Case Study - Concrete Pavement

Korean Accelerated Environmental Simulator, Expressway & Transportation Technology Institute, Korea

January, 2009

KALES (Korean Accelerated Environmental Simulator)

- Scientific evaluation of pavement response and performance
- Asia first real scale pavement accelerated environmental simulation laboratory

KALES – Concrete Pavement Test Overview

Aim	To evaluate the long-term behavior and performance of concrete pavement joint.
Location	Expressway & Transportation Technology Institute, Korea
System Integrator	MainTra Co., Ltd. (http://www.maintra.com) Kyu-Wan Lee (maintra@paran.com) Sung-Hoon Jung (maintra3@naver.com)
Customer	Expressway & Transportation Technology Institute
Date	January, 2009
Instrumentation	(1) Micron Optics sm130-700 Optical Sensing Interrogator (1,000 Hz sampling rate)
Sensors	(2) FBG embedded strain sensors (Lateral & longitudinal direction of pavement joint)
FBG Benefit	Immunity to Electro-magnetic Interferrance (EMI) and high tolerance to fatigue.

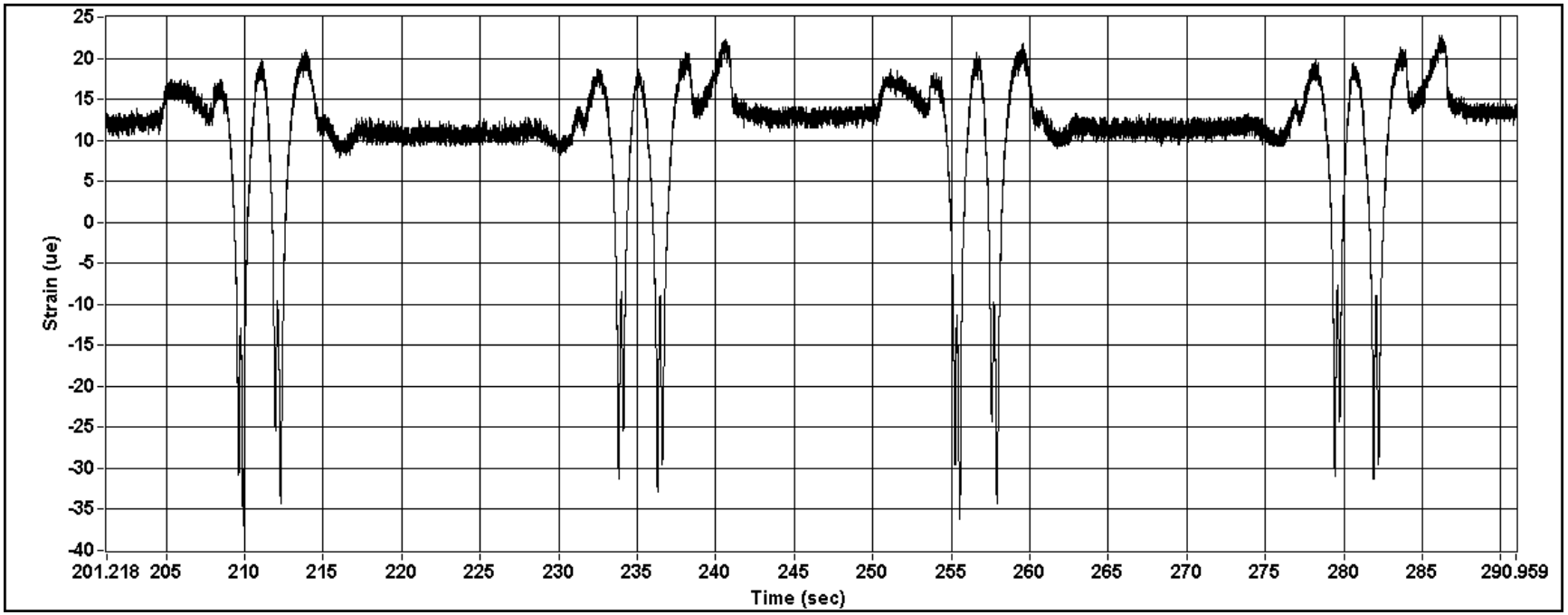
Concrete Pavement – Sensor installation

- FBG sensor installation
  - Embedded FBG strain sensors are coupled by optical connectors
  - Connection points are wrapped by tape
  - Armored patch cords are used to protect the cable during concrete pouring
  - FBG sensors are mounted near dowel bars and frames using steel wire

Concrete Pavement – Measurement

Concrete Pavement – Data Results

- Sample result



Forward **Backward** **Forward** **Backward**

Results & Acknowledgements

- Results & Conclusion
  - The information was useful to the customer because of the higher accuracy and reliability results achieved as compared to those from conventional sensors.
  - The installation was single and intuitive.
  - The customer was very pleased with the results.

- Acknowledgements
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    - MainTra Co., Ltd – Tel: 031-427-6961, email: maintra@paran.com, web: www.maintra.com
  - Micron Optics, Inc, USA
    - Tel: 404-325-0005, email: info@micronoptics.com, web: www.micronoptics.com