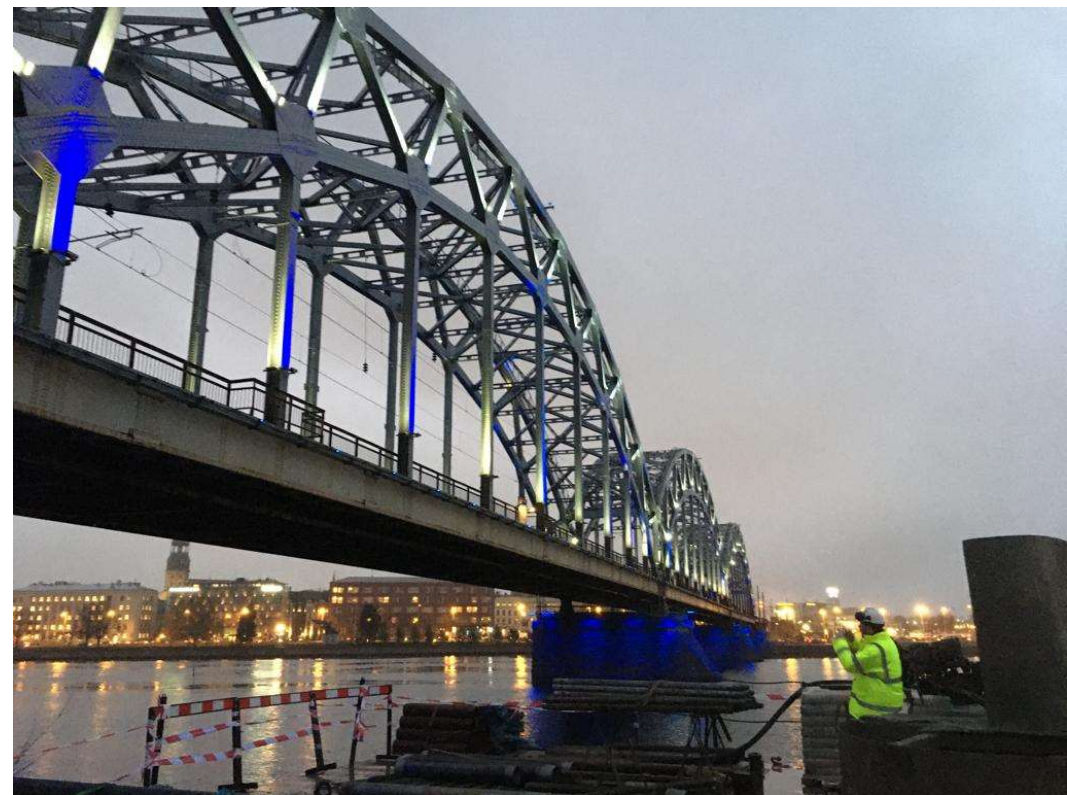


Geodesy works for Rail Baltica geological research – stakeout and surveying 2019 – 2022

SIA GEO PRO, Rūdolfis Mellēns

Our contractor: SIA Vides Konsultāciju Birojs

Main contractor: Ineco (Spain)





Stake out and surveying

Main goal was to stake out and measure exact coordinate and height in field for 700 geological boreholes. Our close partner and contractor SIA Vides Konsultāciju Birojs did geological research for Spanish company Ineca.

We received coordinates from Ineca for each borehole designed on corridor. On river Daugava and for corridor from Vangaži up to Estonian border.

On river Daugava there were research for 2 bridges, in Riga city center next to existing railway bridge, and second location near Salaspils, where Riga's bypass meets river.



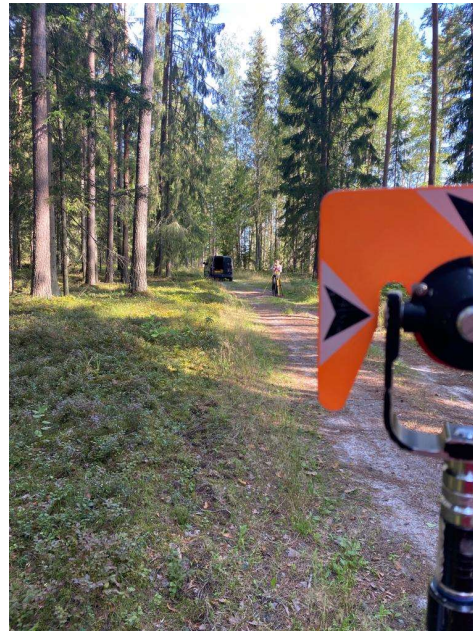
2022

Requirements for the execution of works



All works were required to do in local LKS92 coordinate system and LAS2000,5 high system. Coordinates we received from Ineco was already in WGS84 and LKS92.

Accuracy requirements were on basic standard level, 1 – 2 cm for XY and 5 cm for Z. On open fields this was easy to reach, but many parts on corridor was covered in forests, and that made it harder- it had to be done with total stations.



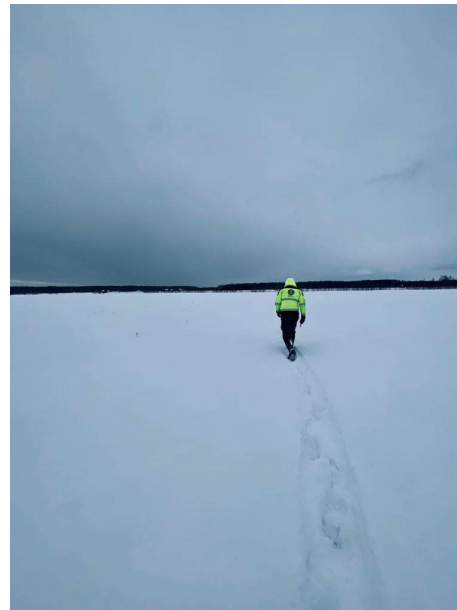


Deliverables



For each borehole it was required to take 3 pictures and do a report. First picture with a picket stick and its number, second with surroundings and last one with yourself (selfie)+ picket.

In the report it was required to describe surrounding environmental situation, name instrument we used to do work and explain method, show measured picket XYZ values.



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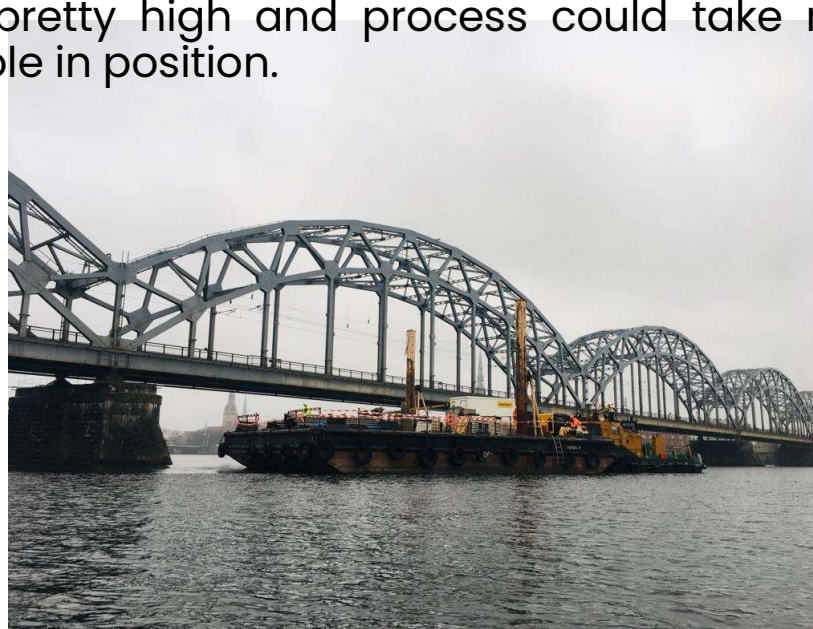
River Daugava and drilling floating platform



More interesting part was positioning on floating drilling platform. There was 2 locations - Riga city center and near Salaspils - much more challenging, as the river itself was much more wider!

Platform needed to be positioned over know point coordinate for drilling borehole usually within 7m radius. For few very precise points it was 4m radius accuracy.

To move platform around was used a small tugboat. Currents sometimes were pretty high and process could take many hours to get platform drilling hole in position.





Method

Basically we did set GNSS receiver over drilling hole on platform and thru radio talked with tugboat pilot, who was very experienced and knew how to operate in currents and how to move platform. We let him know how many meters in which direction.

Sometimes if distance was bigger we staked out point with a small boat and made anchorbuoy, so the buoy was clearly visible from afar and pilot moved platform over it and then we corrected it. Good thing is that platform when locked was able to turn around by rotating itself around its legs, so with a so called "crab-walk" it was possible to achieve few meters accuracy.

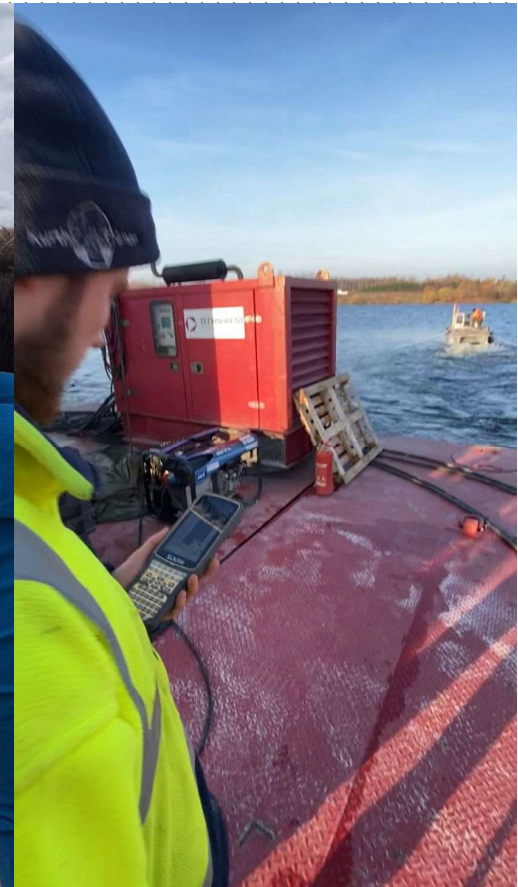


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Gallery



Some funny moments when pilot stuck inbetween rocks and lead geologist Dzintars (bodybuilder in his free time) moved it with his bare hands!



Thank you for your attention 😊

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