What has NGI worked with?

NGI has mainly worked with "EPC Oslo S" which includes the stretch from the tunnel portal at Ekebergåsen and toward the station area at Oslo S. In addition NGI has also contributed with specialist expertise in other parts of the project.

The work for "EPC Oslo S" are complicated, both when it comes to soil conditions and stability (soft, quick clay), pollution in the ground, conflicts with important archaeological areas in Gamlebyen (the old town/the medieval park), as well as the proximity to the existing railway tracks in operation and other traffic, vulnerable buildings and the main station area. In
addition, there are black shale in the area, which must be taken into account in multiple contexts.

In the early stages, as part of a larger consulting group, NGI was involved in the evaluations related to the choice of the final path of the railway. Eventually, NGI became responsible for geotechnical and environmental site investigations, geotechnical and geo-environmental consultancy, preliminary engineering design, and in addition, NGI contributed to the documentation for the comprehensive contractors bid, which was advertised in 2014.

After start of the construction work in 2016, a major part of NGI’s assignments has been associated with independent control of the geotechnical engineering design performed by the comprehensive contractor, the Italian Condotte. In addition, NGI has assisted Bane NOR in a number tasks. This applies to both EPC Oslo S, and the TBM tunnel and associated works, as well as some reviews for EPC Ski.

Areas where NGI has been involved

In the course of the project NGI has been represented in almost all of the areas of expertise, from the following sections:

- Onshore Foundations
- Contaminants and Land Use / Water and Resources, and support from the Environmental Dept. in Trondheim
- Field Investigations and Laboratory testing
- Geosurveys
- Engineering Geology and Rock Mechanics
- Computational Geomechanics (CGM)
- Instrumentation and Monitoring

NGI’s tasks (examples)

In the project, NGI has been consultant to Bane NOR and, among other things, assisted with:

- Geotechnical engineering design from the early stages to the detailed design, as well as the assessment of the areal site stability
- Geotechnical and geo-environmental site investigations in several phases
- Hydrogeological mapping and mitigation measures against the influence of ground water and changes in pore water
- Planning of the monitoring program for pore pressure and infiltration wells
- Planning of the required preparatory measures to ensure more efficient progress for comprehensive (main) contractor
- Instrumentation and monitoring
- The preparation of the specifications in the quotation phase (the works has been advertised as comprehensive (total) construction contract. NGI has contributed to both geotechnics, geo-environmental engineering and hydrogeology
- Support to the developer (Bane NOR) in the design and construction phase
- Third-party control of geotechnical engineering
- Extensive geo-environmental technical assistance in a variety of contexts.
The progress in the area Klypen, where the concrete tunnel will be constructed by the cut-and-cover method (September 2017)

Tunnel entrance north of the Mosseveien: the connection between the concrete tunnel and rock tunnel (summer 2017)
Archeological excavation at ancient “Bispeborgen” (Bishop’s castle) which was below the Bispegata bridge (September 2017)

In early phases NGI has contributed with geotechnical and geo-environmental site investigations and soil sampling in connection with cultural relics (left: block sampling - ø250mm in clay, 2012; right: soil sampling and site investigations at the railway tracks at Loenga, 2012)

/ CONTACTS

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