

E18 Bjørvika

**Via Nordica 2008
Helsinki**

**Kjell Bjørvig
Dep. Director General
Norwegian Public Roads Adm.**

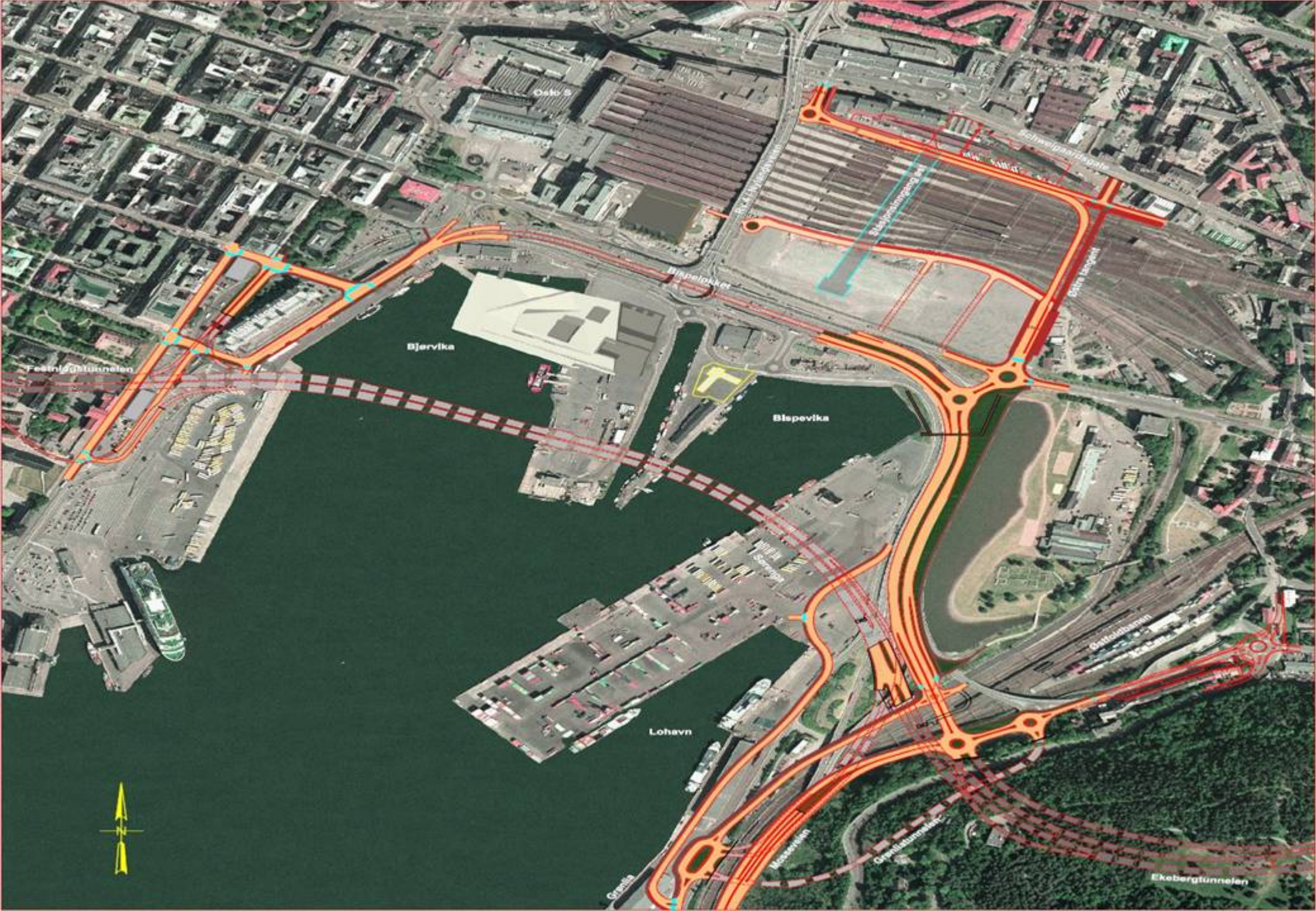
E18 Bjørvika

- **Increasing productivity through new methods of cooperation and new technologies**

Three different elements which in isolation are very different, but which all contribute to improved cooperation and reduced levels of conflict in the project.

- **Partnering**
- **Dispute Review Board**
- **Dataflow and 3D planning**





Bjørvika – the most complex infrastructure Project i Norway

- 120.000 AAD
- 120.000 travellers by public transport
- A busy railway line through the site
- Complicated ground conditions
- Great environmental challenges
- Archaeological challenges
- The first immersed tunnel in Norway





A three level tunnel intersection



A W SOLERØD

Partnering

- Start-up meeting (normally 2 days)
- Bringing about understanding and respect for the various roles undertaken by all the people involved in the contract
- All the objectives are set out and a summary is prepared of objectives that the parties have in common
- To identify areas that are likely to be challenging when cooperating under the contract
- Rules are also drawn up to establish a protocol for quick and effective dispute resolution
- The start-up meeting concludes with the signing by all the participants of a Partnering Agreement

Dispute Review Board (1)

- The contracts contain special terms providing for the establishment of a Dispute Review Board
- Terms are based on the “Dispute Board Rules” prepared by the International Chamber of Commerce (ICC).
- The contractual terms allow for the parties to agree on an alternative procedure for appointing the Board.

Dispute Review Board (2)

- In Bjørvika all the three major contracts agreed on the appointment of a Board that would have the power to resolve disputes in relation to all the contracts.
- The site developer nominated a candidate for the role of leader of the Board and this candidate was approved by the other parties. The leader of the Board then proposed candidates for the two other places on the Board.
- Following an internal process among all the parties involved, all the members of the Board were nominated and approved.

Dispute Review Board (3)

The advantages of an single board are :

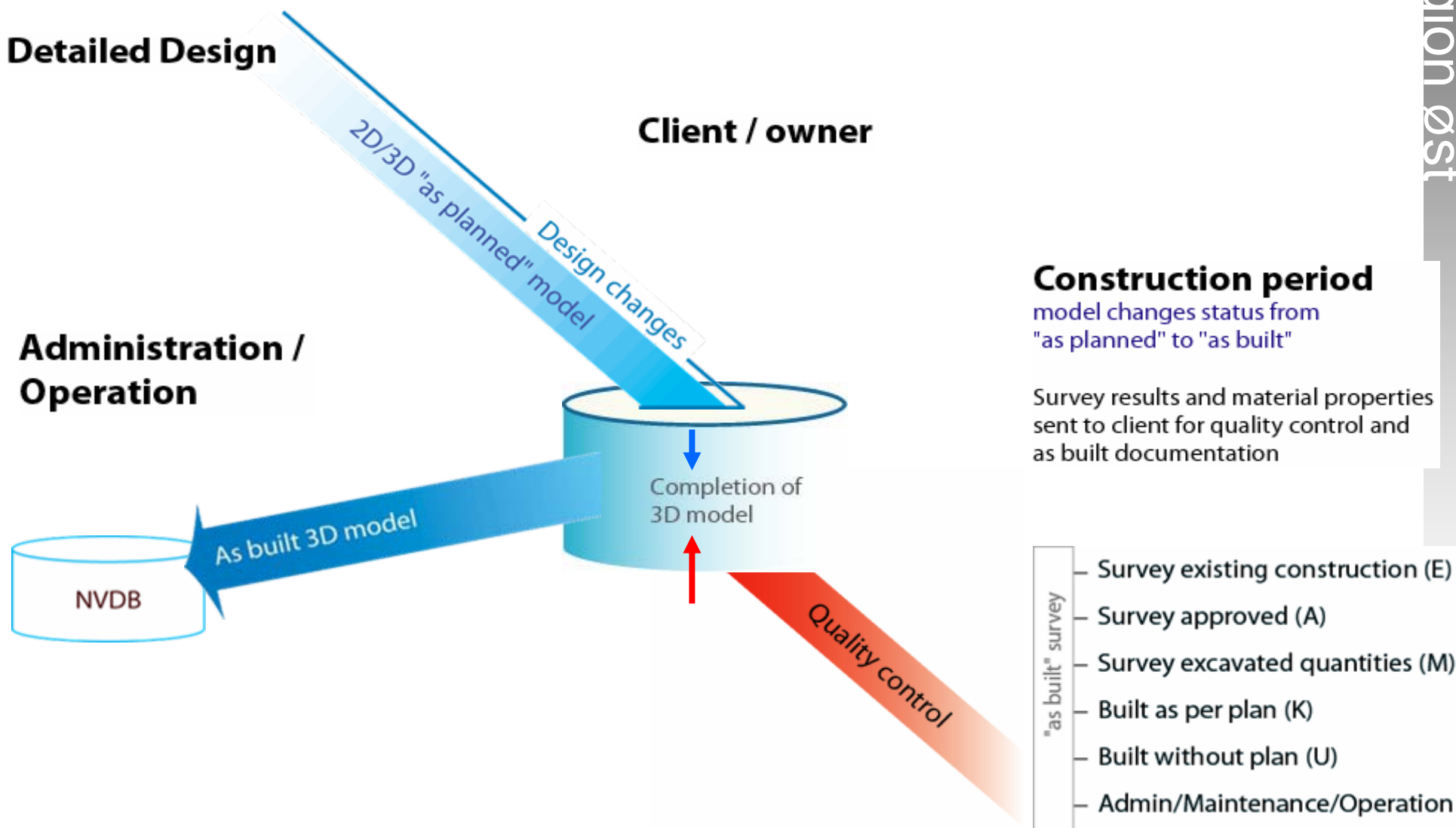
- the Board would more readily be able to view the project as a whole
- the Board would consist of three impartial members with no links to any of the parties
- the Board would have good internal relations and be able to work together smoothly
- the Board's members would have a broad range of expertise
- a single Board would reduce costs.

Documentation

All exchanges of documents are channelled via a web hotel.

- Completed elements must be surveyed and precisely documented by the contractor
- The site developer checks the data, corrects drawings in the case of discrepancies and produces “as-built drawings”
- Once the project has been completed, the whole database of “as-built drawings” will be handed over to those responsible for operation and maintenance of the site for reference

The Bjørvika Project – as built documentation

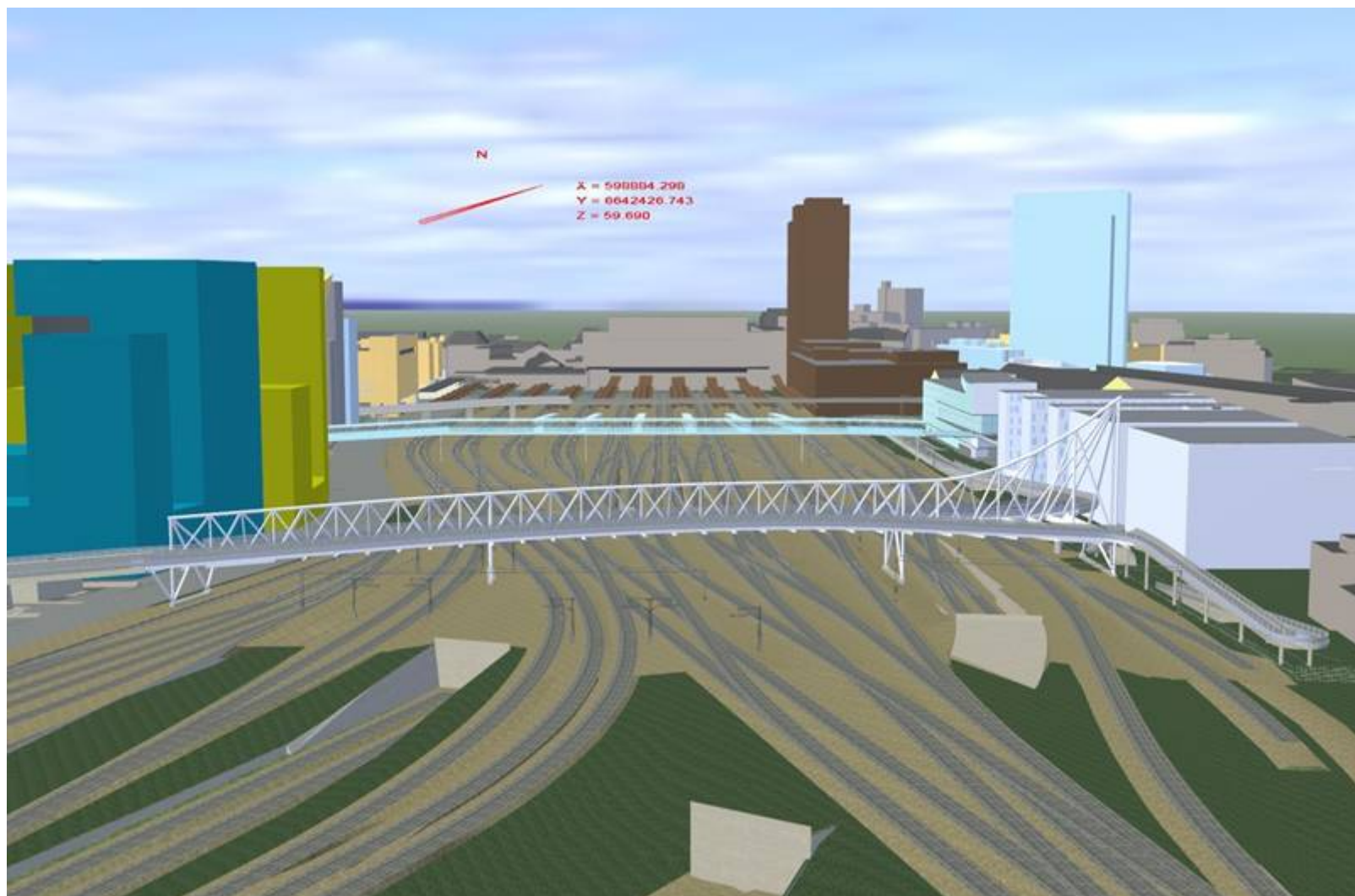


3D planning

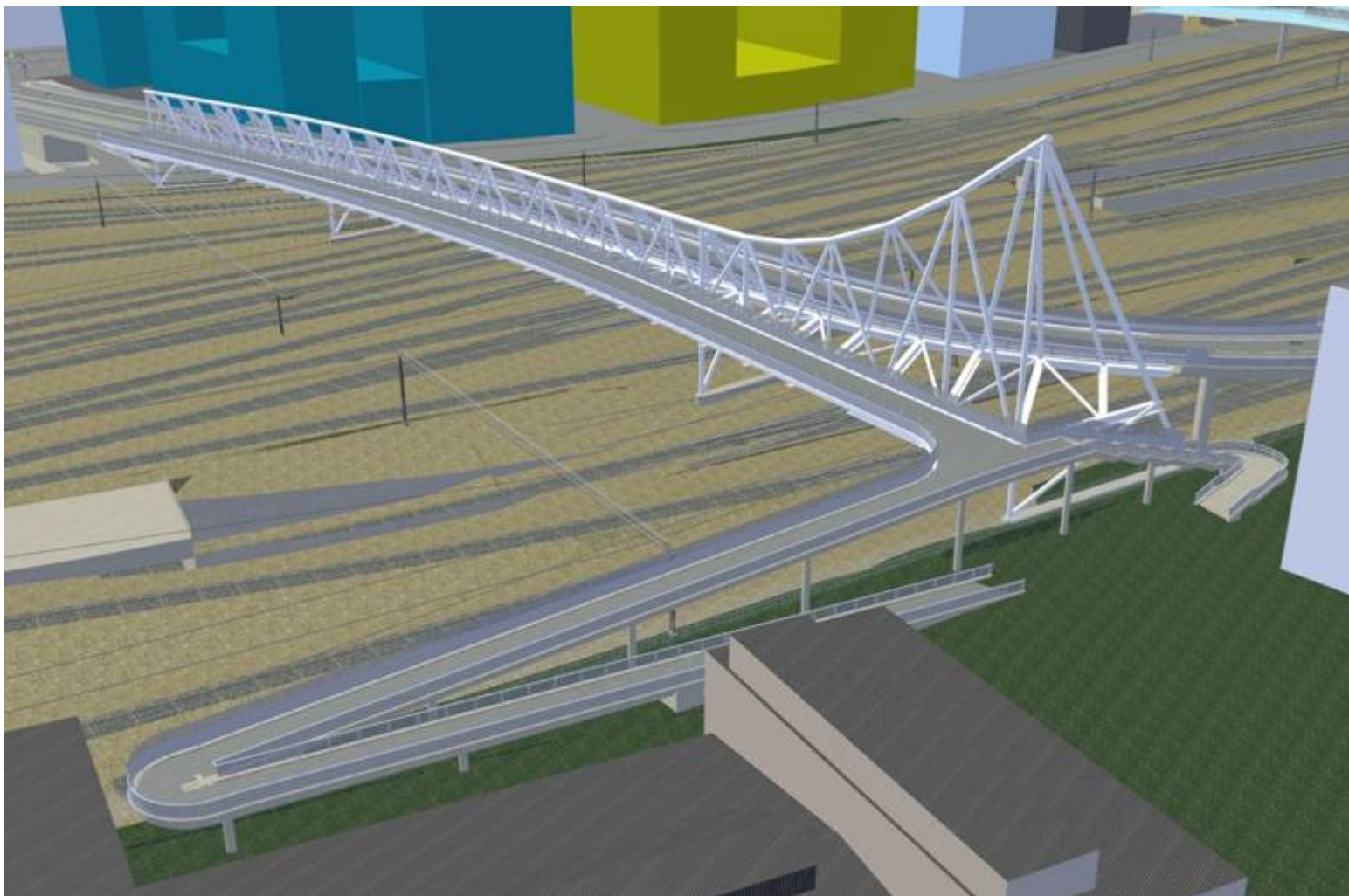
The first step is the construction of a 3D model, following which drawings are generated directly from this model

- The 3D model is made available on a dedicated area within the web hotel
- Contractors are able to access the model directly and obtain all the geometric data required for construction purposes
- The model requires from them in terms of equipment, software and skill
- Potential for time-saving in connection with quantity assessments and that there are also fewer sources of error

Overview bridge passing railway

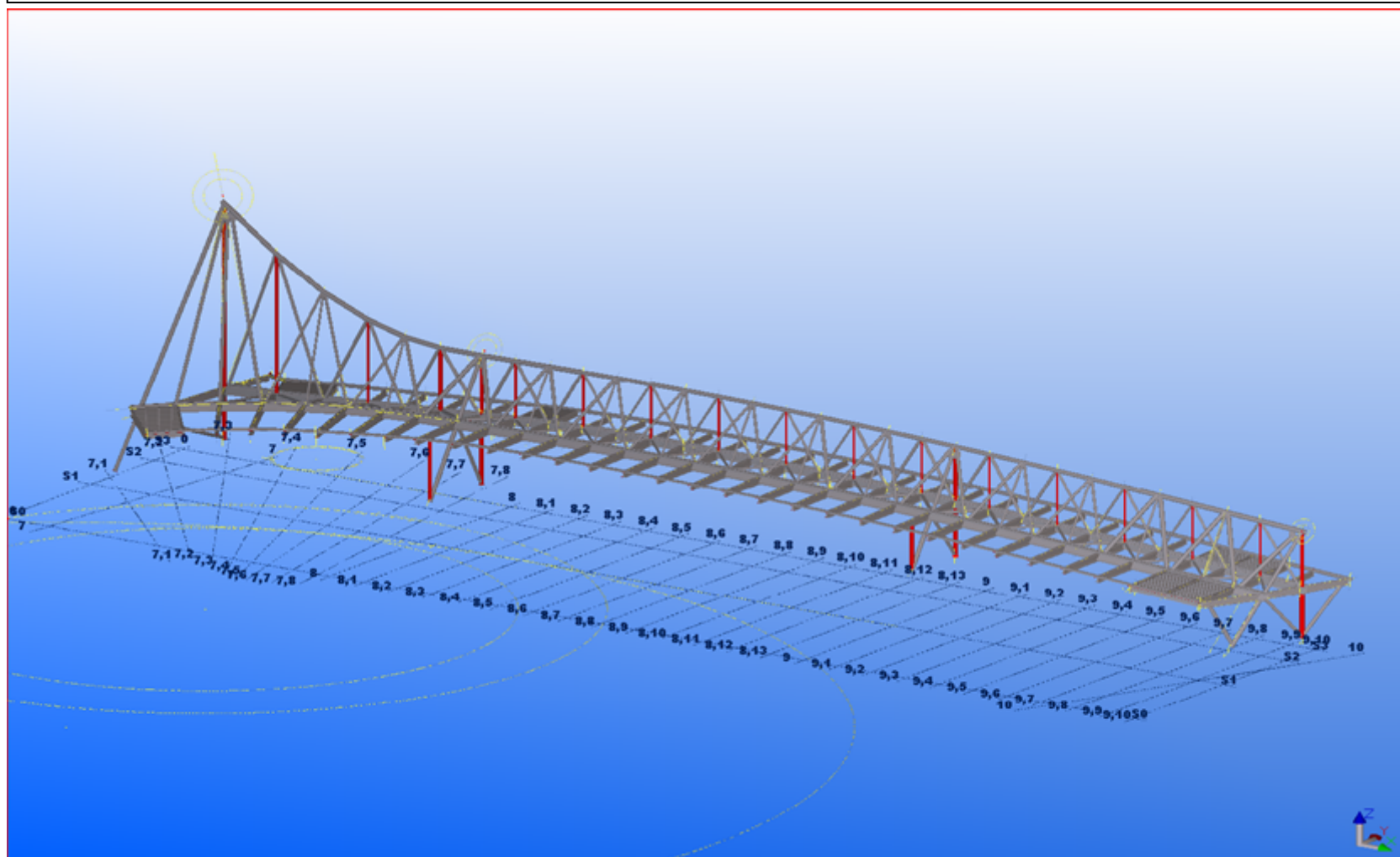


3D models

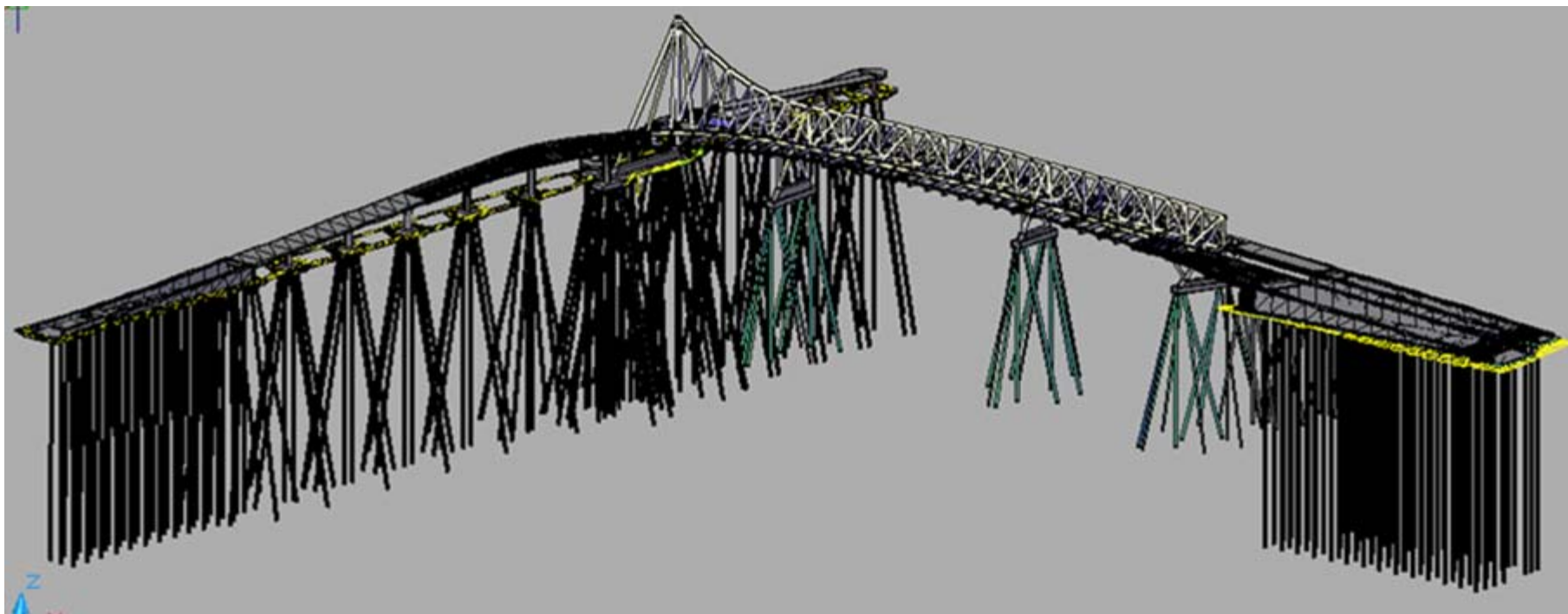


3D model close-up





Bridge foundation



**Thank you for your
attention**

