

HUNGARIAN GEODETIC AND MAPPING CORPORATION LTD.



Case studies about using Mobile Mapping System (MMS) on traffic network mapping

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What I would like to talk about

- ❖ **BRIEF INTRODUCTION OF OUR COMPANY**
- ❖ **SHORT OVERVIEW ABOUT MOBILE MAPPING**
- ❖ **CASE STUDIES**
 - ❖ **MAPPING OF OVERHEAD CABLES ON A RAILWAY STATION**
 - ❖ **CLEARANCE CHECK IN A LONG TUNNEL**
 - ❖ **SIDE SLOPE EVALUATION ON A HIGHWAY**



HUNGARIAN GEODETIC AND MAPPING CORPORATION LTD.





HUNGARIAN GEODETIC AND MAPPING CORPORATION LTD.

17 offices countrywide



References all over the World





WHO WE ARE

- ❖ **65 YEARS OF EXPERIENCE IN GEODESY**
- ❖ **THE LATEST STATE OF THE ART TECHNOLOGY**
- ❖ **MORE THAN 100 ENGINEERS**
- ❖ **MORE THAN 300 EMPLOYEES**
- ❖ **MORE THAN 20 MILLION USD TURNOVER**



MAIN ACTIVITIES

- ❖ **CADASTER, EASEMENT MAPPING**
- ❖ **GEOGRAPHIC INFORMATION SYSTEMS - GIS**
- ❖ **PUBLIC UTILITY LOCATING, MAPPING & INVENTORY**
- ❖ **PLANNING MAPS, AS-BUILT MAPS**
- ❖ **INVENTORY & FACILITY MANAGEMENT MAPPING**
- ❖ **NOISE MAPPING**
- ❖ **THEMATIC MAPPING, SPECIALIZED MAPS & GIS DATABASES**
- ❖ **3D MAPPING AND MODELLING**



OUR TECHNOLOGY IS STATE OF THE ART TECHNOLOGY



Most Advanced Mobile Mapping System manufactured by Rieggl
Can be used both on roads and railways.



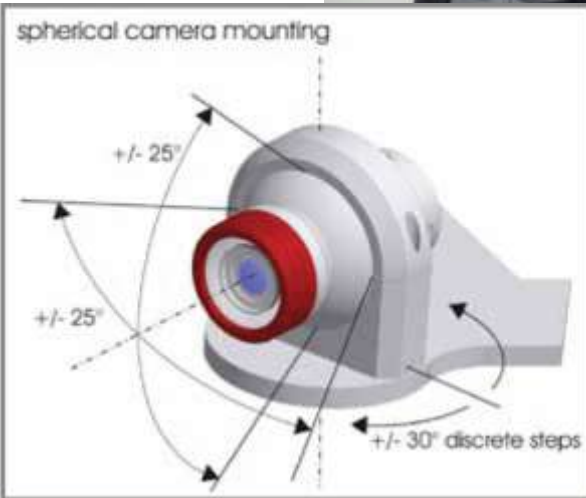
Mobile Mapping System

- **Mobile (terrestrial) remote sensing system, which integrates the following components:**
 - **Laser scanner – full circle rotating mirror scanners (2 pieces – 12000 RPM)**
 - **2 x 550 000 pulse / sec (1.1 million point / sec)**
 - **Digital cameras (4-6 pcs. + LadyBUG panoramic camera) 4 FPS**
 - **Global navigation System (GNSS) – 20 position / sec**
 - **Inertial navigation (IMU) – 200 attitude information/ sec**
 - **Controller and data storage**



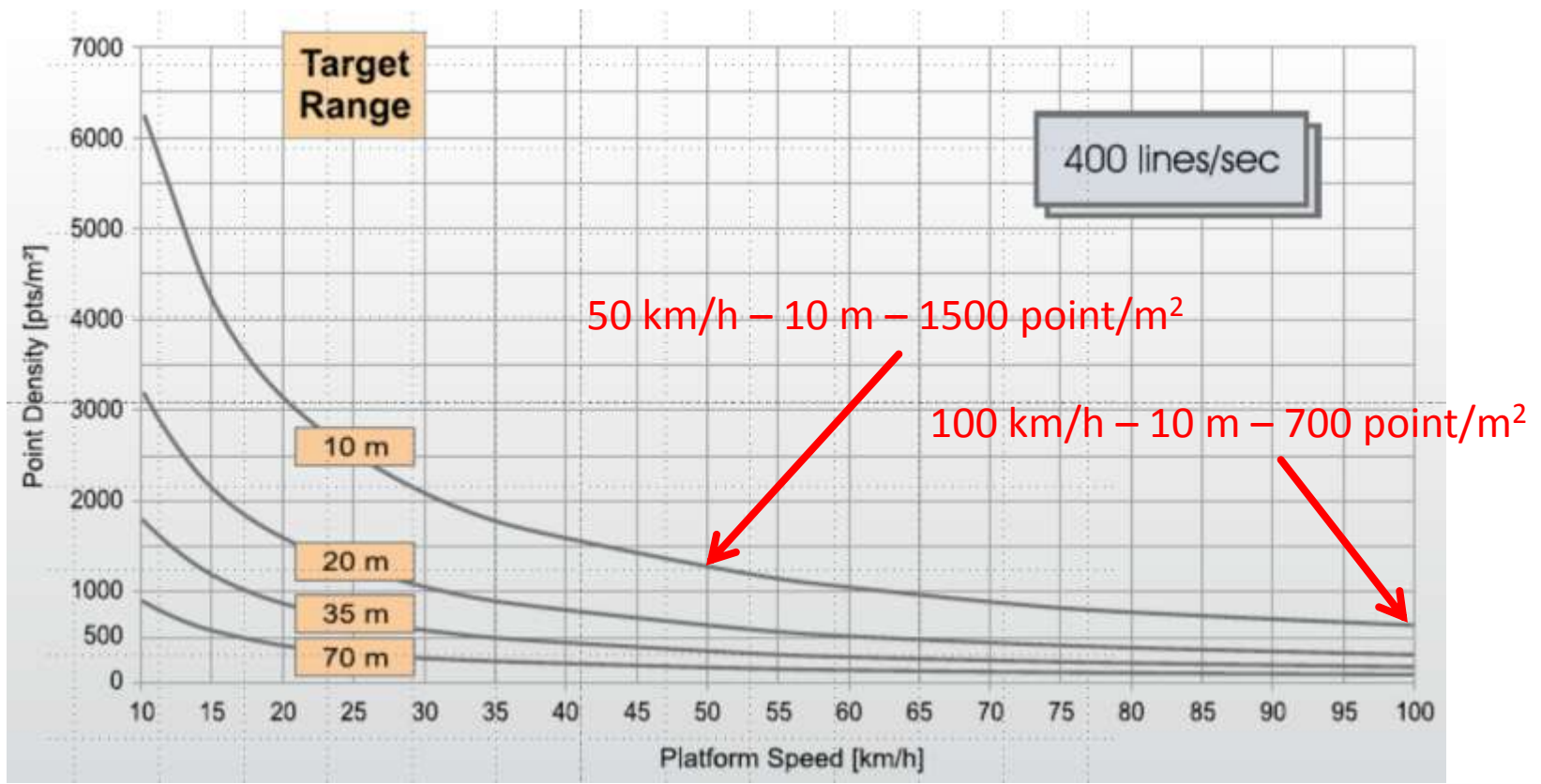
MMS

Cameras are configurable independently according to choice





Point density





Advantages

- ❖ „Snapshot” compared to the conventional data collecting procedures
- ❖ Measuring time is dramatically reduced on the field
- ❖ Data can be reprocessed from a different point of view, new objects can be evaluated further on
- ❖ Attributes can be collected
- ❖ No traffic limitations, no diversion must be used during the measurements (highway, railway)
- ❖ Photo documentation of the measured area

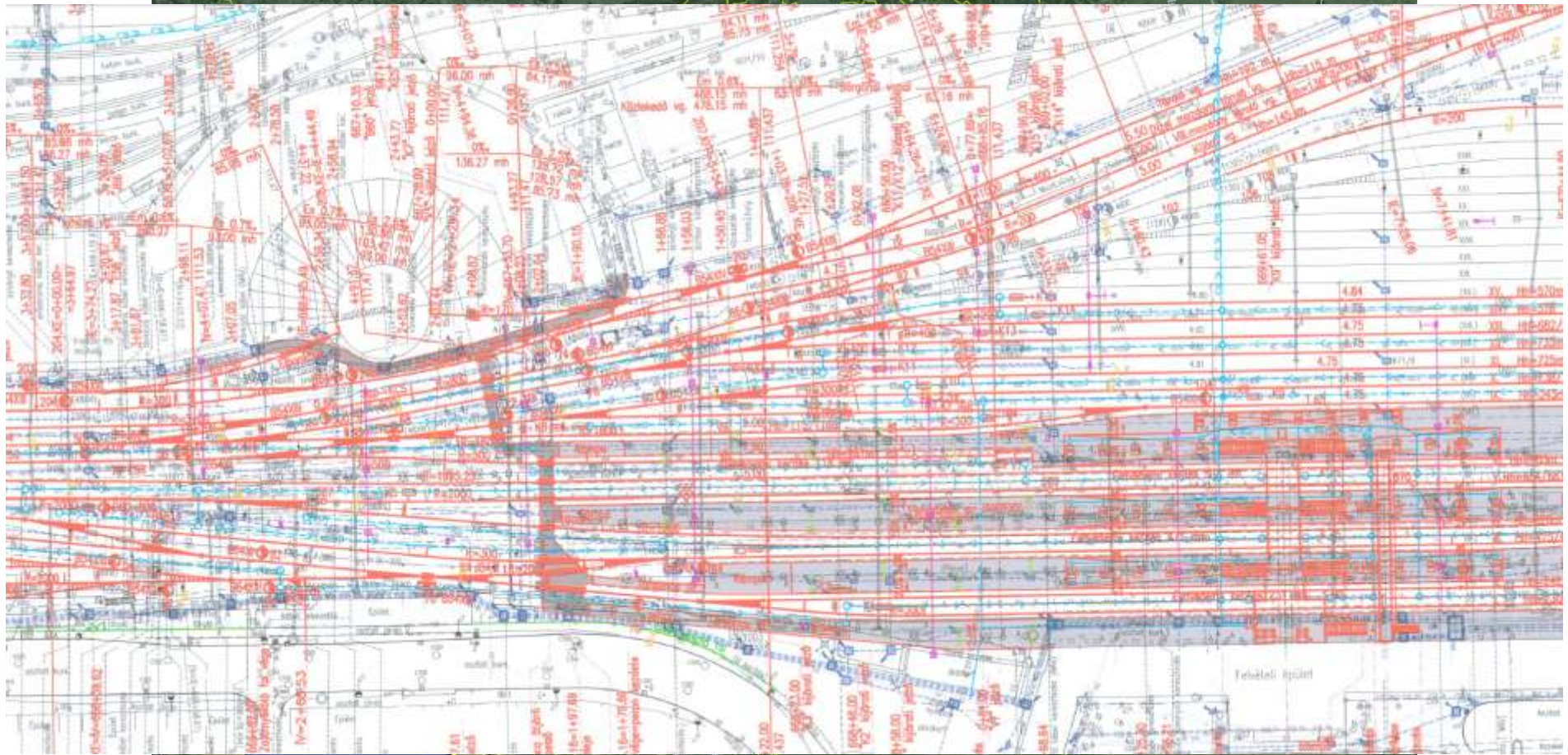


Railway measurement - Video



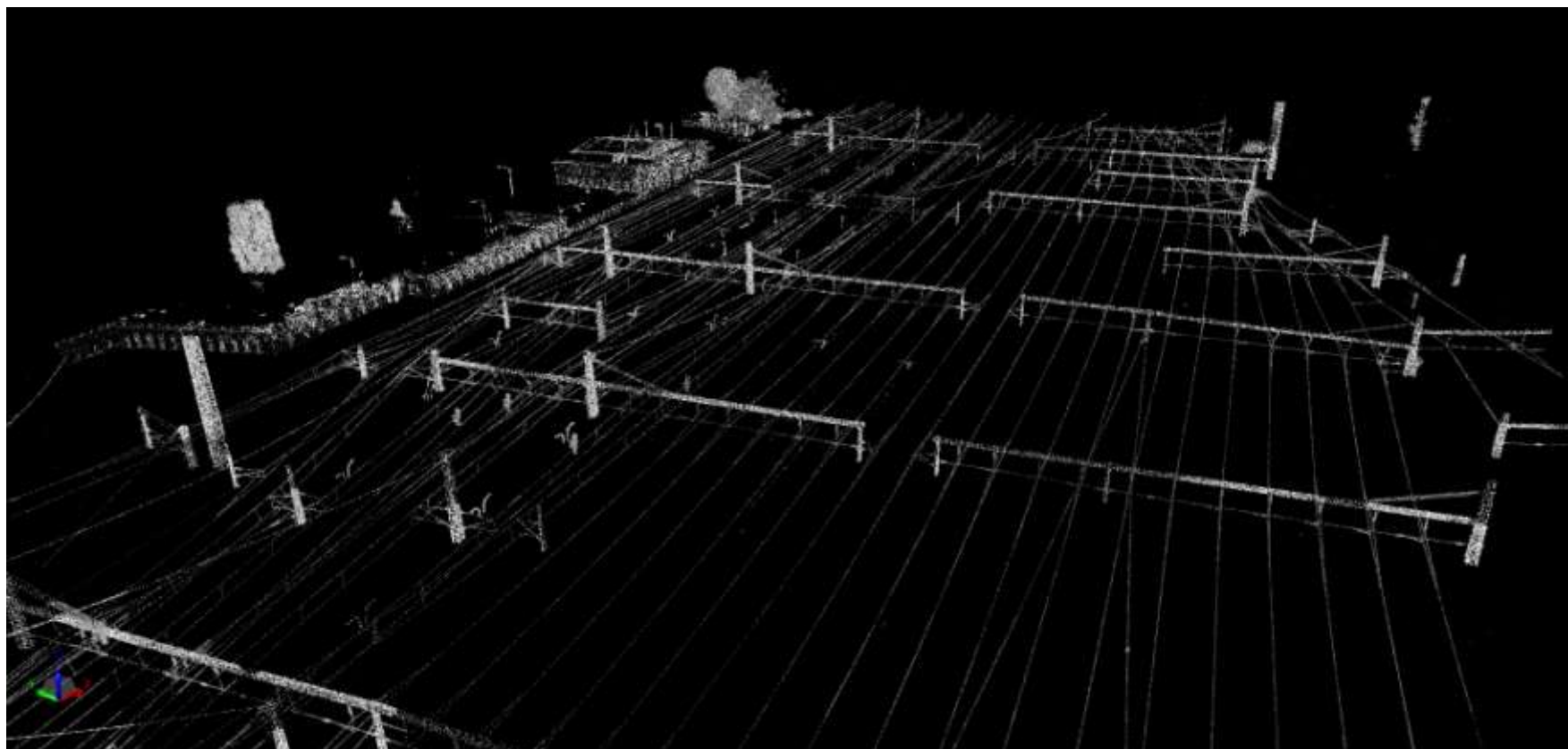


Railway measurement



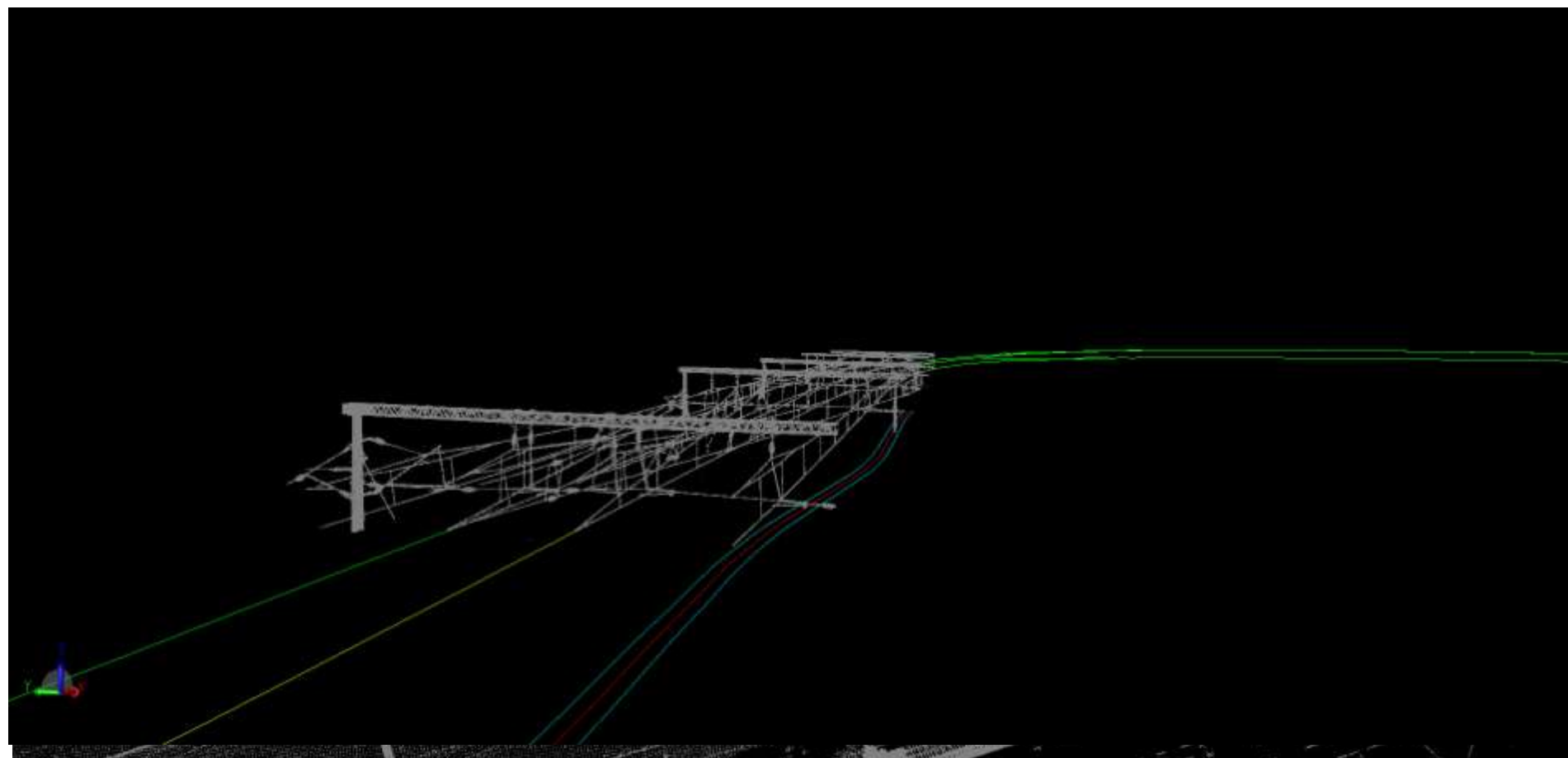


Mapping of the overhead cable system



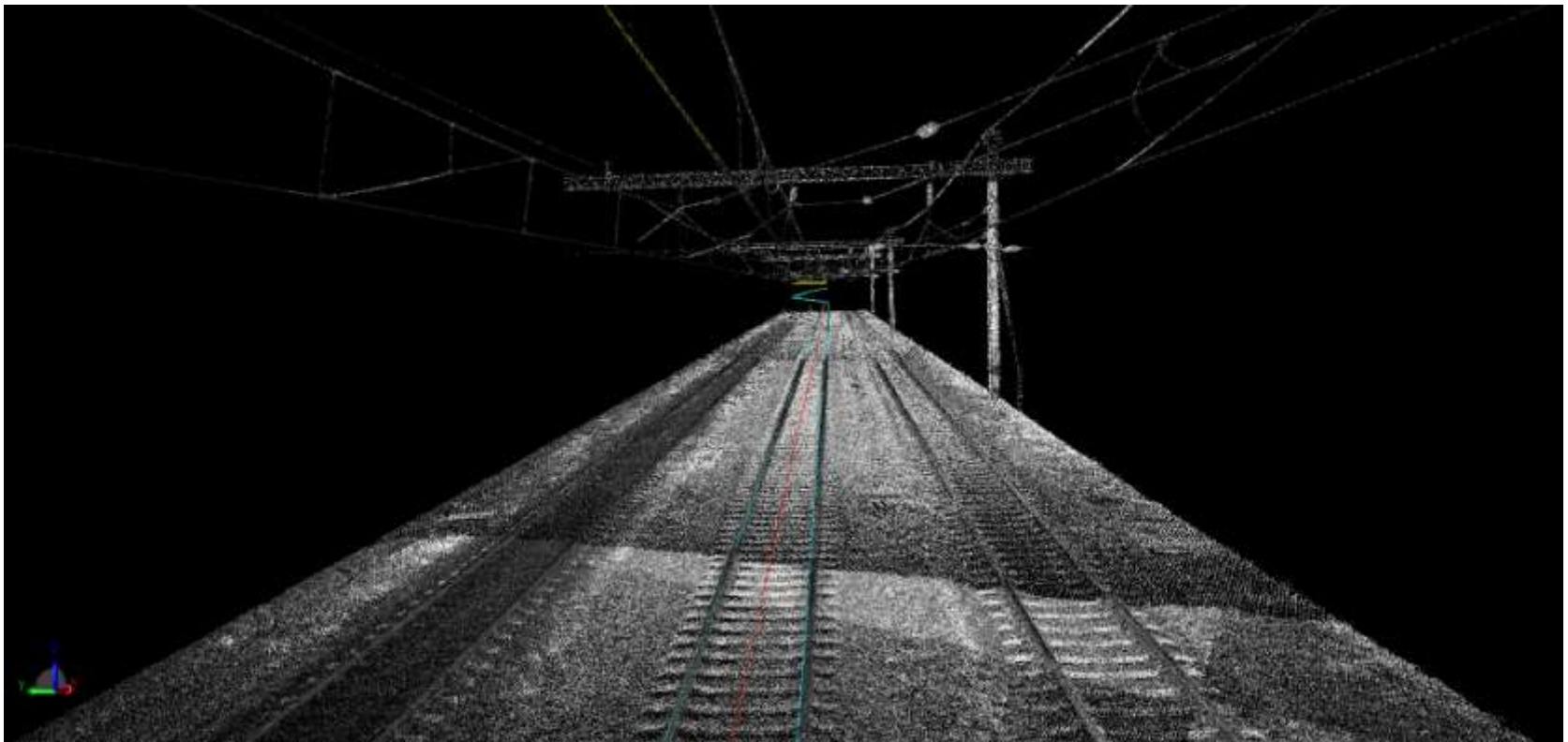


Mapping of the overhead cable system



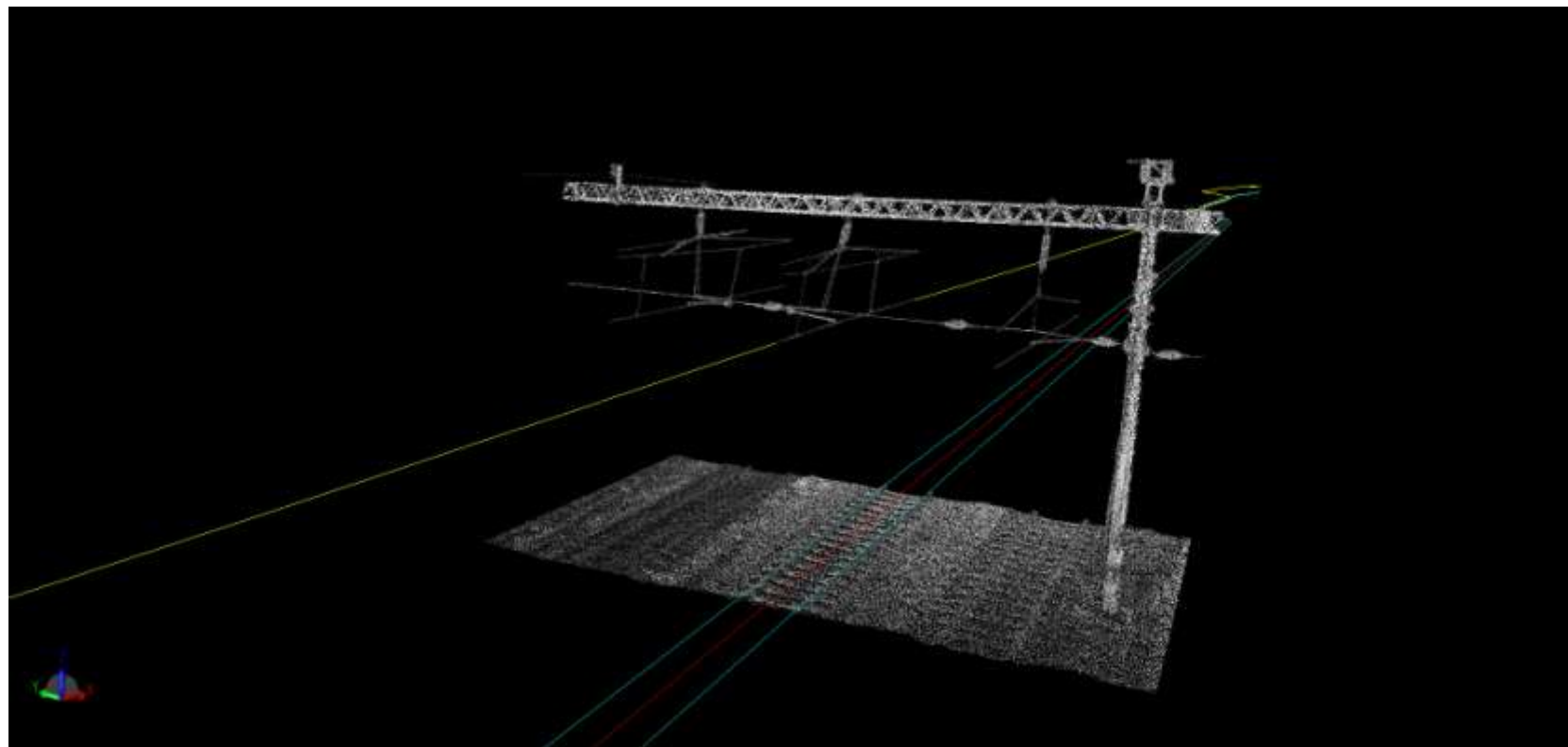


Automatic rail and overhead cable recognition



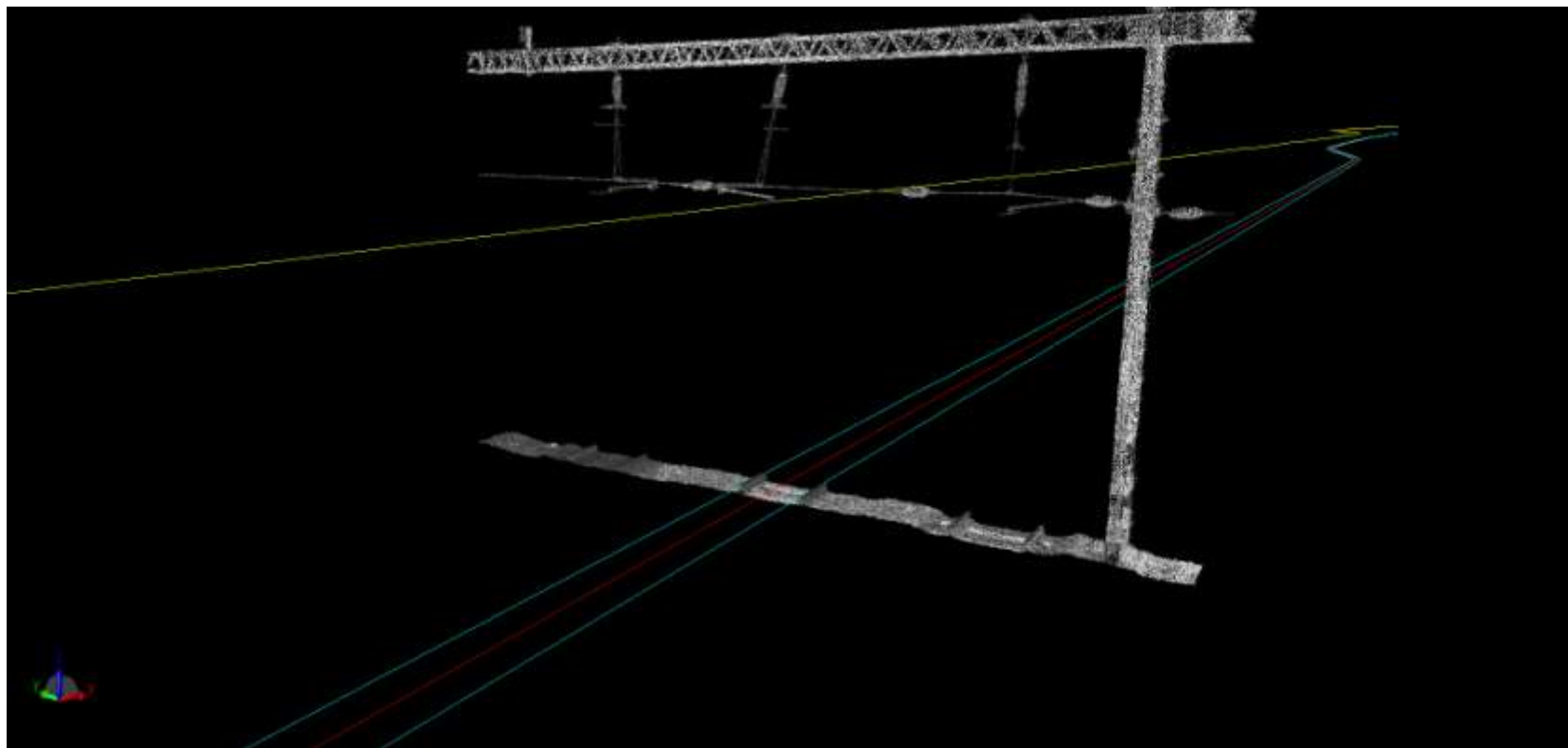


Automatic rail and overhead cable recognition





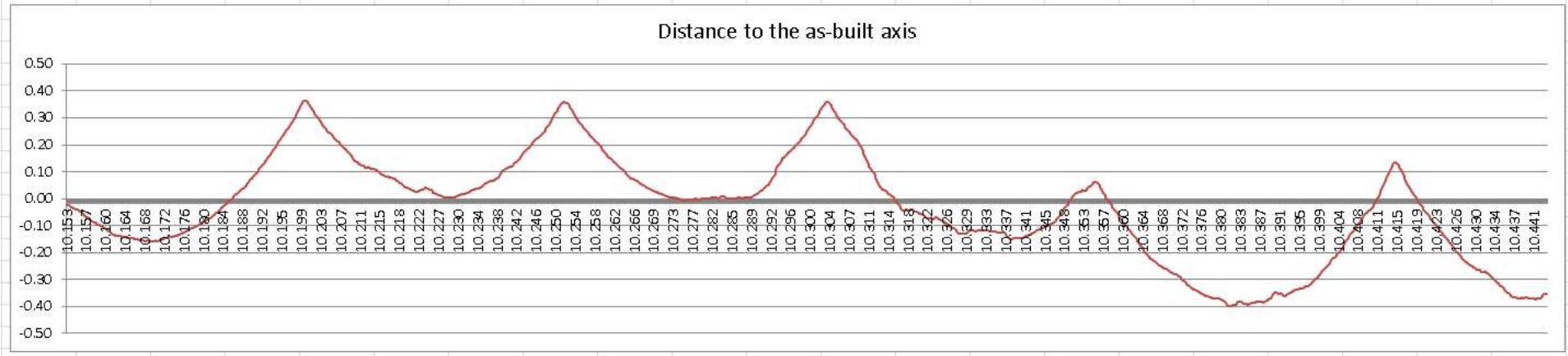
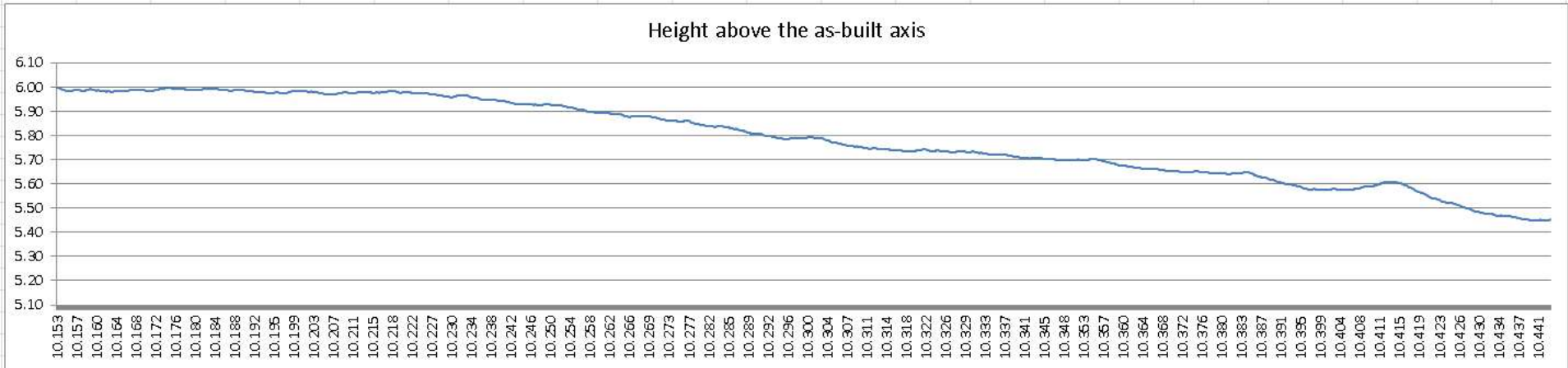
Automatic rail and overhead cable recognition





Railway measurement

Results of the overhead cable mapping





Clearance Check in Tunnel



Connects Slovenia and Austria under the Karawank mountain

7864 m long

12th longest motorway tunnel in Central Europe

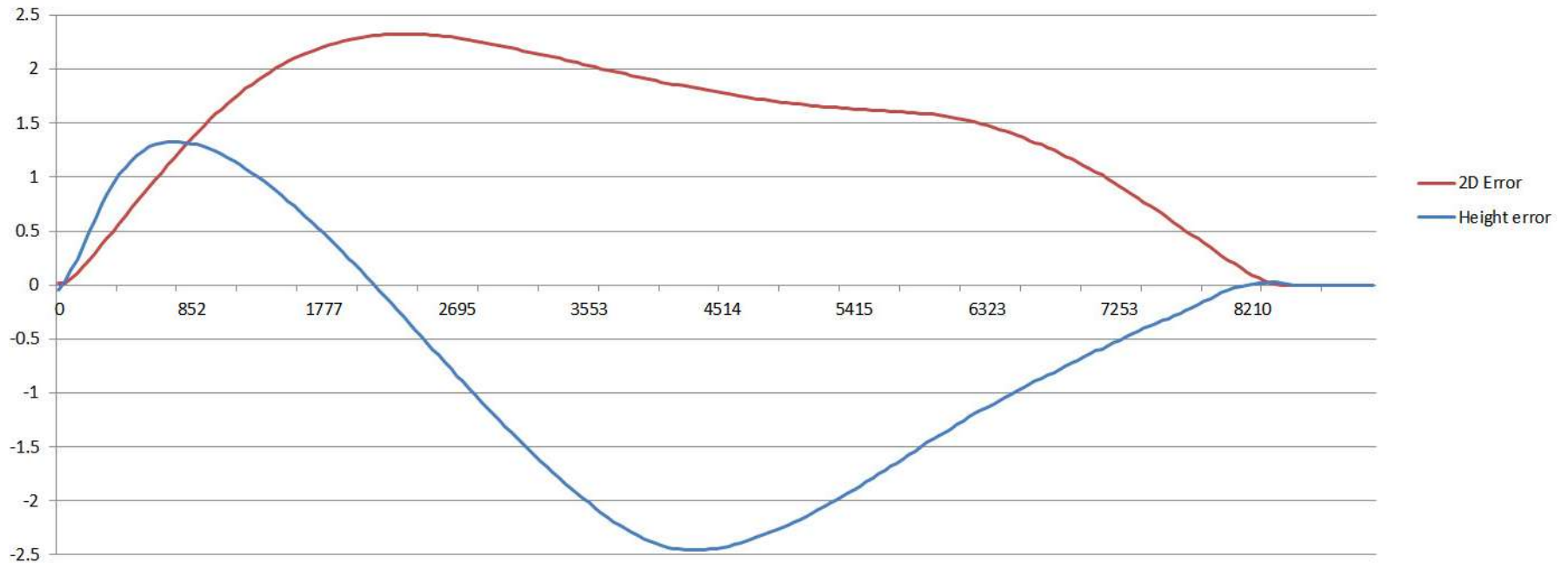
22nd in Europe

44th in the World



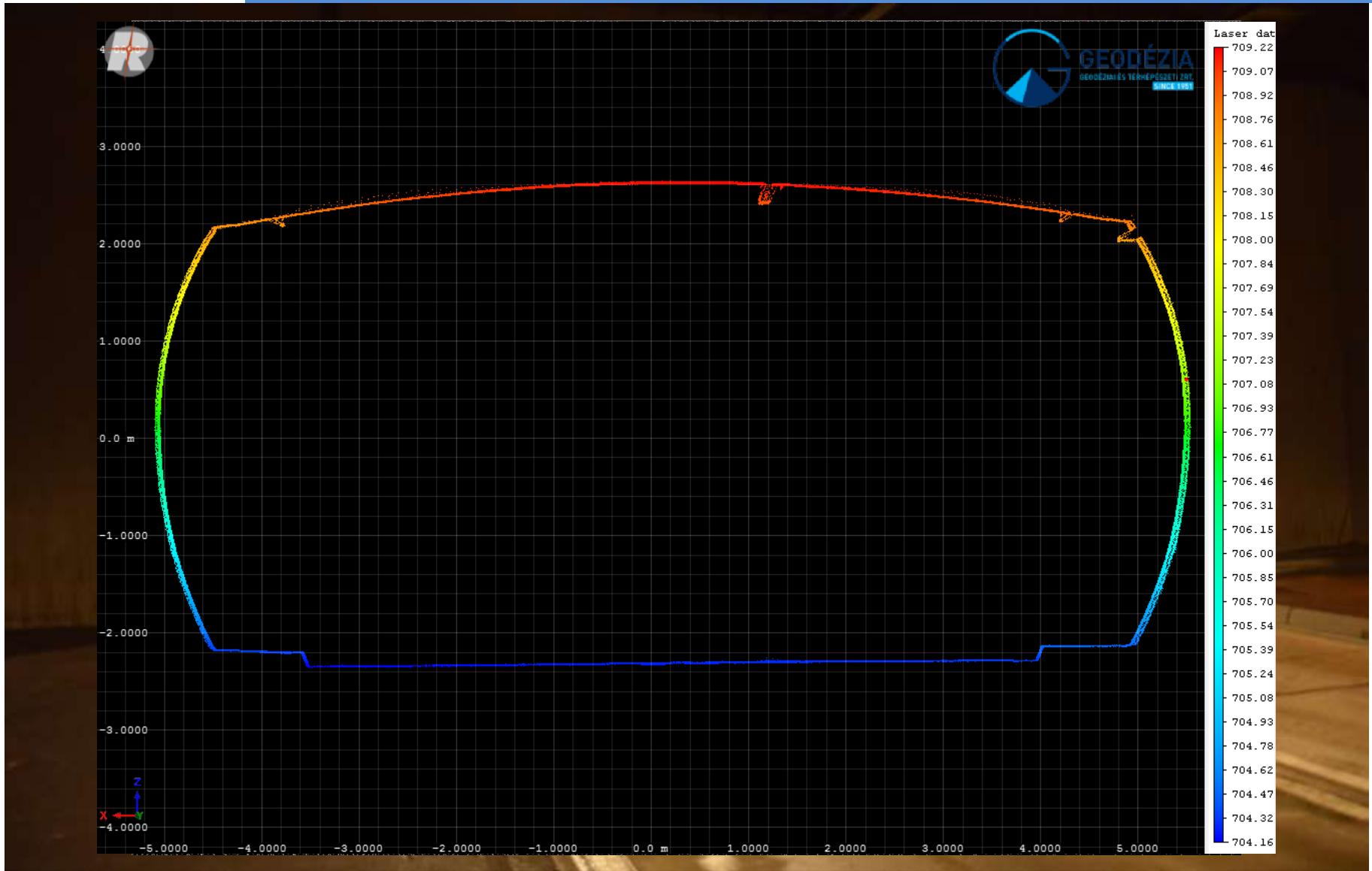
Karawanks Tunnel (Karawanken or Karavanka)

Original trajectory error (2D + height) compared to the adjusted trajectory
(supposed zero error)



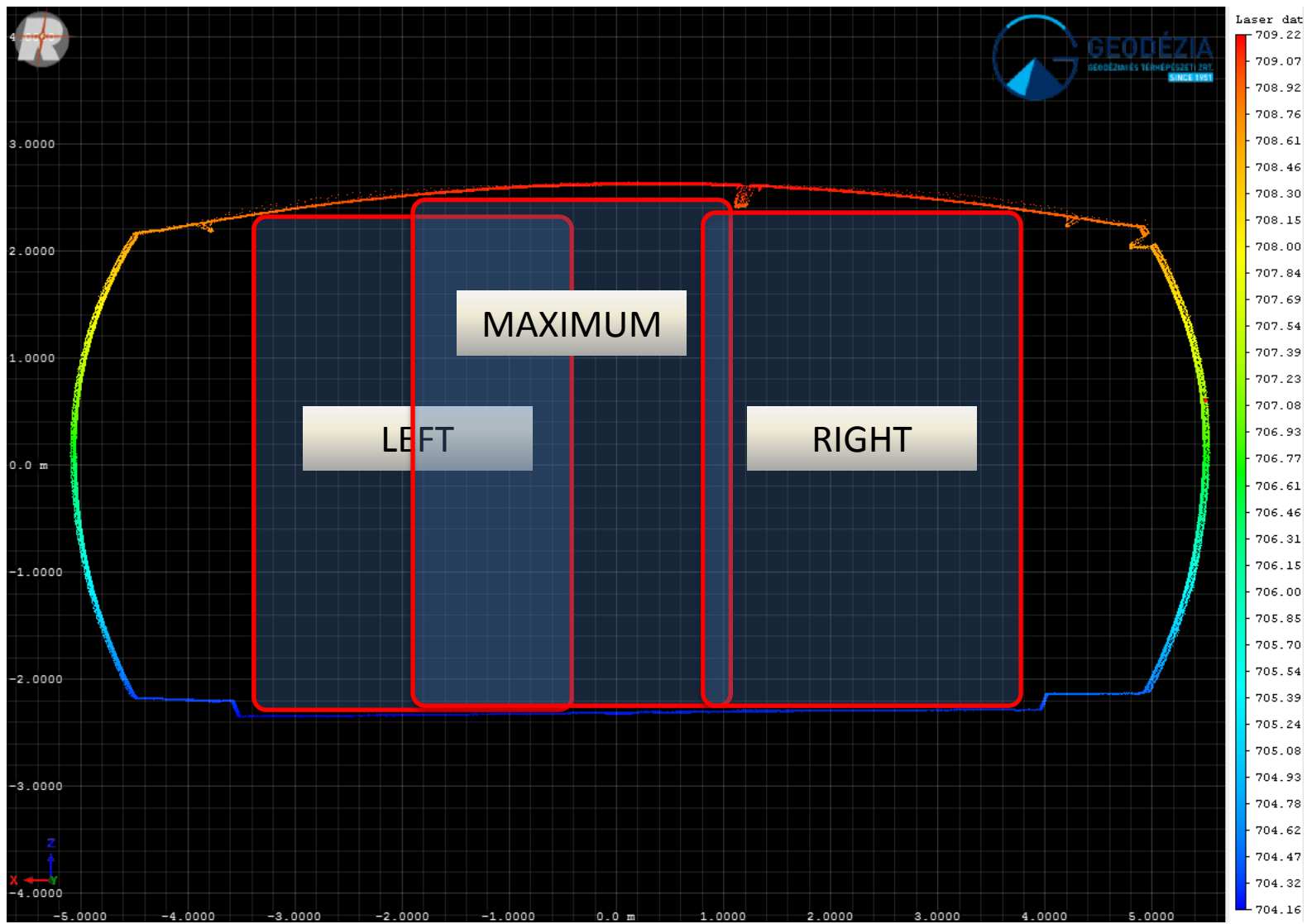


Clearance Check in Tunnel





Clearance Check in Tunnel





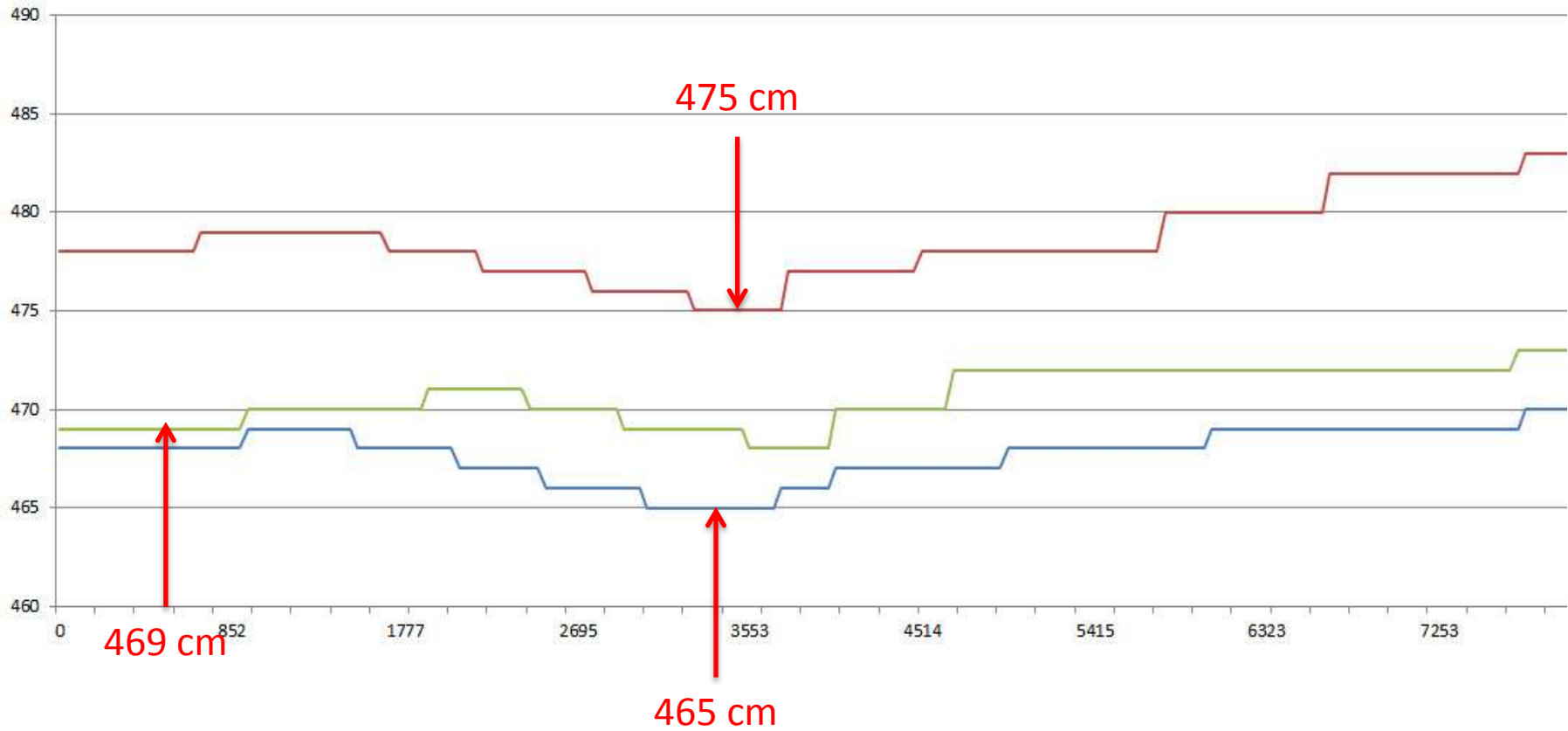
Clearance Check in Tunnel

Maximum height allowed

LEFT LANE (towards Austria)

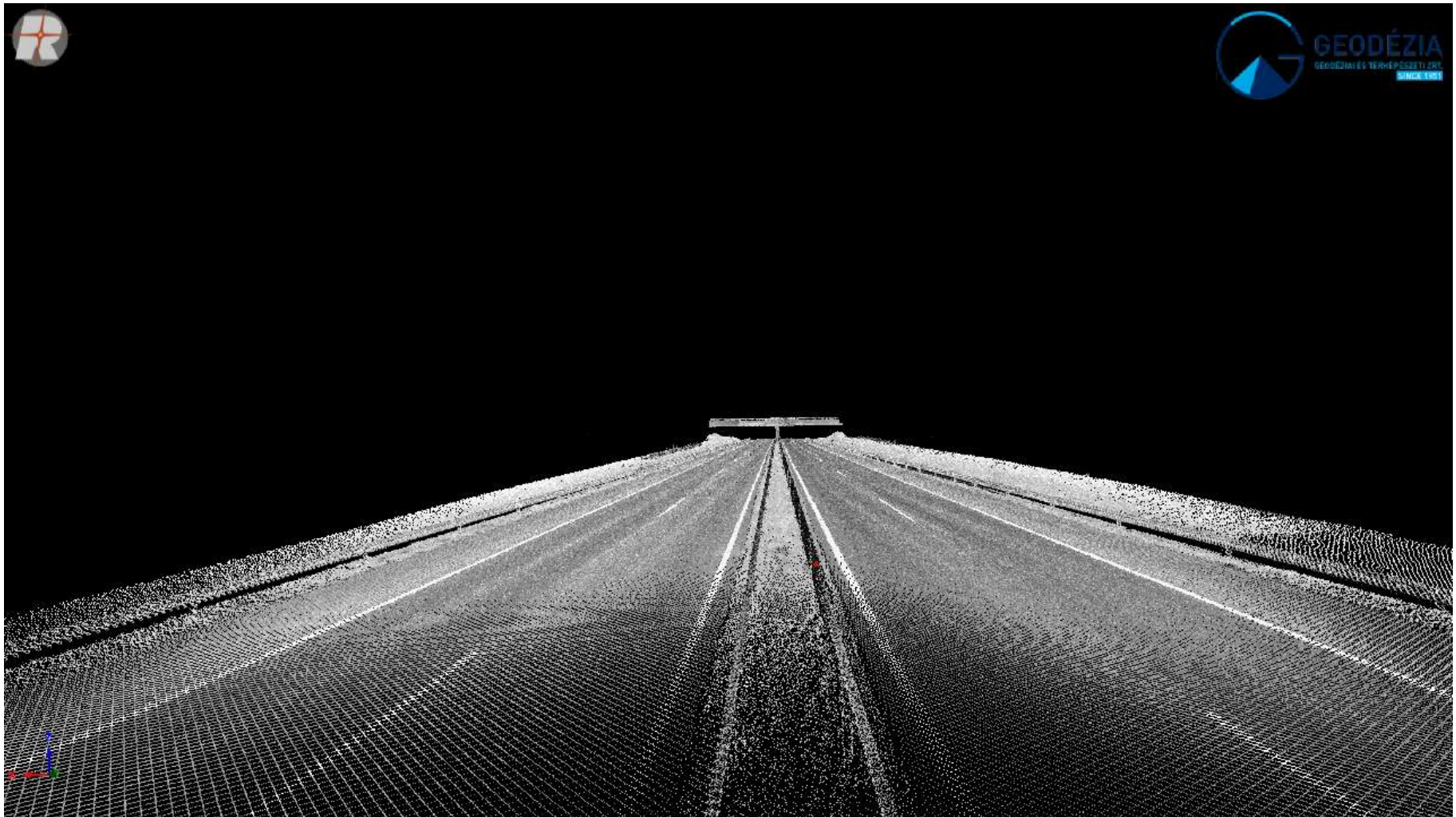
CENTER OF THE TUNNEL

RIGHT LANE (towards Austria)



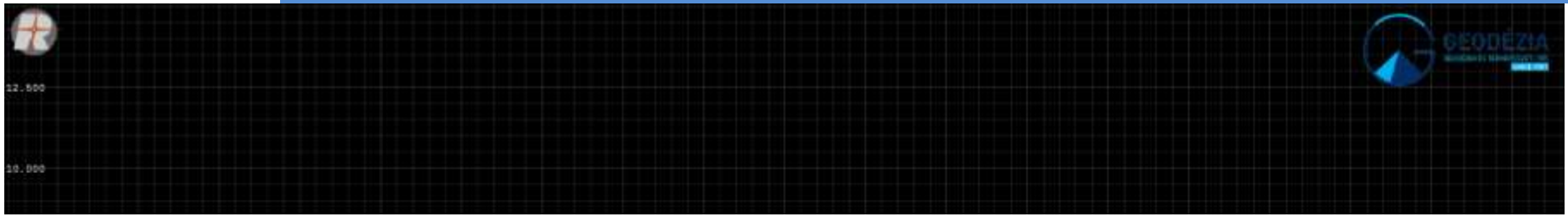


Side Slope measurement on a highway

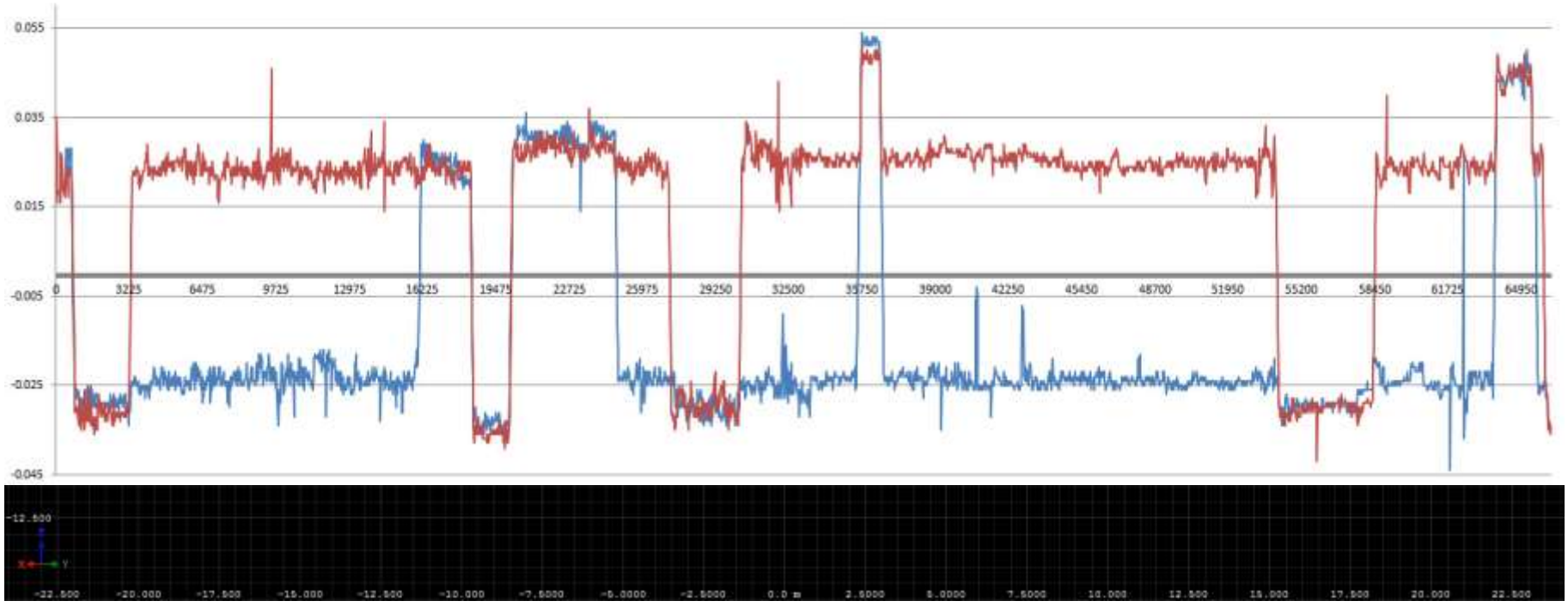




Side Slope measurement on a highway



E73 side slopes
LEFT
RIGHT





Mobile mapping is the best way to

Measure on highways without blocking the traffic

Measure in dangerous areas such as railway stations

Collecting large amount of data within a short period of time

Measure unreachable geometry such as

Clearance in a tunnel

Overhead cable system of a railway station



THANK YOU FOR YOUR KIND ATTENTION