SPENS Final seminar
27 – 28 August 2009
Ljubljana, Slovenija

Road Assessment and Monitoring

László Gáspár - KTI, Hungary
WP2 leader

Alapítva - Since 1938

Contents

1. Background I.

Development of expressway network: from 0.07 km/km^2 to 0.25 km/km^2 (EU-15 average) by 2020.

Poor condition of non-expressways $\rightarrow$ drawback in national economy, extra user costs, life quality, tourism.

Co-ordinated efforts for clearing the quality backlog (e.g. Hungarian National Road Rehabilitation Programme for 2009-2020).

1. Background II.

PMS data needs → Performance related pavement monitoring: unevenness, surface distress, bearing capacity, skid resistance

High-speed and high-performance measuring devices

2. SPENS Work Package 2

WP 2 Road Assessment and Monitoring

WP 2.1. Traffic equivalency factors

6 sections, HVS, strain measurements, approximate results

WP 2.2 Road measuring techniques

Harmonisation of bearing capacity, unevenness, skid resistance measuring devices

WP 2.3 Systematic decision support for road rehabilitation

Flow chart based methodology for the selection of optimum intervention techniques

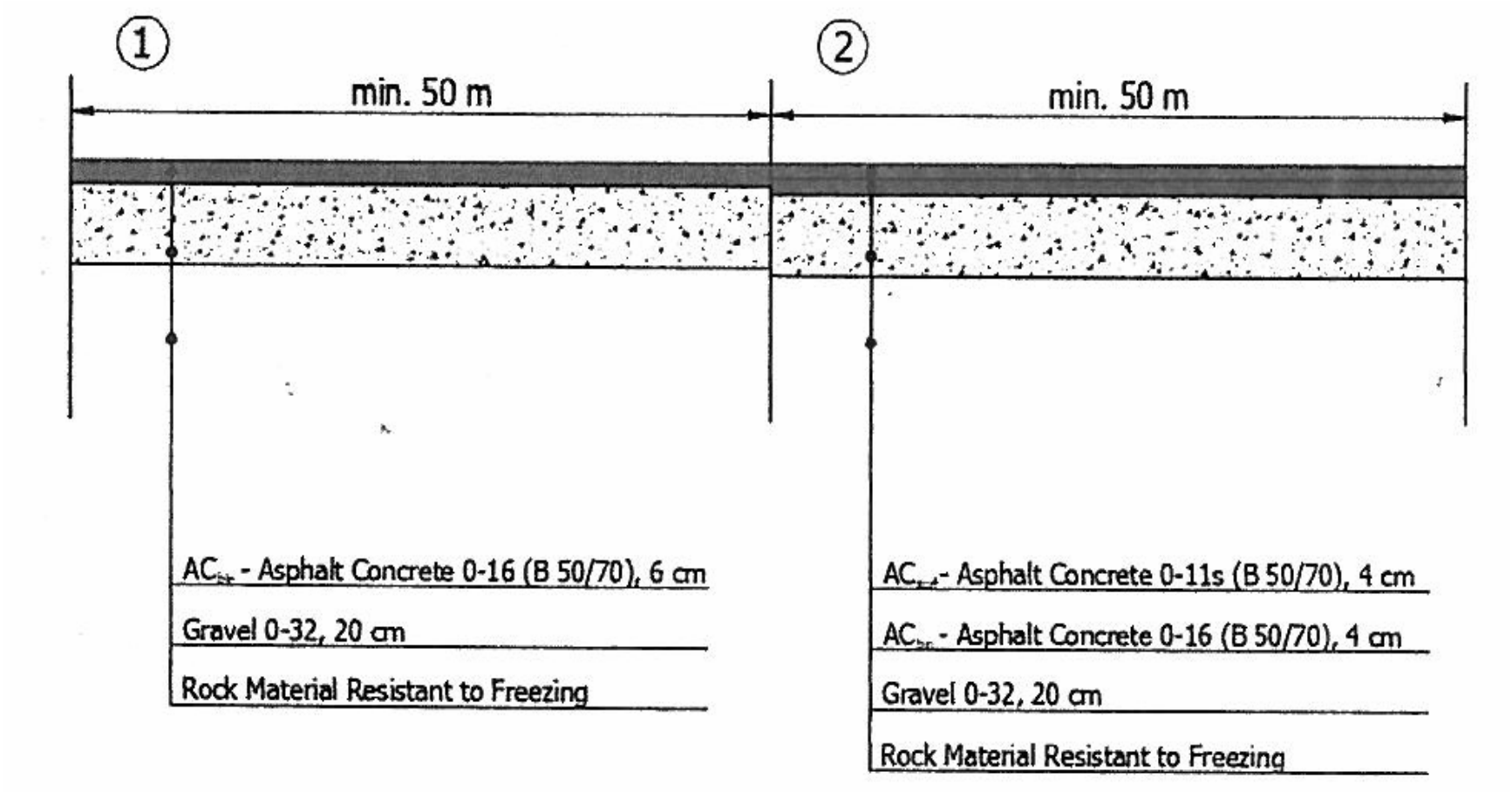
3. WP 2.1 Traffic equivalency factors I.

Goal: Estimation of traffic load equivalency factors for CEEC-pavement structures

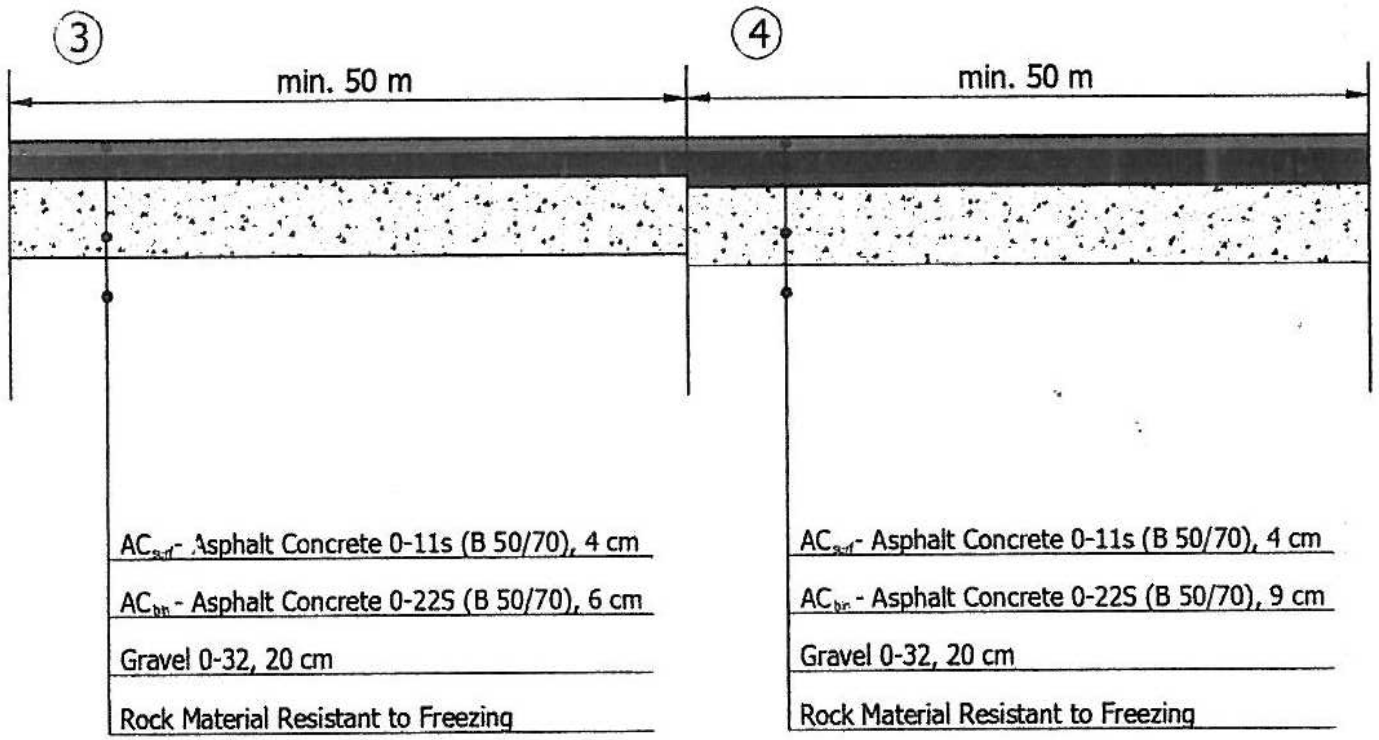
Methodology: HVS-loads, reactions, calculation

Pavement structures: 6 variants (4 applicable for the exercise)

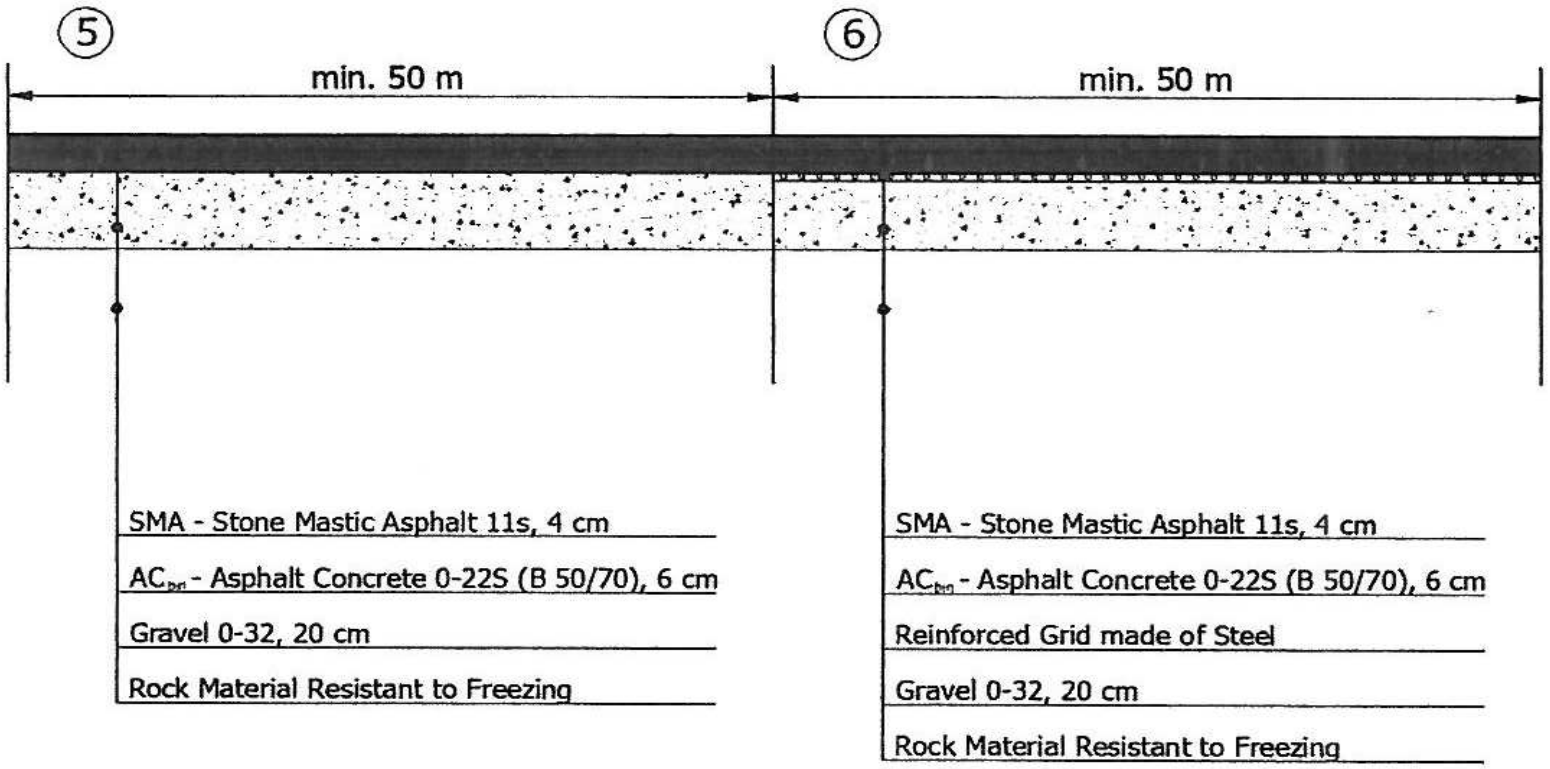
3. WP 2.1 Traffic equivalency factors II.



3. WP 2.1 Traffic equivalency factors III.



3. WP 2.1 Traffic equivalency factors IV.



3. WP 2.1 Traffic equivalency factors V.

3. WP 2.1 Traffic equivalency factors VI.

Changes of load during fatigue test

Structure	Number of passes using wheel load of		
	60 kN	80 kN	100 kN
1 and 2	0-293,000		
3 and 4	0-49,760	49,761-208,135	
5 and 6	0-50,000	50,001-173,000	173,001-190,500

3. WP 2.1 Traffic equivalency factors VII.

Response tests: 30-40-50-60 kN loads after 20 000 and 200 000 repetitions

No fatigue, just deformation

Also FWD-tests

Data analysis: repetition numbers → asphalt strains → critical strains (pavement design methodology) → critical repetition number s→ powers of wheel load ratio

3. WP 2.1 Traffic equivalency factors VII.

40/50 kN wheel load ratios (80/100 kN axle load ratios):

Section 2	1.95
Section 3	3.65
Section 4	2.10
Section 5	2.33

Acceptable preliminary results

4. WP 2.2 Road measuring techniques

Harmonisation of bearing capacity, unevenness, skid resistance devices

20 devices of 8 countries on test sections near Vienna.

(reference device for unevenness measuring test)

A certificate given to the participants after the exercise.

5. WP 2.3. Systematic decision support for road rehabilitation

Decision making methodology for pavement rehabilitation and upgrading, low volume roads, CEEC's.

Flow-chart based methodology
Network level approach → project level one
Several examples (case studies)

6. Concluding remarks

Road assessment and monitoring: special role in NMS's

Vital part of asset management

Co-ordinated effort of mainly CEEC's experts

Considerable contribution to success by Swedish and Austrian experts

THANK YOU FOR YOUR KIND ATTENTION !