



Gi-Heung 1 Bridge

- Short-term health monitoring of a MSS formwork
South Korea, March 2008





Aim	FBG sensors were installed to monitor the structure safety during concrete pouring (about 13hr 30min).
Location	GiHeung-Gu, YongIn-Shi, GyungGi-Do, Korea
System Integrator	KyuWan Lee (smart@seoul.korea.com) Sung-Hoon Jung, Eun-Yong Park
Customer	Samsung Construction Corporation
Date	March 2008
Instrumentation	Micron Optics sm130-700 Optical Sensing Interrogator
Sensors	(8) Micron Optics, os3100 FBG Optical Strain Gage (1) Micron Optics, os4100 FBG Optical Temperature Compensation Sensor (2) Conventional displacement sensors
Software	Customer designed
FBG Technology Benefit	FBG sensors to provide real-time quantitative information.

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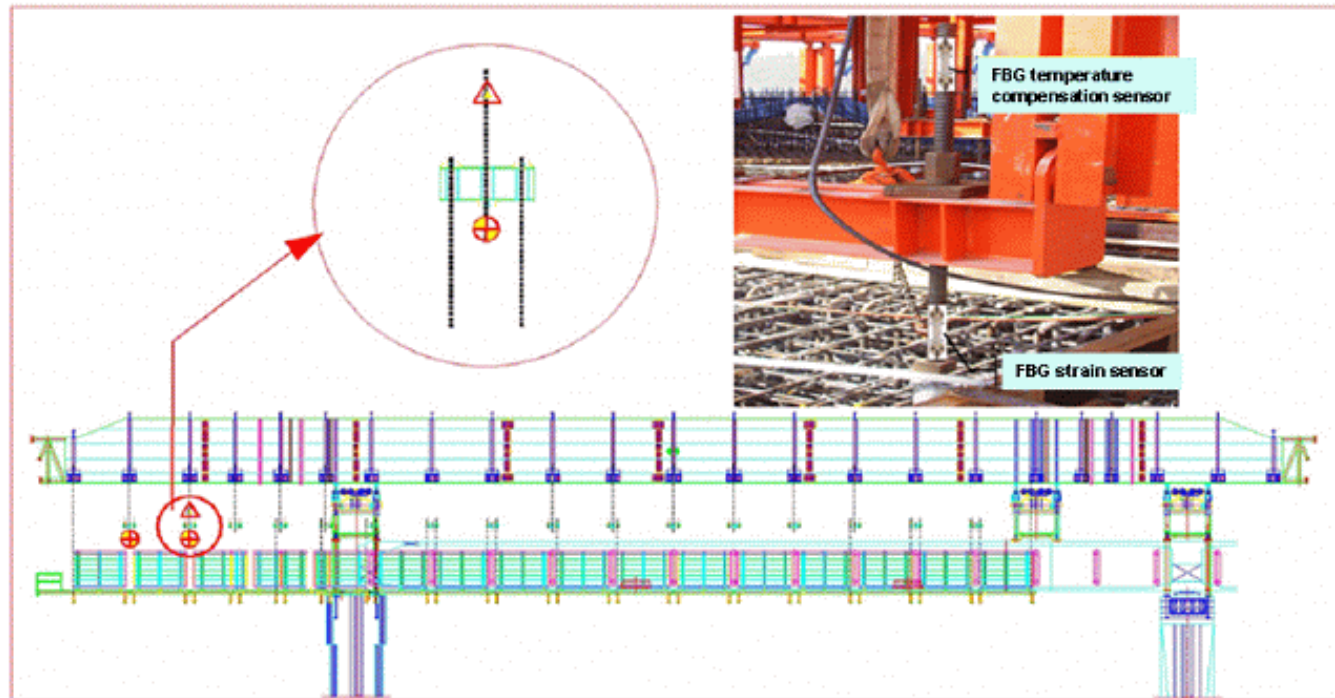


It is a concrete box girder bridge constructed with a movable scaffolding system.



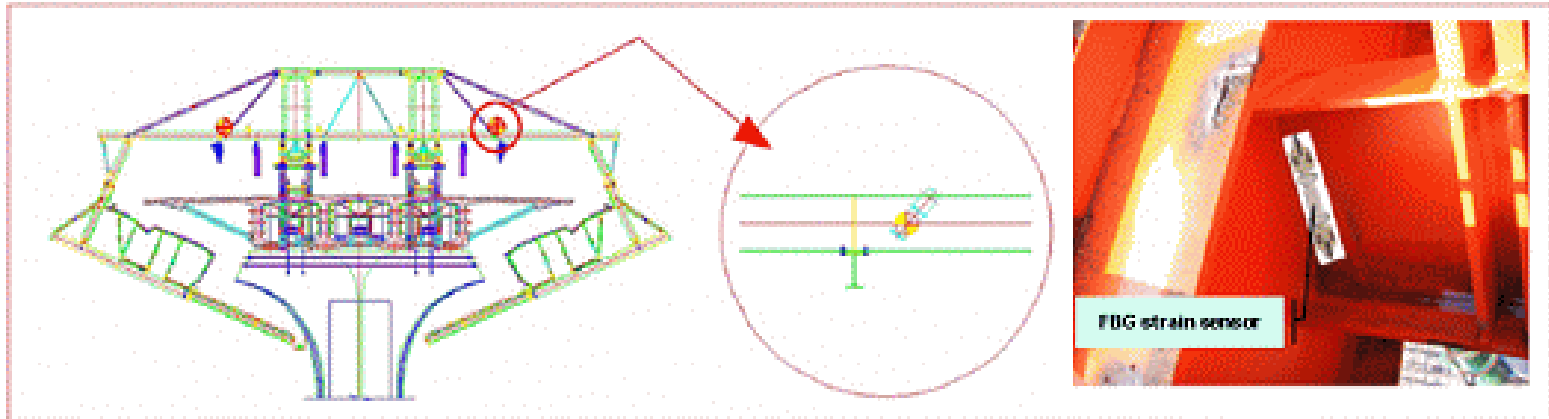


Sensor installation on a steel bar.



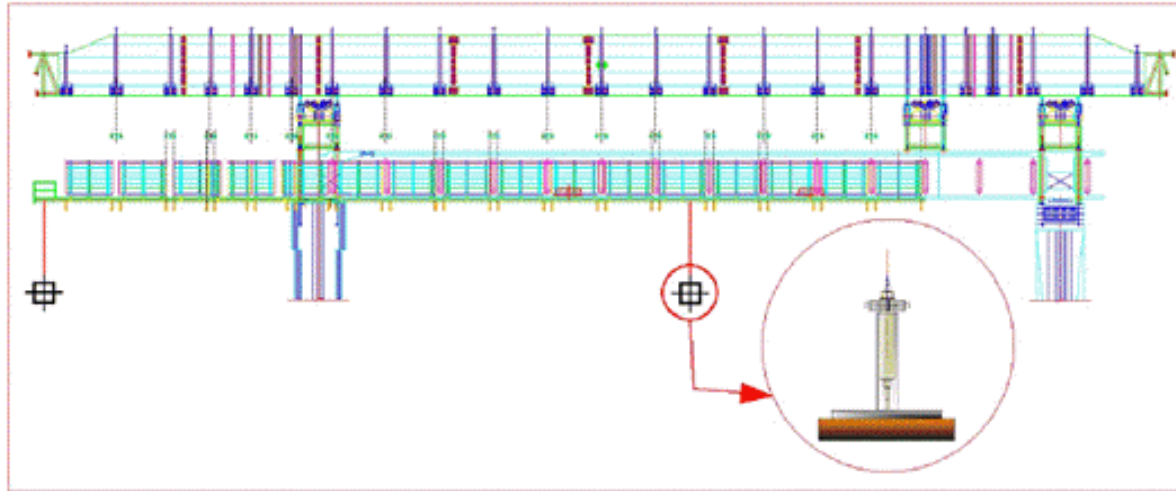


Sensor installation near welding point.

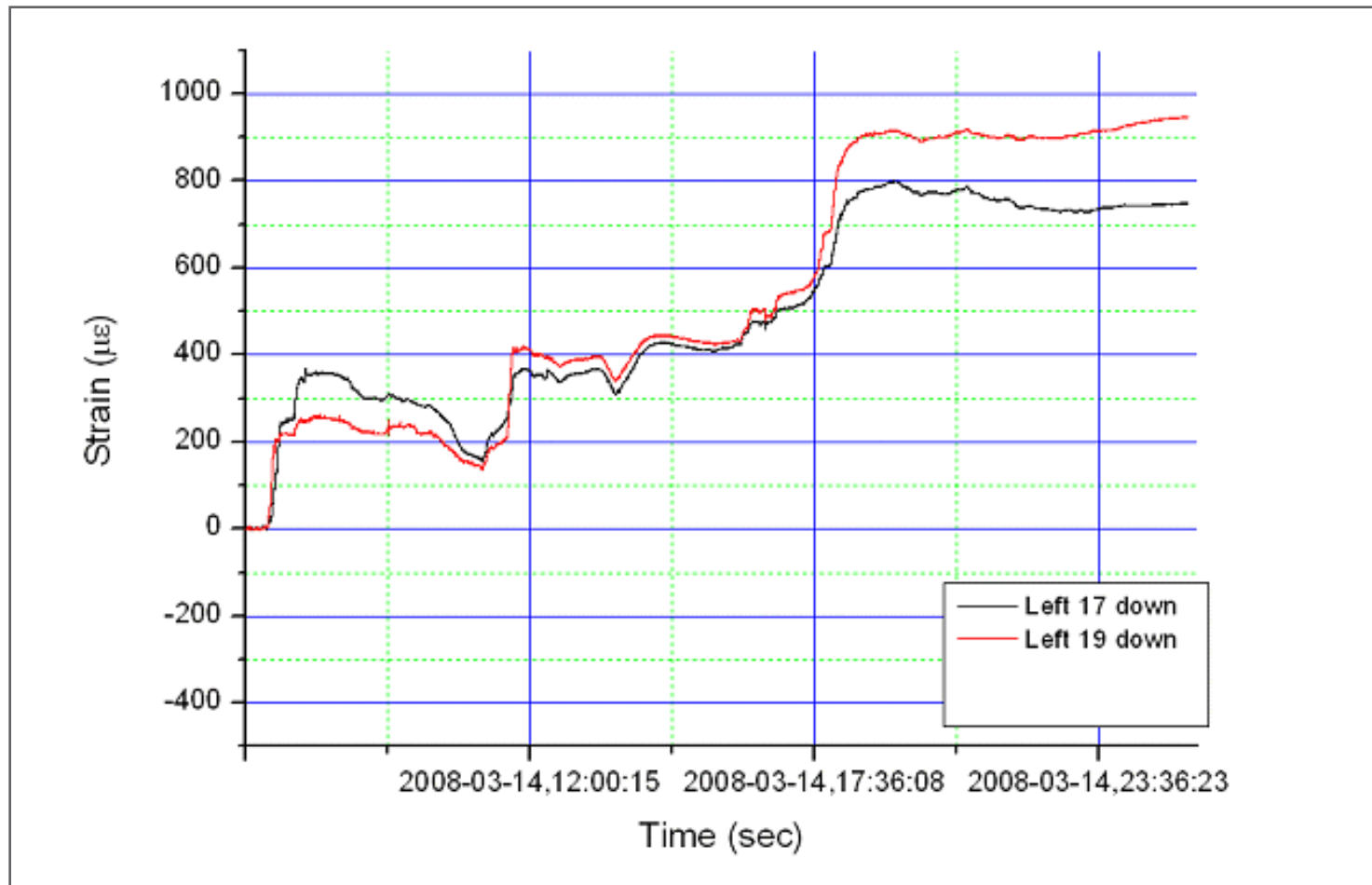




Conventional displacement transducers with wireless sensor system were also used as part of the monitoring system.



The stress level of an above type MSS formwork during concrete pouring were clearly identified by MOI os3100 and sm130-700 interrogator.





- Results

- § Strain measurements, including temperature were recorded from the beginning of concrete pouring works. Continuous measurements were set for several hours until the concrete pouring was finished.
- § During storage time, thermal coefficient was calculated using linear regression method and highly precise strain data recorded by os3100 sensors, and reasonable thermal coefficient value were brought out for thermal effect estimation.

- Acknowledgements

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- § We thank Samsung construction corporation for supporting the field site and Dr. KiTae Park of KICT for reviewing the whole project results.
- § Micron Optics, Inc, USA
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