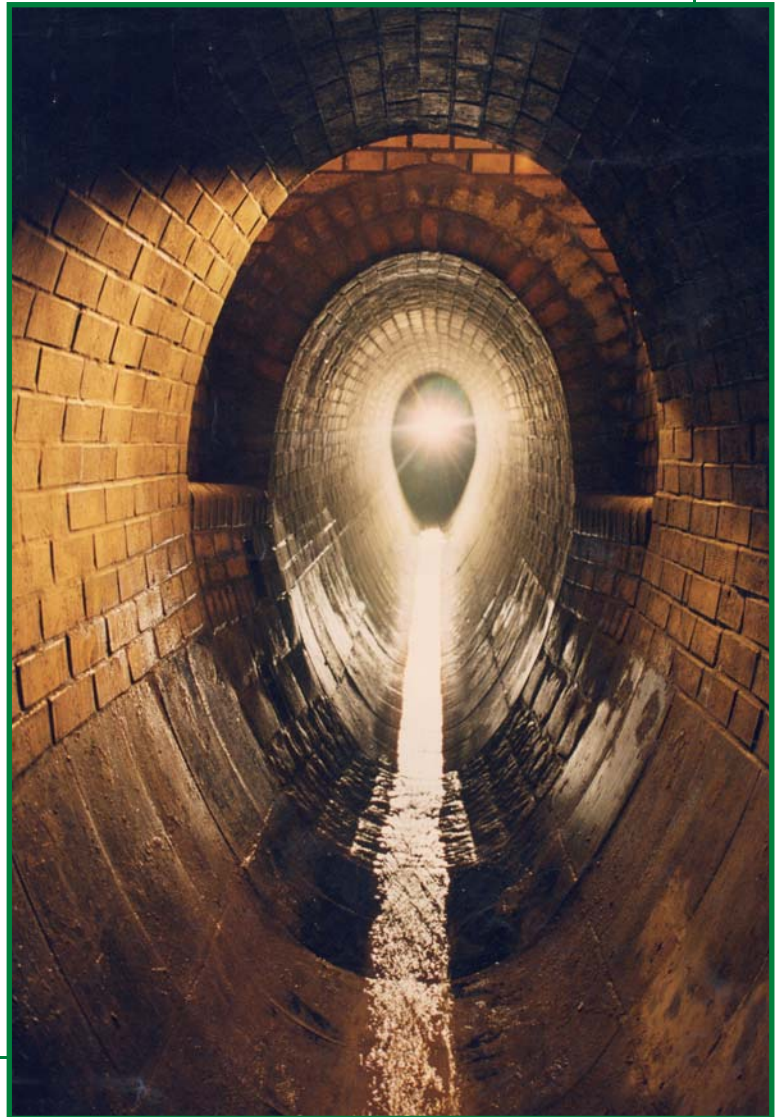


# Revision of sewerage systems and conduits

We perform revision of sewerage systems and conduits and other linear objects of underground engineering networks to determine and document their technical state.

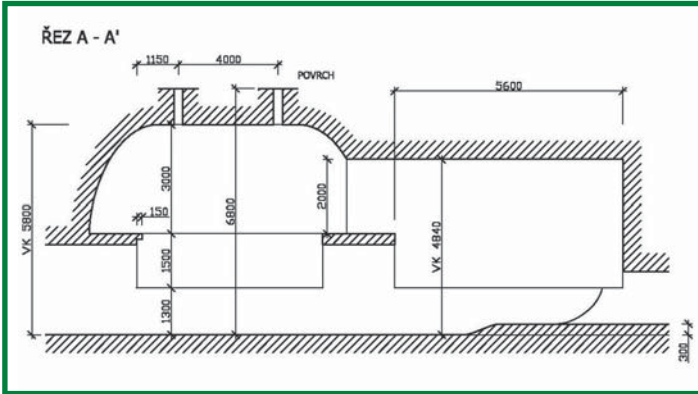
Based on the scale of the participation, part of the revision can also be a set of special-purpose technical measurements, material tests or expert opinions.



Revision of sewerage systems and conduits is particularly suitable when performing building work in their vicinity.

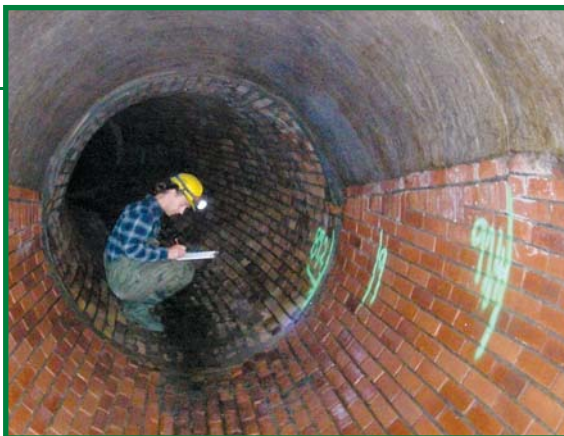
Revision helps when solving the issues of remediation of water mains and sewerage systems and environmental protection, when solving problems of the expansion of municipal development, in particular if there are insufficient or inappropriate maps or archive material, or if it is necessary to obtain information on their technical state and possible safety risks.

During the revision of sewerage systems and conduits we perform the following professional work based on the requirements of the project and scale of the impact



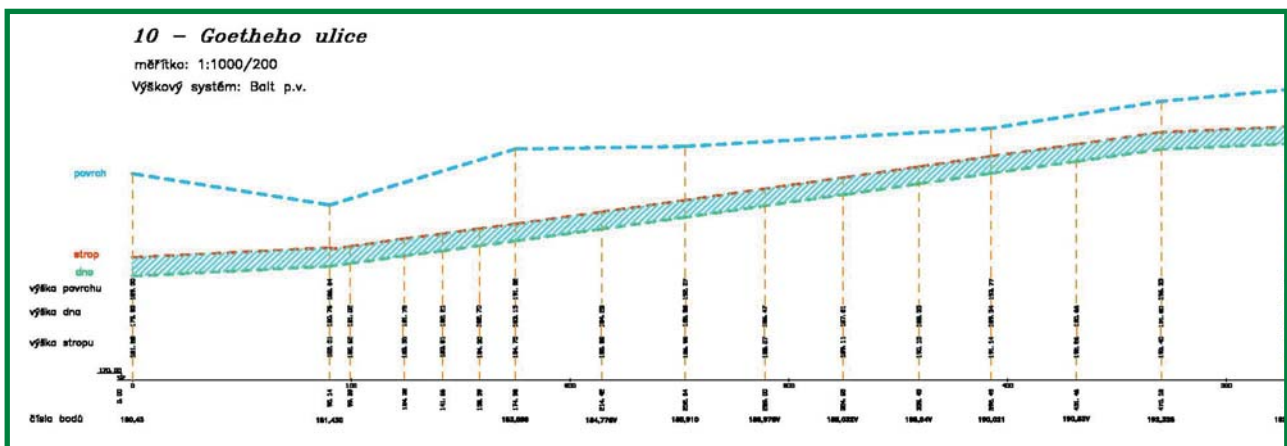
plan of chamber

- inspection of underground works with basic documentation of their state, air diagnosis, documentation of throughput rate, through flow and amount of fouling and specification of the possible need for technical or operational measures.
- preparation and elaboration of maps and documentation of underground works



documentation of the technical state with denotation and description of fault

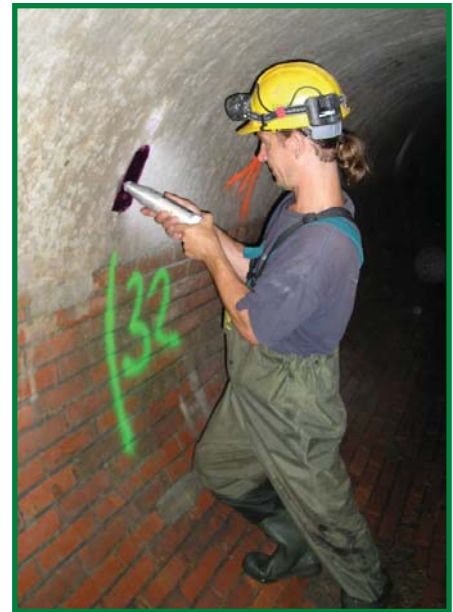
- geodetic measurement of surface characteristics and measurement of the actual course and shape of the underground works



longitudinal profile of conduit measurement

## Monitoring and diagnosis of the state of construction of underground works

- in the case of determined damage, monitoring changes and documentation of the related manifestations: opening of fractures, declines, inclines, above-ground and underground deformation
- sampling of the lining or the rock environment for laboratory testing
- determination of the thickness of the construction
- determination of the quality of concrete construction by terrain tests using a Schmidt impact hammer, radar and ultra violet diagnosis
- verification of chemical composition of infiltration water by hydrochemical sampling and laboratory analysis
- revision of underground works with documentation of their technical state and denotation of the determined in situ disturbance; data from the performed revision are elaborated pursuant to Czech state norm ČSN EN 13508, including an assessment of the findings from a statics point of view

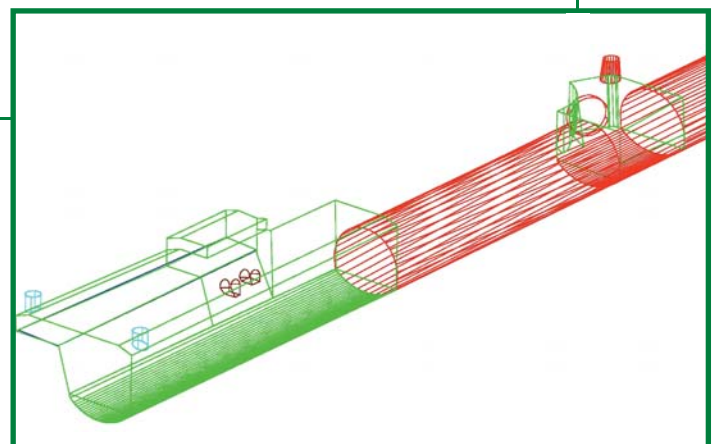
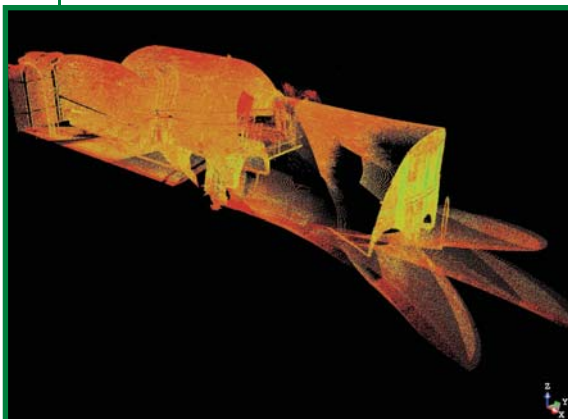


*Schmidt impact hammer test*

## Measurement and scanning of the underground area

- for the documentation of large and broken chambers and background material for subsequent control measurements of shape modifications
- software with graphic outputs in formats for all applications normally used in planning and civil engineering

*graphic output from scanning*



*chamber - model*

## Ground-penetrating radar investigation

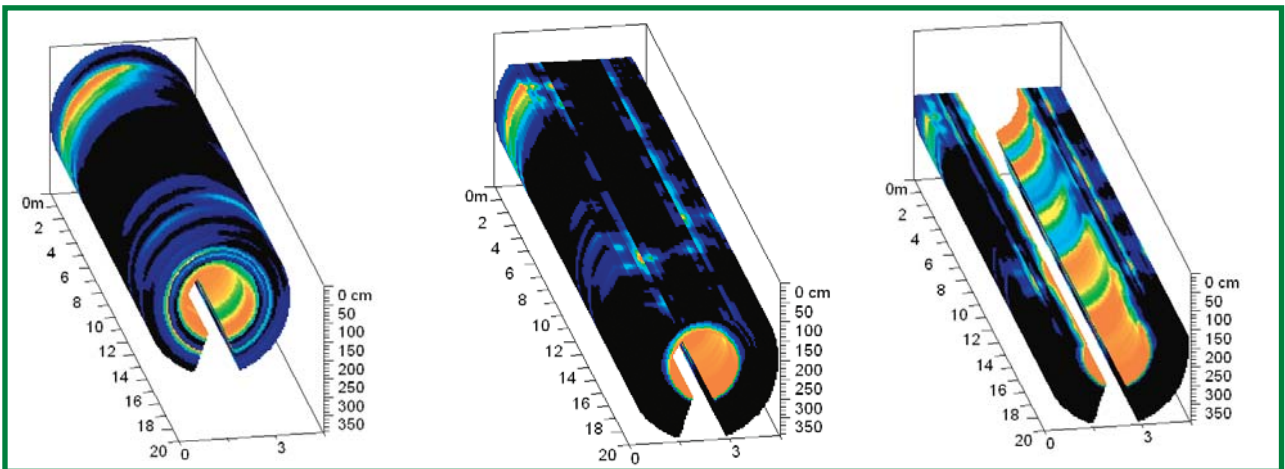
Ground-penetrating radar investigation from conduits performed to assess the state of the environment and to locate cavities behind the conduit lining. Surface geophysical investigation of the soil environment above the underground work monitors the impact of the underground structure on the stability or disturbance of the communications.



*ground-penetrating radar above the sewerage conduit*



*ground-penetrating radar investigation from the conduit*



*3D processing of ground-penetrating radar measurements*

We perform static assessments of the state of the underground object and static calculations of stress on facings and linings. We elaborate designs for long-term monitoring systems of underground works.

INSET s.r.o. meets all of the qualification requirements for the performance of underground work and holds the relevant professional certifications for the performance of work in the field of diagnostics of engineering structures, official measuring, passportization and documentation, engineering and planning activities for construction work etc. Underground work is provided by INSET s.r.o. employees who hold the relevant mining qualifications.