carriageway is not more than</th>
<th>4 cm</th>
<th>7 cm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>When the road is covered with ice or snow overnight, de-icers should be spread</th>
<th>24 h</th>
<th>till 7 am</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>After the snow stops, all roads should be cleaned and de-icers spread</th>
<th>within 2 h</th>
<th>within 3 h</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Under normal weather conditions, the pavement should be free of snow or ice</th>
<th>yes</th>
<th>yes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Traffic under extreme weather conditions may be interrupted</th>
<th>no longer than 3 h</th>
<th>no longer than 4 h</th>
</tr>
</thead>
</table>
Winter Maintenance

- Salt spreaders: 46
- Tractors: 25
- Autog graders: 11
- Other: 19 (rotor snow ploughs, salt loaders, and etc.)

Total: 101
Winter Maintenance GPS tracking
Winter Maintenance GPS statistic

2015-2016 m žiemos kelių priežiūros mechanizmų statistika (mechanizmų darbo dienų sk.)
Winter Maintenance

40 mobile optical road friction sensors RCM411
Winter Maintenance

Measurements of Road Surface Friction

The report of special road inspection performed with mobile optical friction meter RCM 411

- Poor friction (<0.34)
- Moderate friction (0.35-0.49)
- Good friction (0.50-0.69)
- Poor friction (<0.34)
Machinery route application

Graph of routes of spreaders and RWIS station friction measurements

**Functional System:**
- determine what parameters will be shown on the map;
- set the alarm for the appearance of extreme weather conditions;
- select road maintenance mechanisms;
- define parameters of mechanisms;
- form graphs and reports.
Road traffic information

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Total Device</th>
<th>Density (km/device)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWS</td>
<td>118</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>112</td>
</tr>
<tr>
<td>Cams</td>
<td>249</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>140</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>109</td>
<td>45</td>
</tr>
</tbody>
</table>

- **Main Road Network**
- **National Road Network**
Summer Maintenance Requirements

1 zona

2 zona

3 zona

1 m

1 m

1 m

2 zona

3 zona

1 m

1 m

3 m
Summer Maintenance Requirements

Monitoring of Road Conditions

Daily Inspection
- Main: 1 per day
- National: 2 per week
- Regional: 1 per month

Special Inspection
- 1 per month
- 25% roads

Special Self-Inspection
- (April, May)
- All roads

Special Control Inspection
- (May, June)
  - Main: 100%
  - National: 100%
  - Regional: 25%

Road Master
- Representive of State Enterprise
- Road Master

Supervisor
- Pay a Bill According to Contract
- Impose a Penalty

Representative of State Enterprise
- Evaluate Road Condition and Provide Necessary Works

Representative of LRA
- General Act on Road Maintenance Quality
Road Maintenance financing

Average Fund for Maintenance for 1 km Road: **4 233 €**
Thank you for attention!