

# Mobile Laser Scanner Technology to Detect Road Settlement in Sodong Bridge, Trans Sumatera Toll Road

**Idwan Suhendra, Ragil Karim, Billy Silaen and Darmawan Eka Wicaksono (Indonesia)**

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## SUMMARY

Maintaining and monitoring toll roads is essential in preventing traffic accidents on toll roads and providing comfort and safety for toll road users. One of the activities carried out is monitoring the decline of toll roads to detect areas that need to be handled or repaired. The process of toll road subsidence can occur due to relatively unstable soil conditions, construction defect, or excessive loads

Monitoring of road subsidence is then performed by comparing data from mobile laser scanners (MLS) on Sodong Bridge (around 350m), Jalan Tol Terbanggi Besar – Pematang Panggang with scanning period of October 2020 and November 2021 .

Data scanning is carried out on 2 track A and track B. Data is then adjusted to correct the data and eliminate shifting between tracks. Checking the quality and accuracy of the MLS data is also being performed by comparing adjustment data with ICP data onsite.

Point clouds from MLS data acquisition are used to create a surface with a high resolution of 0.01 m. The subsidence elevation value is extracted through a comparison of the MLS surface data between two periods. The result of this comparison is then classified and reviewed at the locations that has a high subsidence value.

The extraction result from toll road subsidence showed variations on the road surface at an elevation around 0.02 – 0.1 m on Track A and Track B. On Track B around 95% of the data from the surface comparison results show road subsidence of around 0.05 – 0.1 m, From this result, an onsite check must be executed and a necessary action plan must be carried out to solve the subsidence issue of the road.

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