An Austrian approach for motorways

Asset Management

Dipl.-Ing. Gerhard EBERL

PIARC TC 4.1 Management of Road Assets

ASFINAG, Department Technics – Innovation – Environment, Austria
Contents

• Introduction – the Country
• Motorways and Expressways in Austria
• ASFINAG
• Evaluation of the Maintenance Strategy
• Process towards an integrated Maintenance Strategy
• Concluding Remarks
<table>
<thead>
<tr>
<th></th>
<th>Austria</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area:</strong></td>
<td>84,000 km²</td>
<td>2,000,000 km²</td>
</tr>
<tr>
<td><strong>Population:</strong></td>
<td>8,4 mio</td>
<td>112,3 mio</td>
</tr>
<tr>
<td><strong>Density:</strong></td>
<td>100,3/km²</td>
<td>56,9/km²</td>
</tr>
</tbody>
</table>
Austria at a glance
Motorways and Expressways in Austria

Vienna

Toll Sticker (Passenger car time-dependent toll) and GO-Box
Planning, construction

Version: February 2010
Total length of road network: approx. 2,170 km

Austrian approach for motorway Asset Management- Dipl.-Ing. Gerhard Eberl - 2014-04-01 – PIARC International Seminar – Cancun (MEX)
The ASFINAG Group

ASFINAG
Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft
(Motorway and Expressway Financing plc)

- ASFINAG Bau Management GmbH
- ASFINAG Service GmbH
- ASFINAG Alpenstraßen GmbH
- ASFINAG Maut Service GmbH
- ASFINAG Commercial Services GmbH
Key Figures:

- Length of network: 2,178 km
- Lane kilometres: 11,594 km
- Tunnels: 150
- Kilometres in tunnels: 354
- Bridges: 5,192 (total area 5,7 km²)
- Existing noise protection facilities: 1,275 km (at the roadside and along central reservations)
- Total area of noise protection walls: 4,1 km²
Efficient survey of the condition of the ASFINAG Network

„Define the right maintenance measure at the right time“

High availability and higher traffic safety
Sustainability
Process towards an integrated Maintenance Strategy

Questions to be answered:

• How much money is needed to keep the value of ASFIN AG’s assets constant?

• Should ASFINAG make an effort to raise the value of its assets?

• Which type of measures is the best one?

• What is the best time to carry out a specific measure?

• Is it better to rebuild constructions or to carry out extensive maintenance measures to extend lifespan?

• Which activities are required to maintain the existing high safety level of ASFINAG’s road network?
Maintenance Strategy

Customer Objectives
- Availability
- Traffic Safety

Financial Objectives
- Revenue
- Sustainability
**Maintenance Strategy**

**Strategic Layer**

**Customer Objectives**
- Availability
  - Construction Site:
    - Availability > 95%
    - Construction site management
- Traffic Safety
  - Pavement: Safety Index:
    - Proportion of pavement in Condition Class 5 < 3%

**Financial Objectives**
- Revenue
- Sustainability
  - Sustainable Investments:
    - Optimizing asset life cycles
    - Construction program invests correlate with required life cycle costs (Tolerance +/-10%)

**Management Layer**

**Asset Safety**
- Engineering Structures:
  - Refurbishment of critical structures within the current year
- Electromechanics:
  - No Tunnels in poor condition (> class 4)

**Accurate Cost Estimates**
- Accuracy of cost estimates +/- 10%

**Sustainable Investments**
- Construction program invests correlate with required life cycle costs (Tolerance +/-10%)
Maintenance Strategy (Management Layer)

Customer-related Objectives

Availability

Minimize the impact of construction sites and assets in critical conditions on the availability of the ASFINAG road network.

- **Construction Site**
  - Construction Site Index should be higher than 95%
  - construction site management team

- **Asset Safety**
  - Safety of Engineering structures
    As far as engineering structures are concerned, the objective is to refurbish or to replace a construction within one year, if its condition is very poor (class 5).
  - Usability of Electromechanical Assets
Maintenance Strategy (Management Layer)

Customer-related Objectives

Traffic Safety

- Pavement
  - Safety Index
    Condition 5 less than 3%

- Electromechanical Assets
  - Guidelines of Tunnel Safety law
    Implemented by May 2019
  - Usability of Electromechanical Assets
Maintenance Strategy (Management Layer)

**Financial Objectives**

- **Revenue**
  - ASFINAG prepares a 6 year construction program. The accuracy of estimated project costs 2 years before the works has to be 10%.

- **Sustainability**
  - In order to ensure sustainable maintenance, life-cycle-cost (LCC)-analysis for every project.
  - Construction program investments correlate with required life cycle costs (Tolerance +/-10%).

- **Pavement**: Data based prognoses system
- **Engineering Structures**: The required costs are calculated on the basis of a representative contingent of engineering structures which is extrapolated over the overall road network.
Asset Management Systems

• Pavement Management System

• Engineering Structure Management

• Electromechanical Assets
Some concluding remarks

- Roads are significant public assets
- Aging infrastructure requires increased road maintenance
- Investing in maintenance at the right time saves significant future costs
- A long term evaluation should be undertaken
- Regular monitoring of asset condition and performance is essential
- Maintenance investment must be properly managed