

# Construction Surveying and Setting Out

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## HIGHLIGHTS

- Many years of experience in working for large construction projects and small building sites
- Numerous national and international references
- Flexible measuring arrangements for optimal integration into the construction process
- Flexible schedules with daily work, weekly and continuous operations
- Utilisation of state-of-the-art surveying technology



*Setting out of the framework for the inner shell of a tunnel*

## Field of Application

### Tunnel and underground construction

GEODATA provides all the required recording and setting out work for surveys accompanying tunnel construction. In this context, we mark and signalise individual points and axes required for the construction of planned underground structures such as inner shells, tunnel floors, carriageways, tracks, drains and niches, bores for blasting and anchoring, pipe umbrellas, etc.

Setting out can be performed by our trained staff either conventionally or by means of automatic setting out systems (motor laser) in special cases. After construction, we check and document the project (e.g. by profile control measurements using total stations and laser scanners) thereby assuring the quality of the entire construction project.

### Surface construction, foundation work and earthwork

We offer object-specific setting out and surveying for earthwork and construction of engineering projects such as excavations, embankments, bulkheads, diaphragm walls, piles, foundations, roads and building site installations, open cut excavations, cut-and-cover constructions, slope protections, disposals, portals, galleries, embankments and dams, bridges and other high-rise buildings etc.

For earthwork, we survey ground level elevations and profiles, generate ground models, calculate masses and provide a reliable base for billing.



*Setting out of a foundation and of bored piles on the surface*

## Construction Surveying and Setting Out

### Description of Services

When setting out a building, we transfer the three-dimensional coordinates of the planned buildings or objects to the nature. For this purpose, the set-out points are determined by means of opto-trigonometric surveys (also using GNSS measurements when on surface) starting from reference points in the absolute coordinate system of the building site, and then marked in a suitable way.

The required reliability and accuracy of the set-out points is confirmed by a final redundant control measurement. To minimise interference in the construction activities, the location of the measuring instrument is generally chosen in accordance with the principle of free stationing. This flexibility is facilitated by creating a dense field of reference points.

The coordinates to be set out are processed using suitable special software. The results are recorded in the form of setting-out protocols and diagrams and handed over. The setting out time and effort is ultimately determined by the given construction tolerances. Using standard methods, accuracies of a few mm to 1 cm are achieved.



*Setting out of the profile for a tunnel in the starting shaft*

### Scope of Services and Delivery

- Accurate and quality targets and marking material
- Utilisation of specialised construction survey software
- Setting out using terrestrial and satellite based methods
- Manual and automated setting out techniques and systems
- Construction surveys by means of tacheometry and terrestrial laser scanning
- Deployment of experienced staff

GEODATA offers construction site survey services for all projects, large and small, national and international. One of our core competencies is the execution of total projects, i.e. we see ourselves as a provider of integrated construction site surveys and products.



*Little tolerances are permitted during bridge construction*

*The following other data sheets are associated with this data sheet.*

<u>Services:</u>	Heading Survey
<u>Hardware:</u>	Targets and Marking Material
<u>Software:</u>	EUPALINOS Surveying Software
<u>Systems:</u>	TALOS III Motor Laser System