BIM to Construction Site

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FIG Working Week 2016

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Recovery
from disaster

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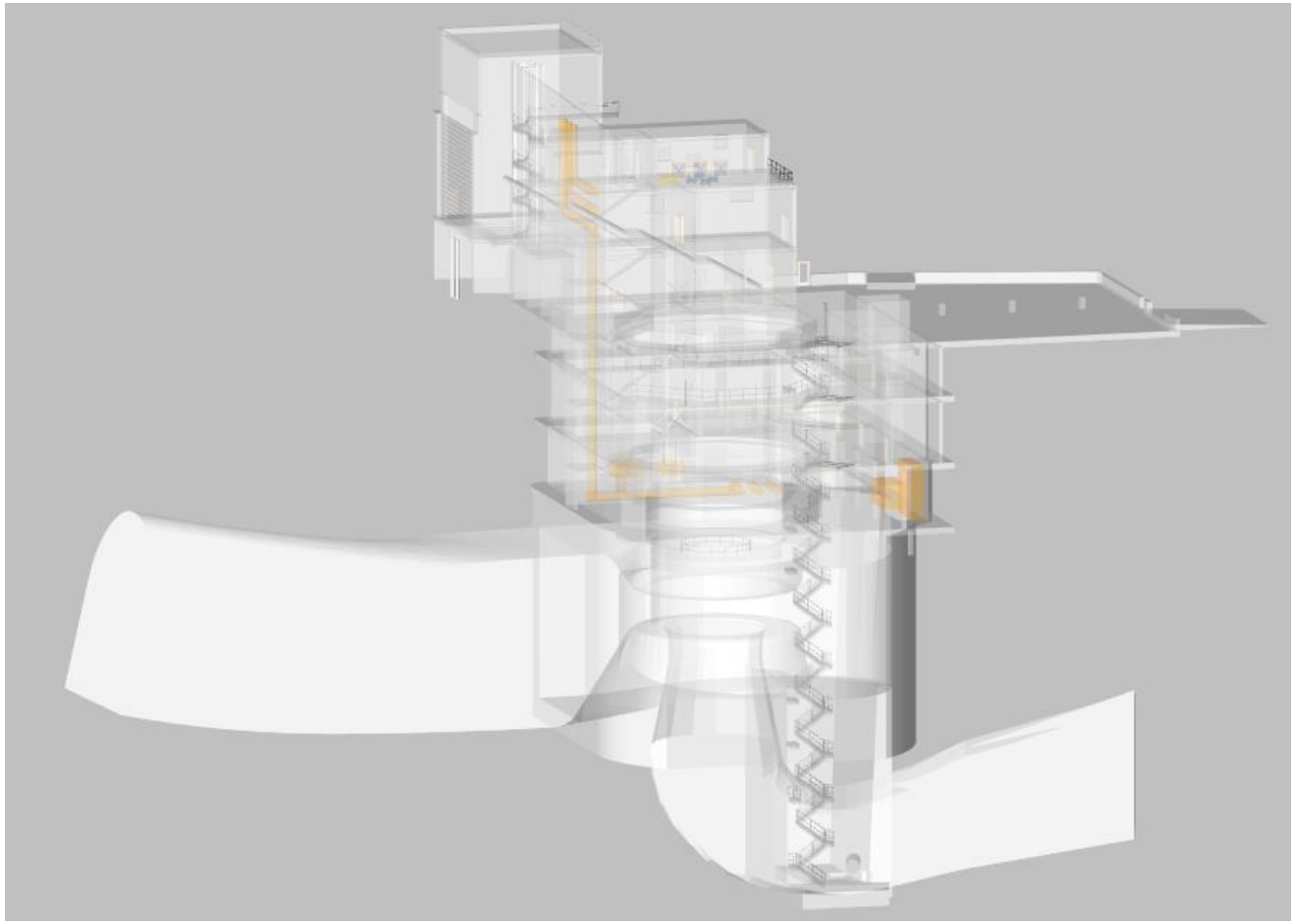
What is BIM without surveying engineers?



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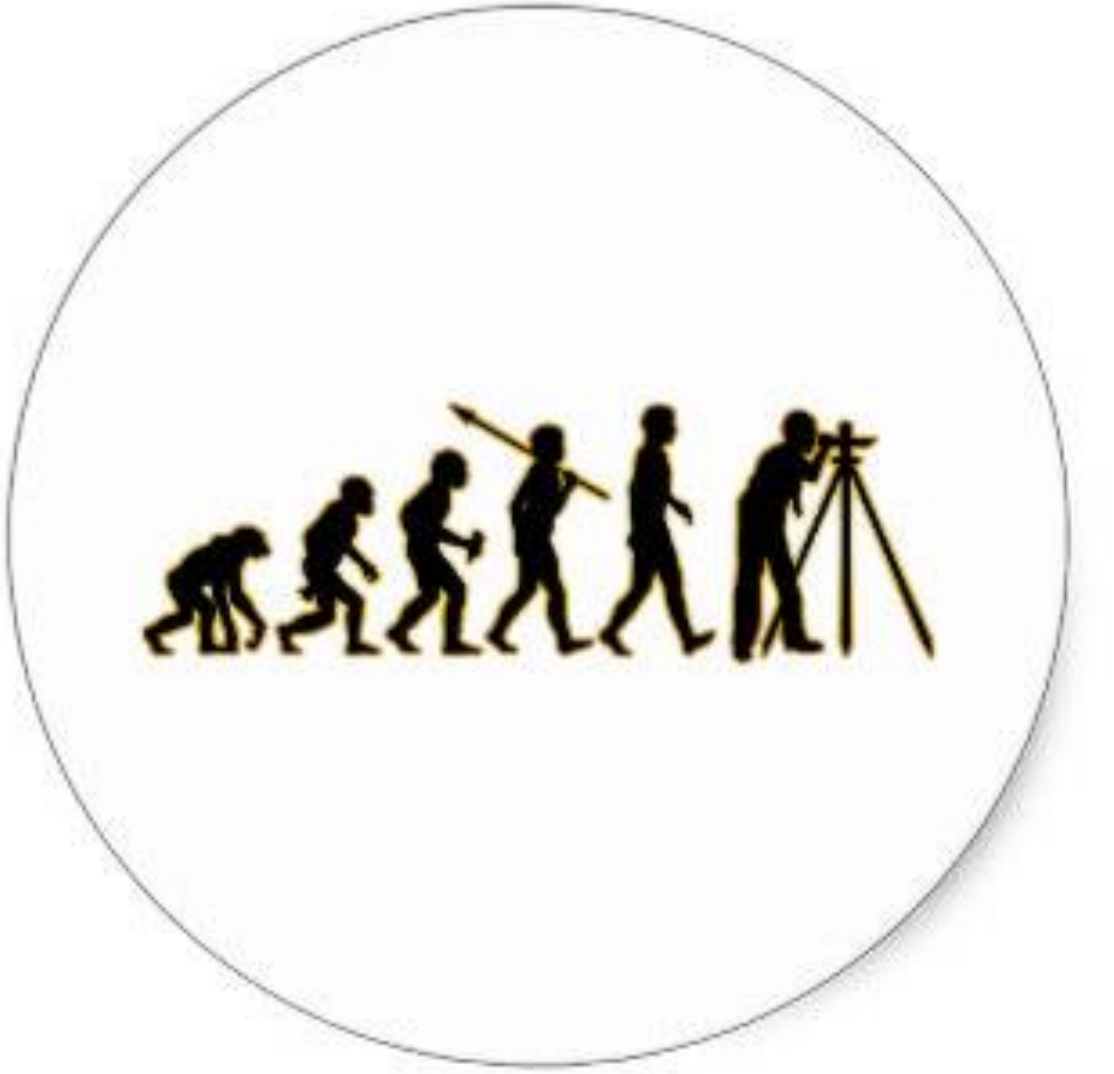
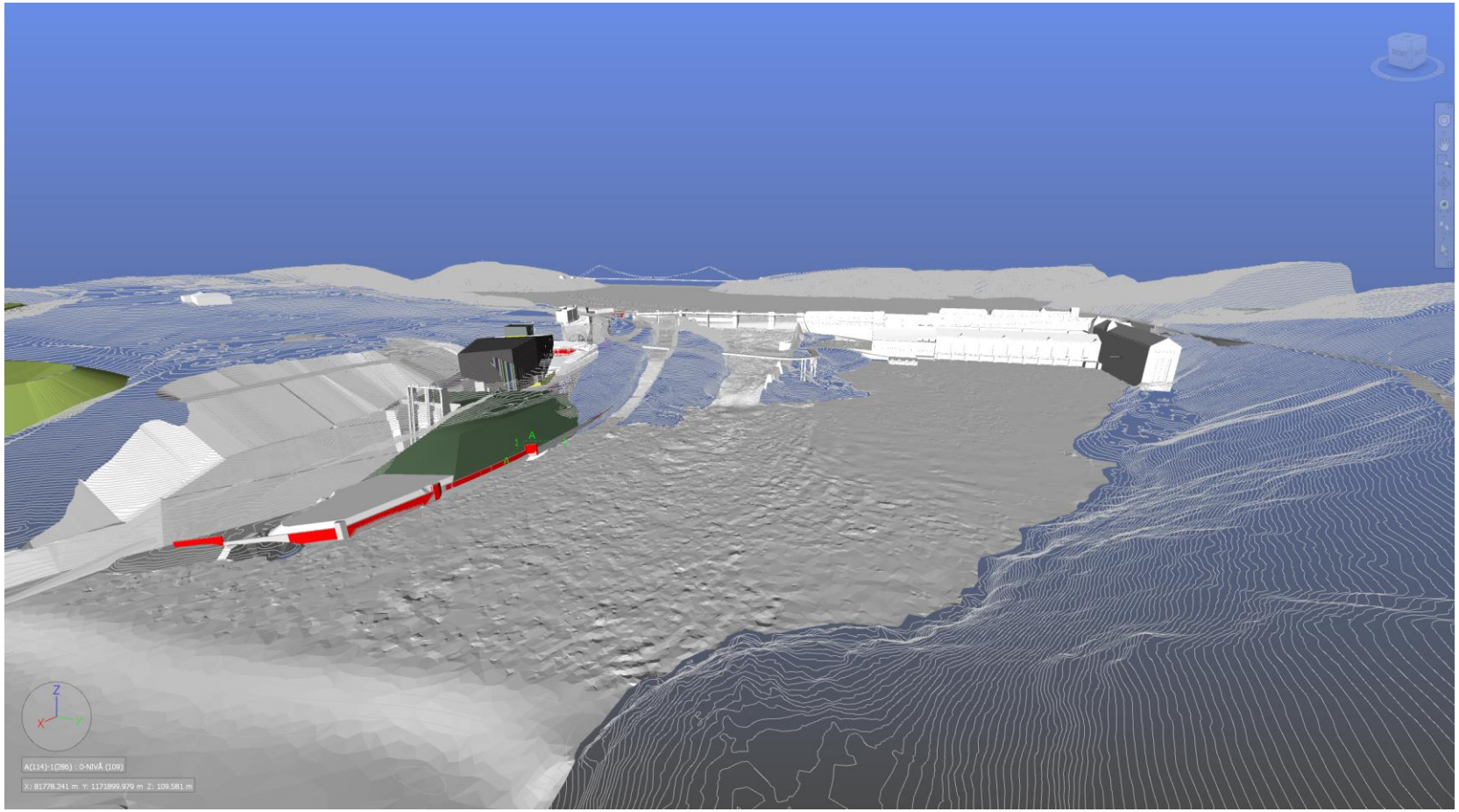
Surveying engineers should take a new step



In order to build we need a solid foundation



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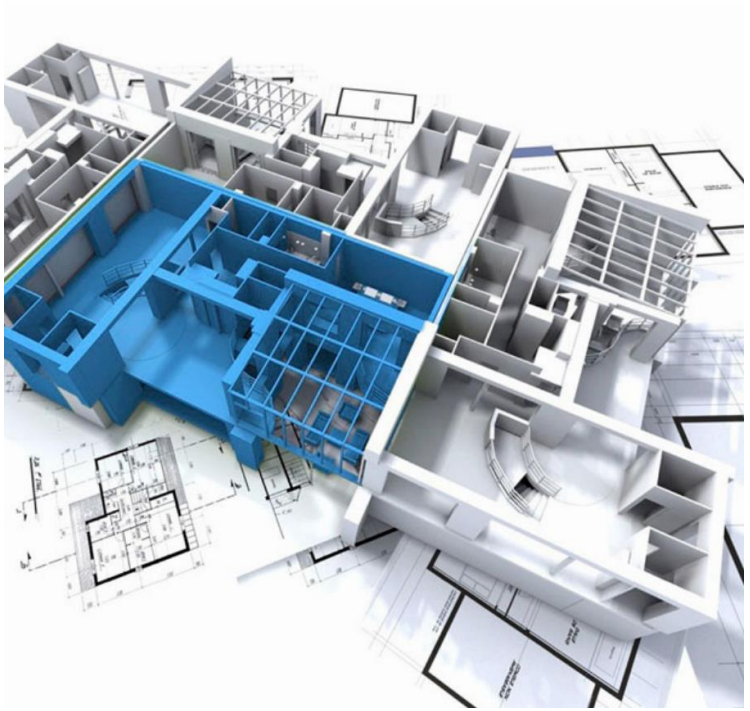
The contribution of a surveyor on BIM projects

- establishment of a good starting point for all projects
- accurate documentation of space and structures
- optimized work processes
- seamless integration between field and office for
  - improved collaboration
  - better time and risk management
  - avoid waste of time and resources
  - avoid mistakes and unnecessary costs

BIM in Norconsult

- Overall BIM Strategy
- BIM as tool for engineering
- BIM at the construction site
- BIM as basis for FM
- Benefits of employing BIM



Overall BIM strategy in Norconsult

- Norconsult shall employ **BIM on all projects**
- Investment on both **BIM Tech** and **BIM Team**
- Development of **standardized work processes**, which are documented in the company **BIM manuals**
- **Separate models** for every discipline during processing
- **Combination** of models from all disciplines in the **collaboration envirnment**
- **Interdisciplinary control** inside collaboration environment
- All BIM **models include built-in information about quantities** and can be used in all stages of a project

Project description:

- New hydropower plant
- The biggest of its kind
- Entirely designed in 3D as a BIM model
- A Completely Paperless Project
- 1 sq Km Project Area
- Aerial and terrastrial Laser Scanning, Aerial and Ground image data, GIS data, Geodetic, geological and seismic surveys all employed for the initial documentation.

New Concept Design

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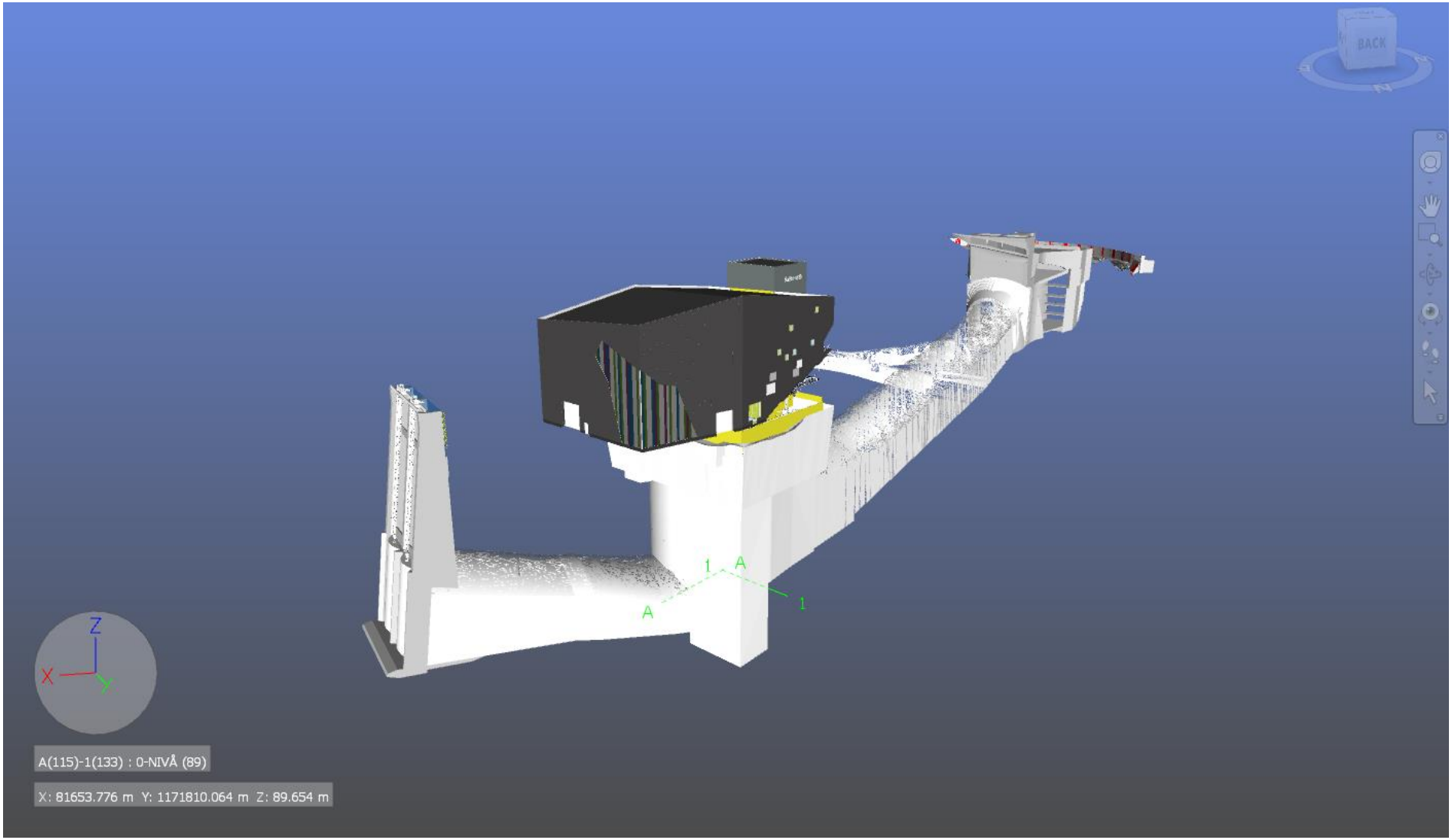
New Concept Design



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Bringing BIM into the construction site

- Establishment of a geodetic network
- Capture and modelling of terrain
- Scanning and modelling of existing structures and infrastructure
- Development, evaluation and optimization of concept in BIM
- Continous monitoring of construction progress
- Update the «as built» model
- Continuous control of costs and quantities(5D BIM)

Project area documentation

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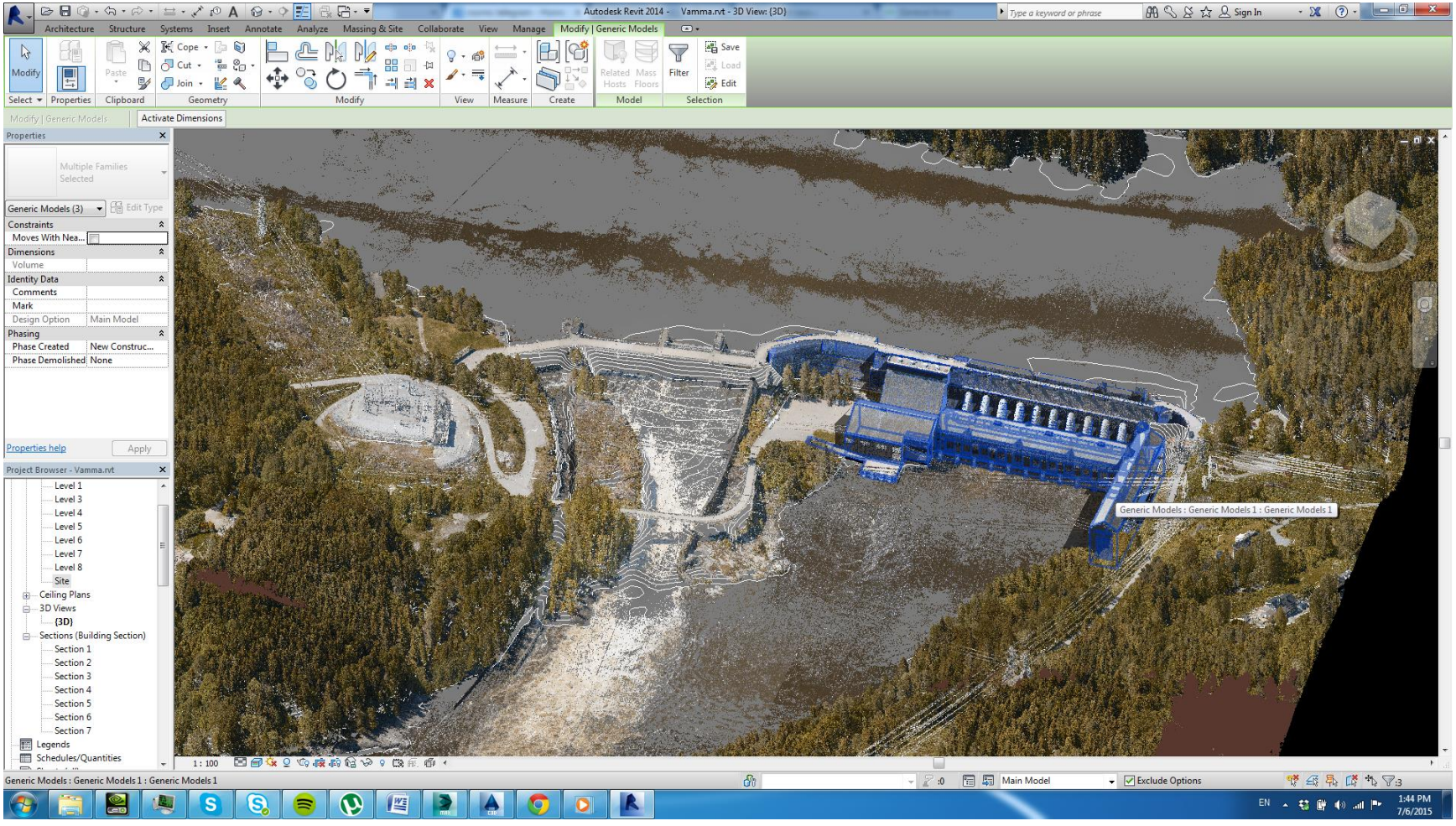
Project area documentation



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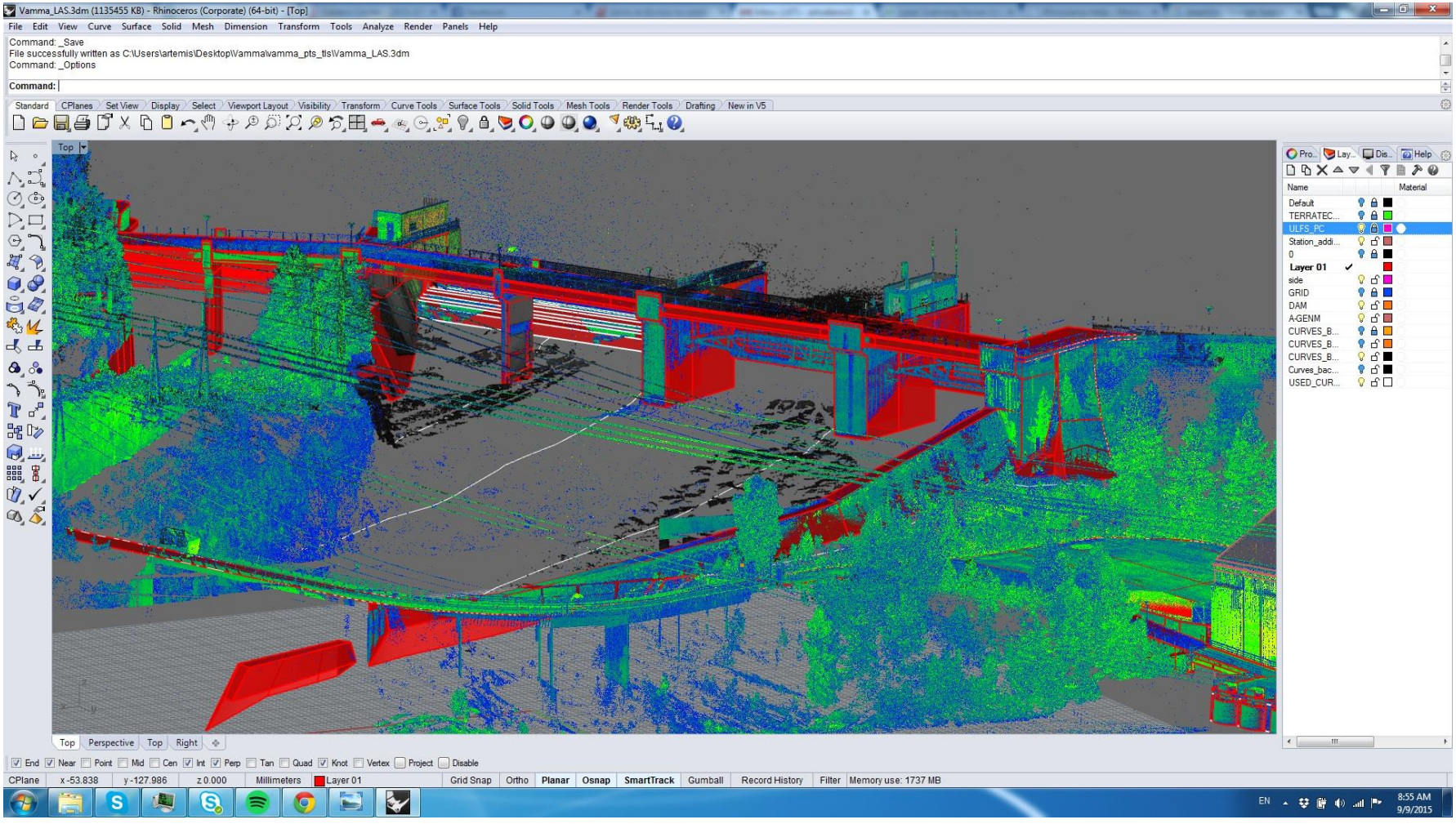
Project area documentation



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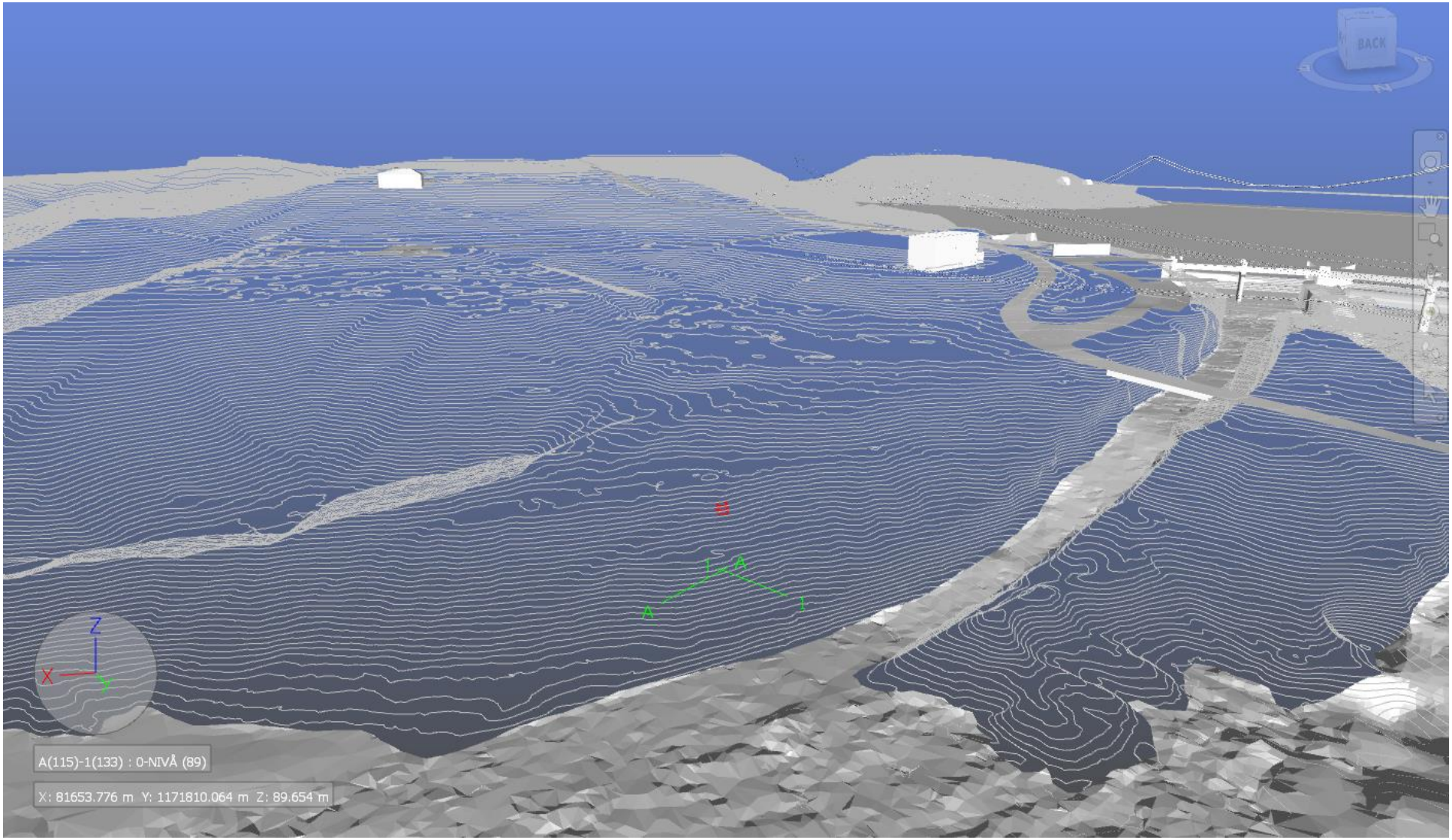

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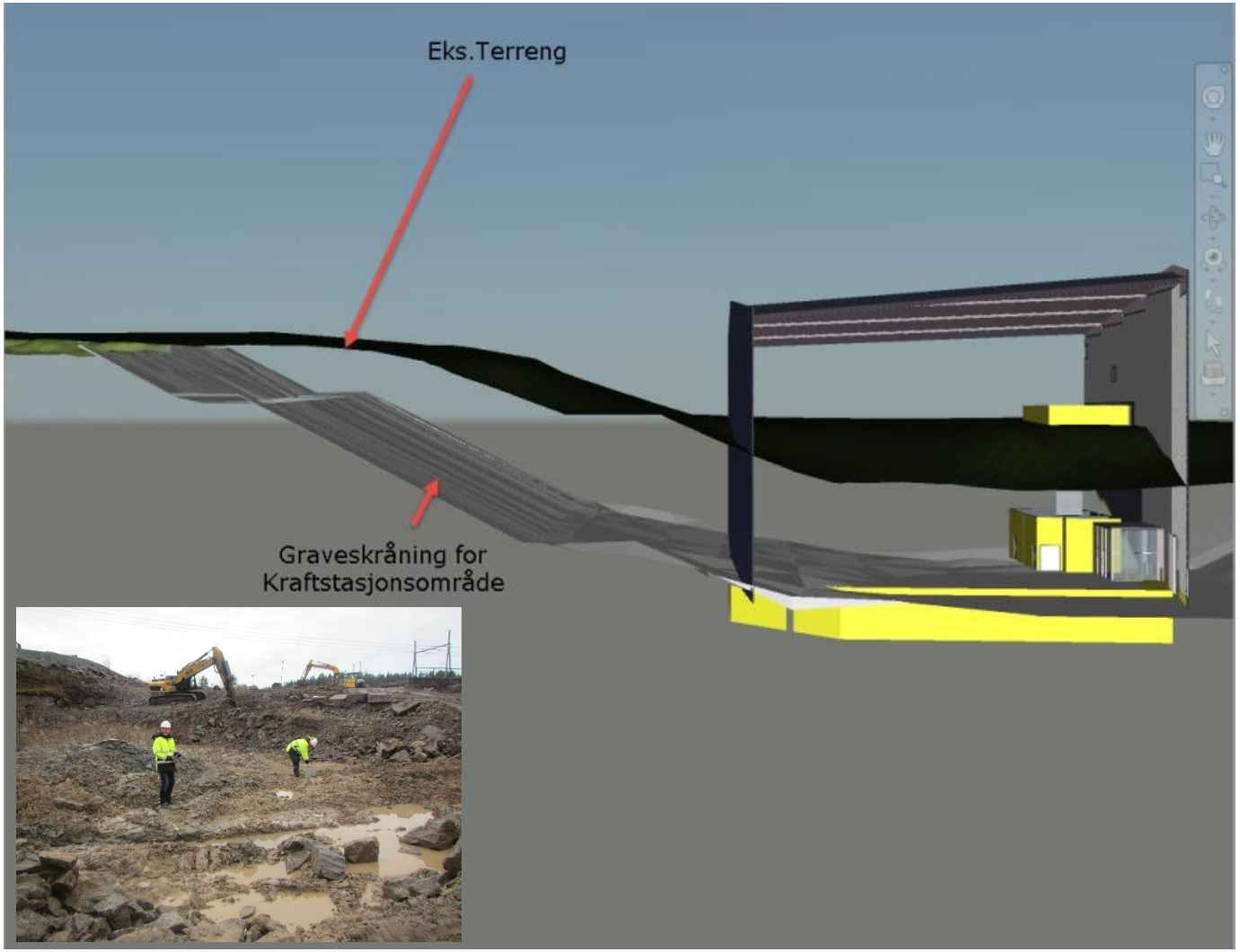
Project area documentation



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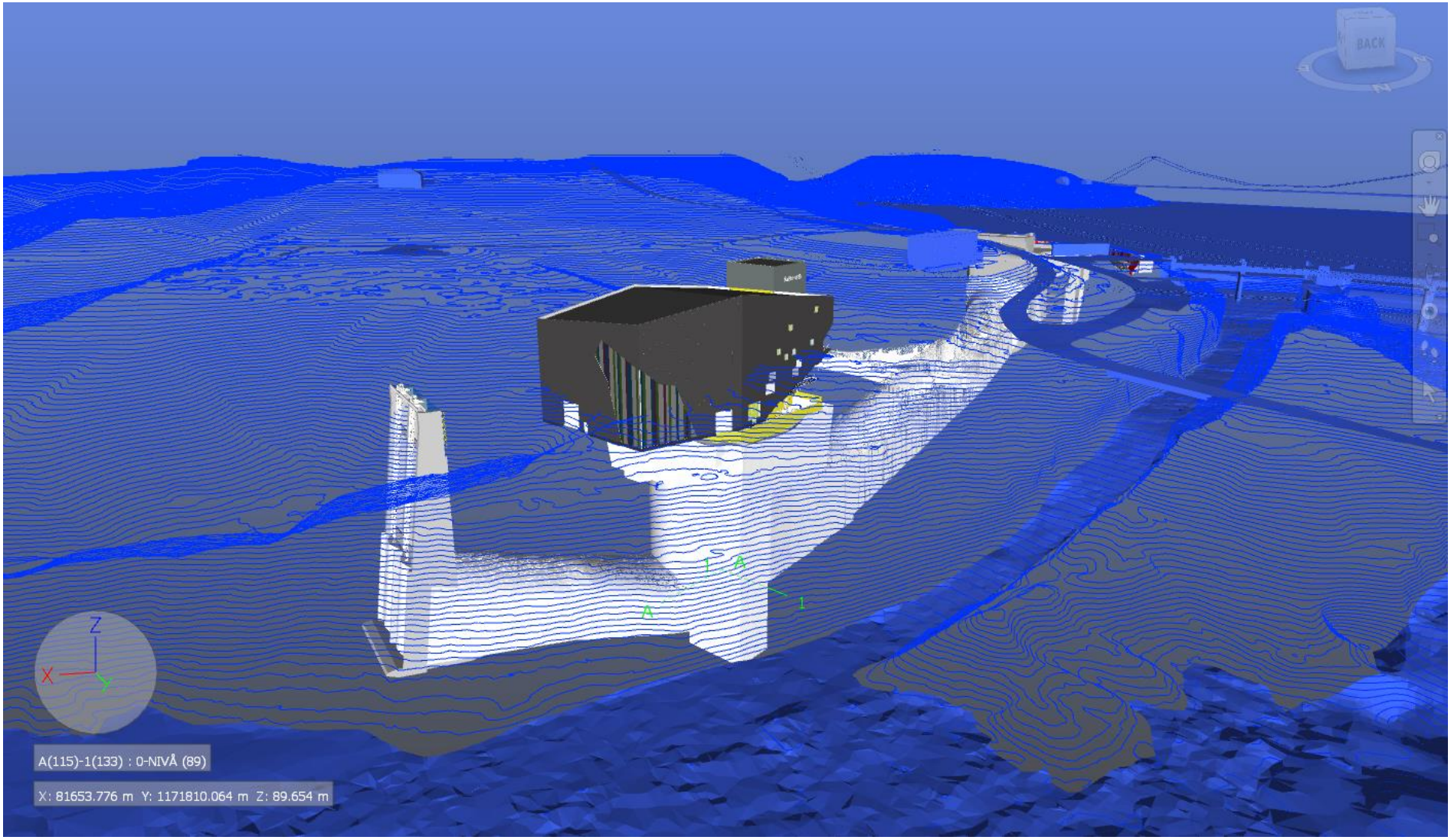
Field and design integration



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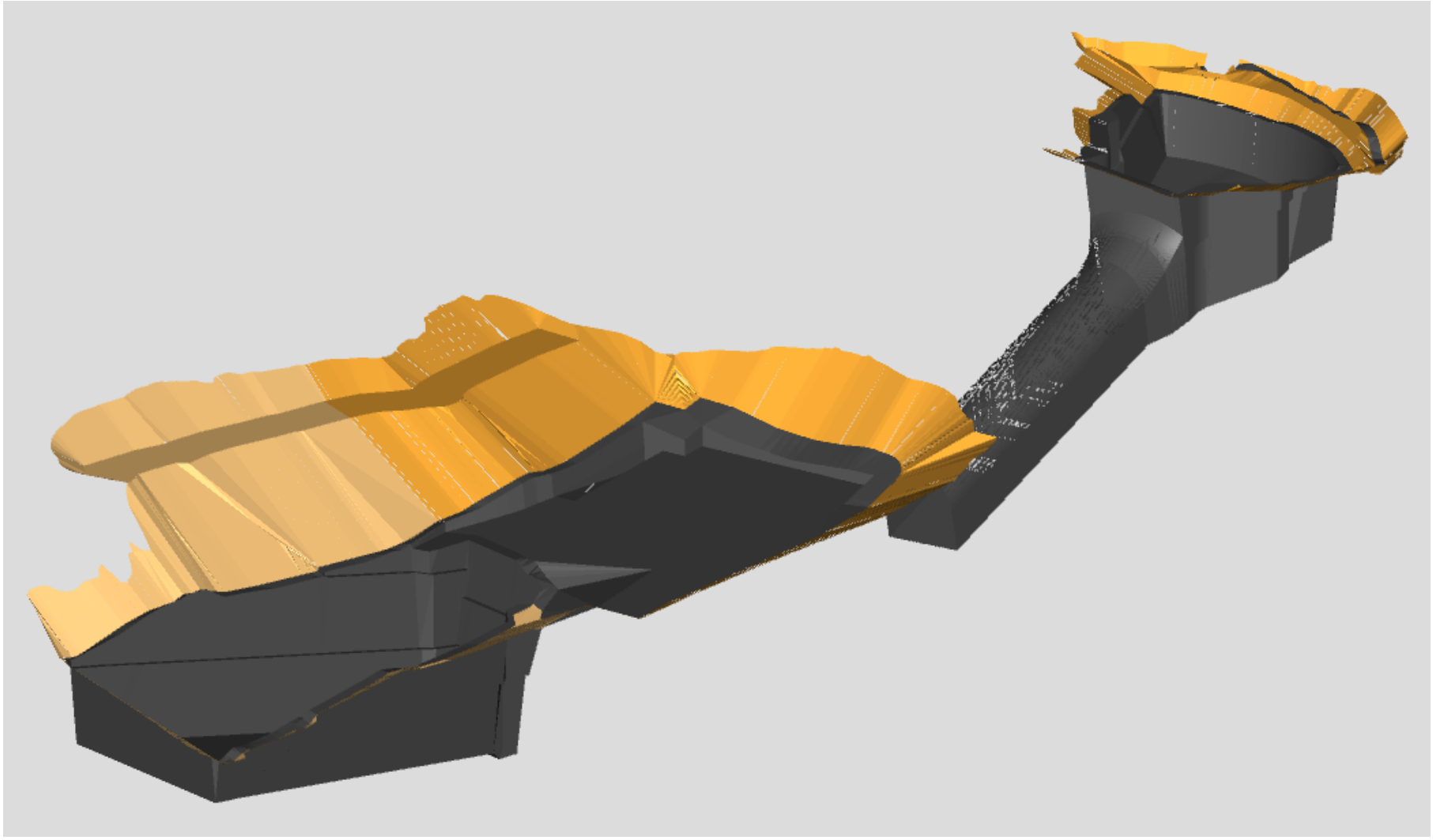
Design and construction integration



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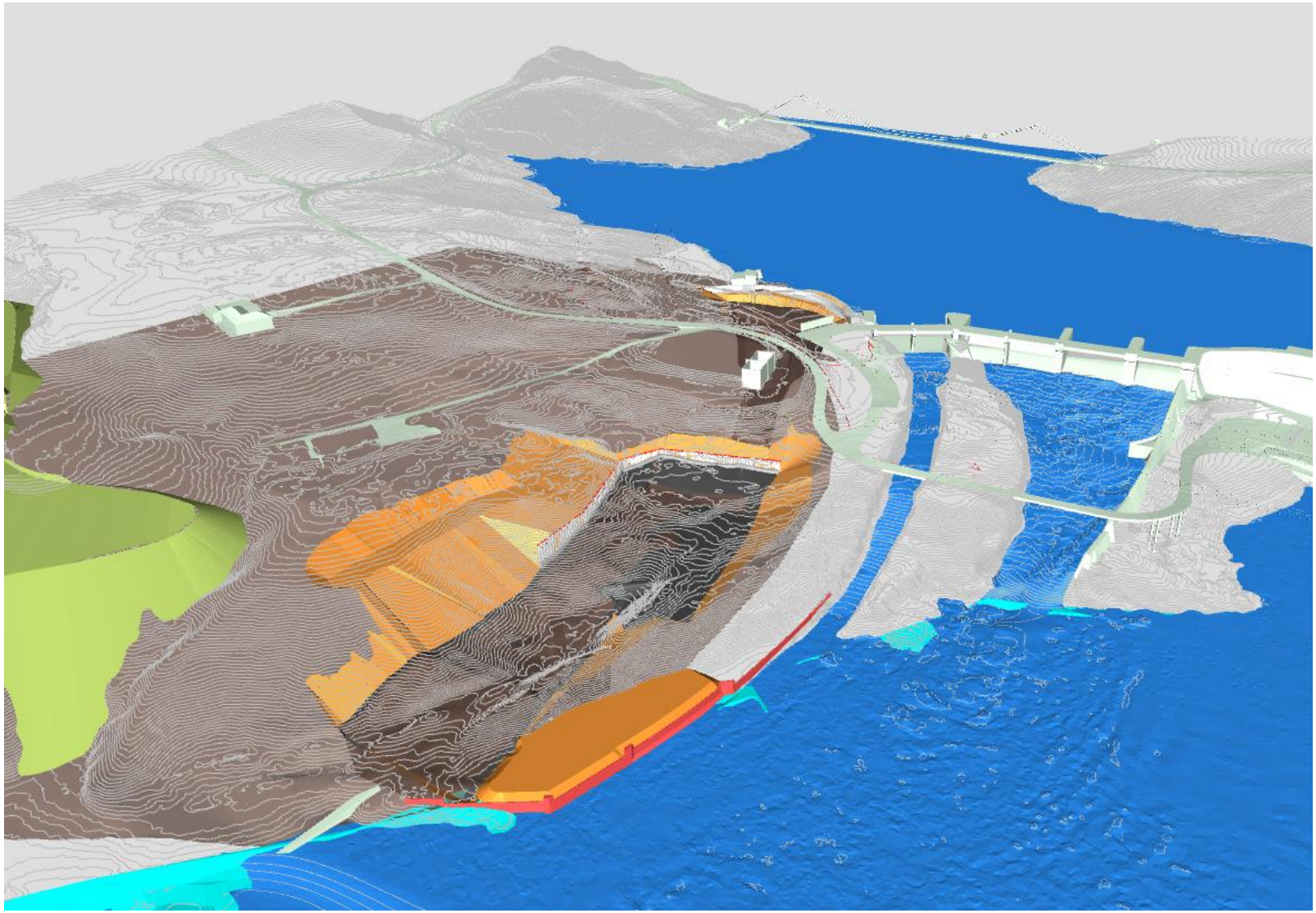
Field and Construction integration



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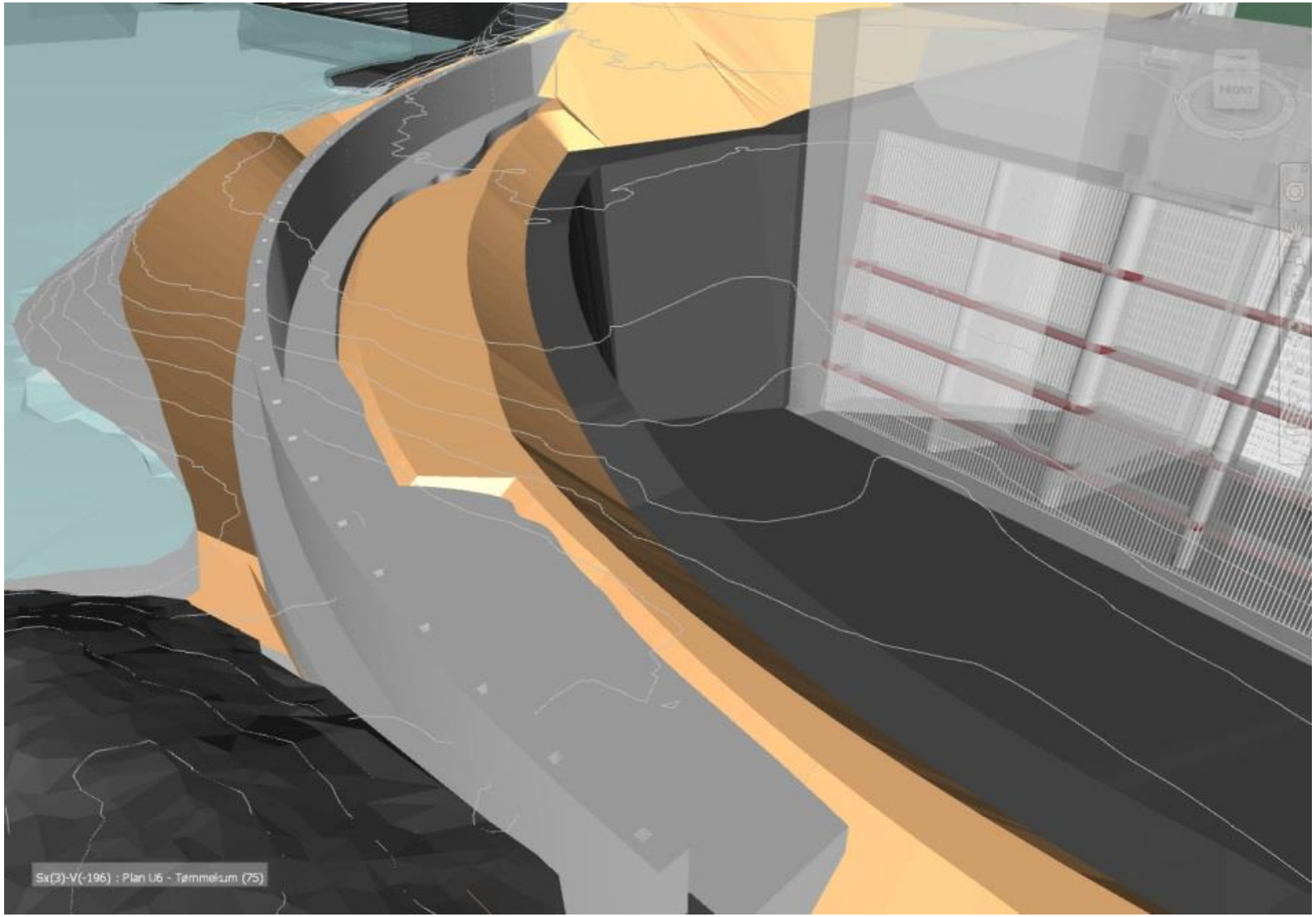
Interdisciplinary collaboration



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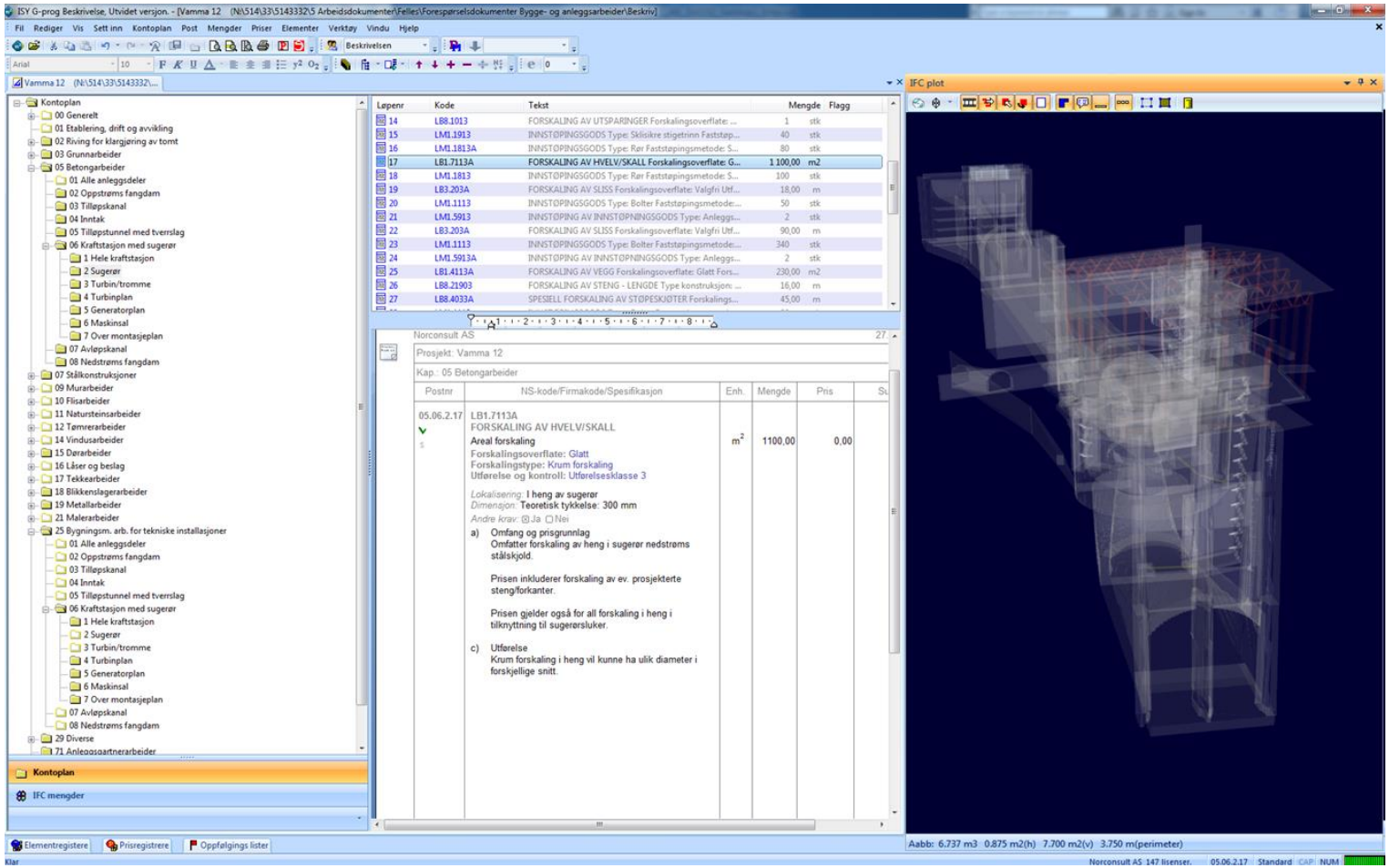
Integration between Model and “Bills of quantities"



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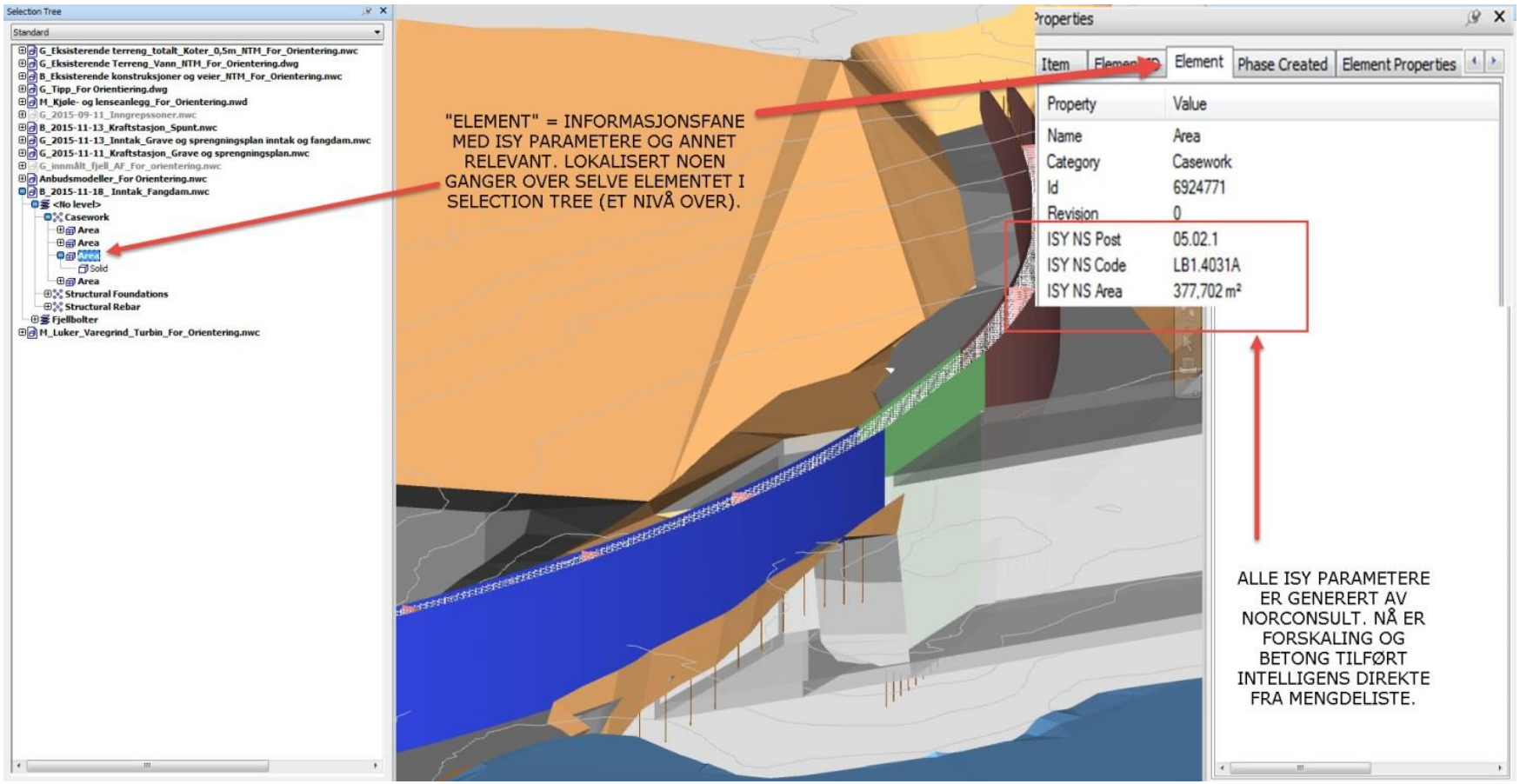
Integration of Information



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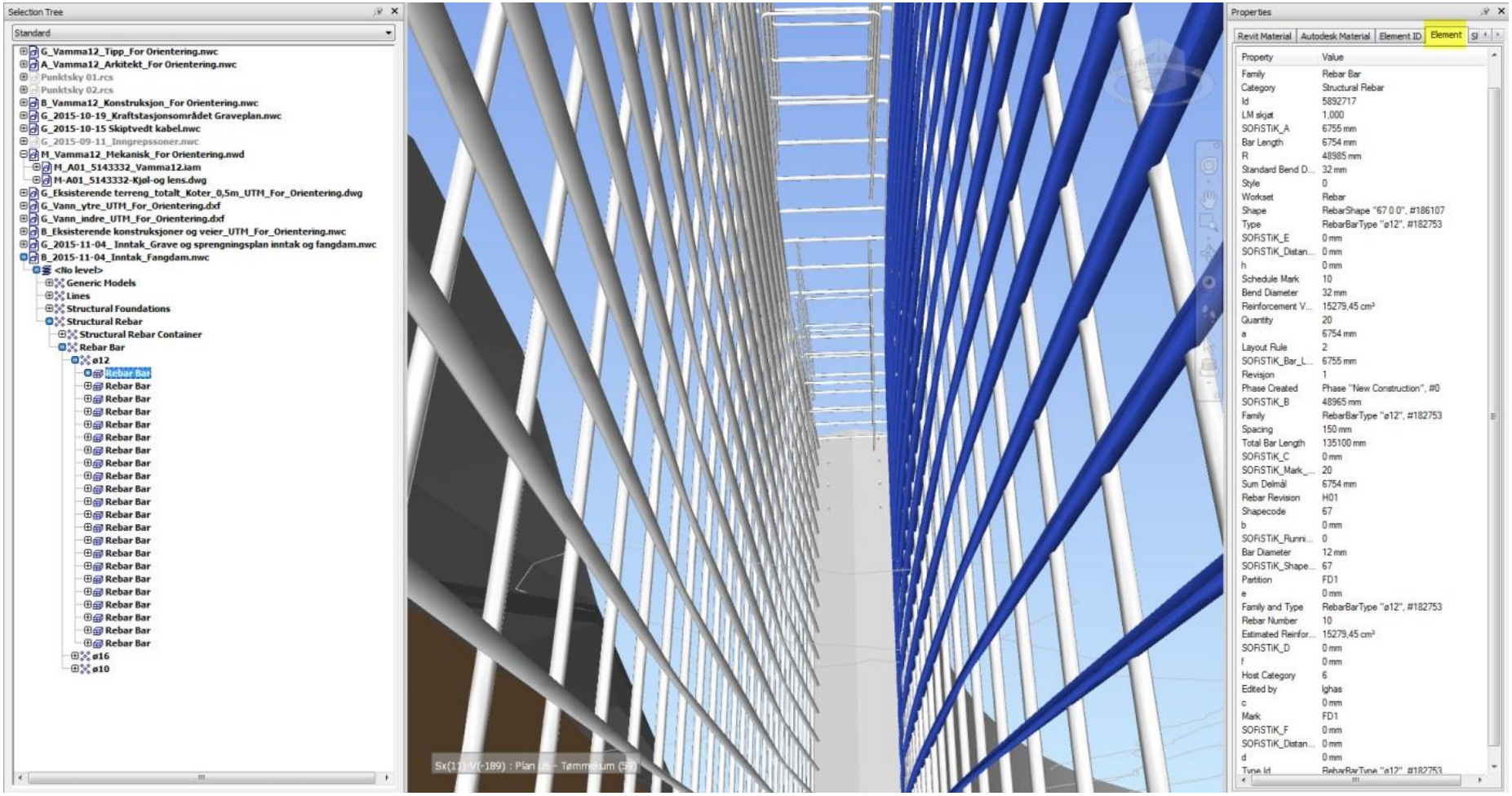

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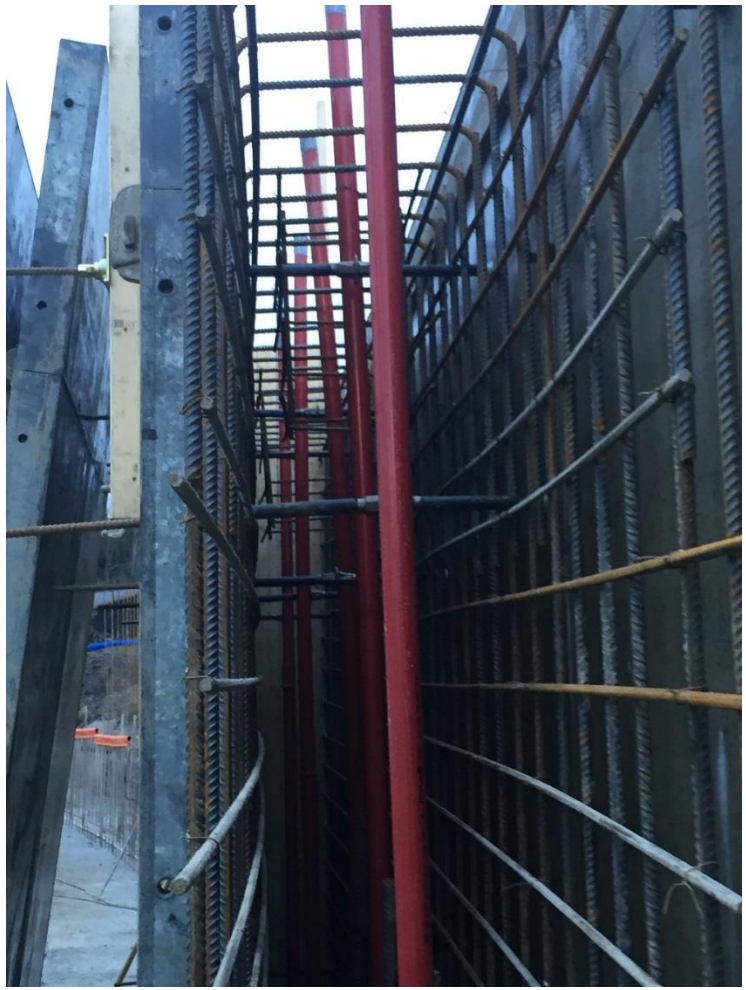
From Design to construction



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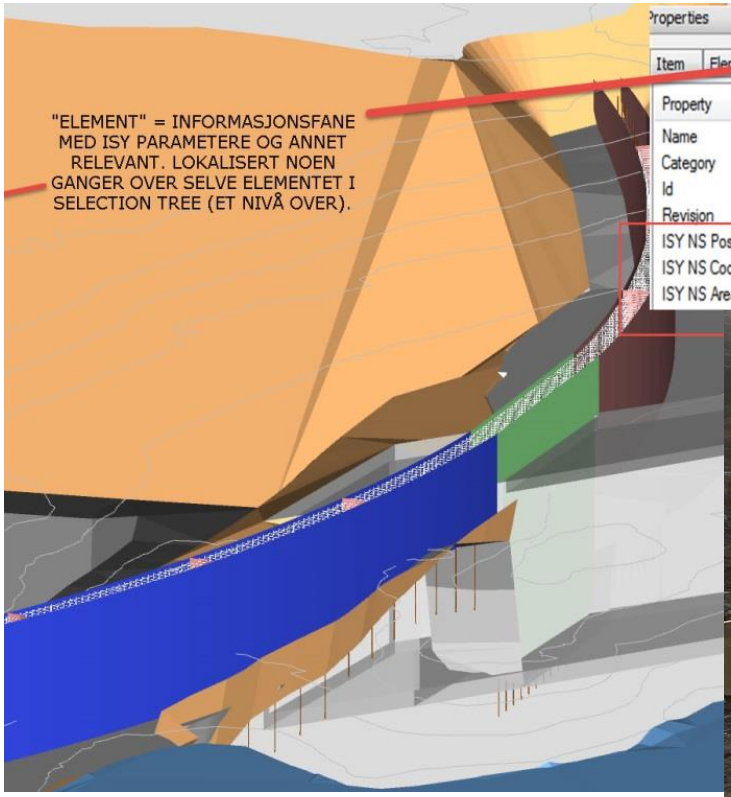
From Design to construction



Properties

Item	Element ID	Element	Phase Created

Property	Value
Name	Area
Category	Casework
Id	6924771
Revision	0
ISY NS Post	05.02.1
ISY NS Code	LB1.4031A
ISY NS Area	377,702 m²

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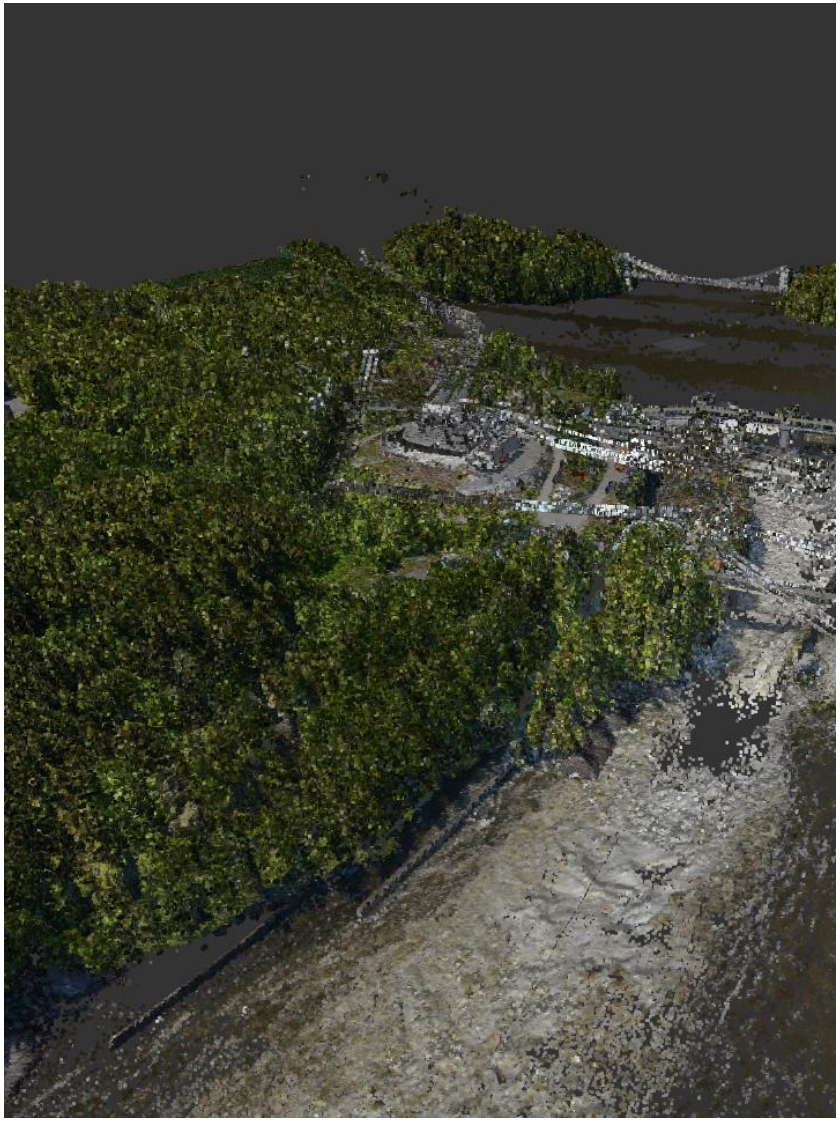
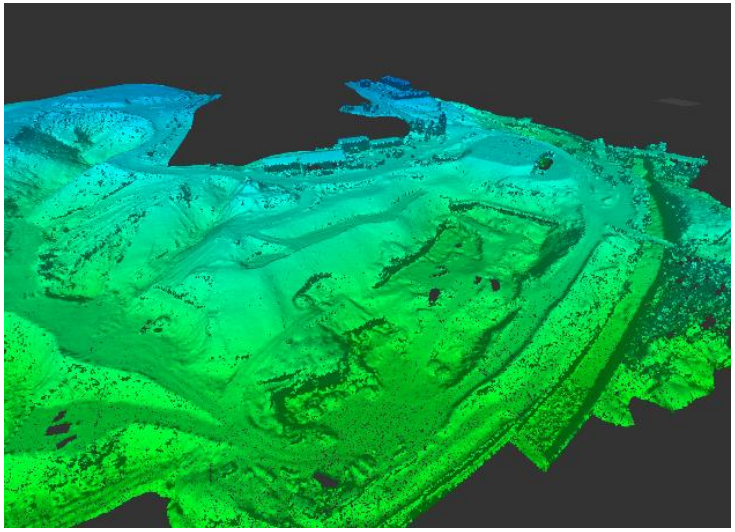
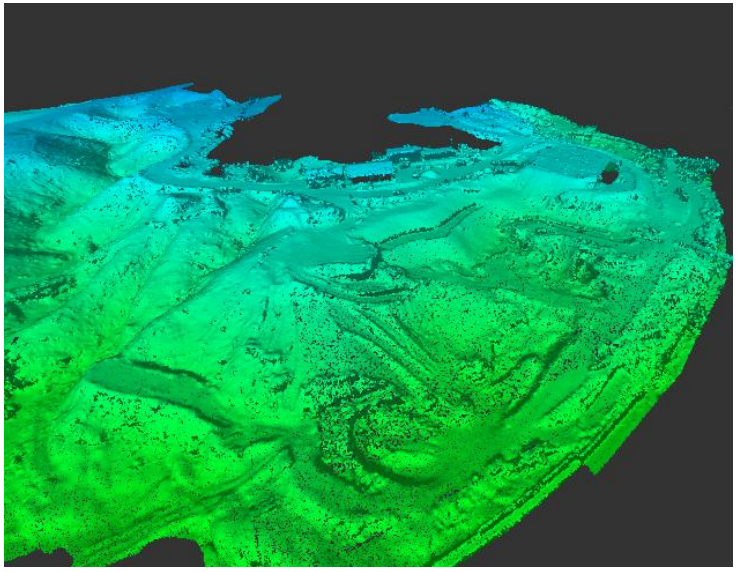
Monitoring of Construction progress







Monitoring of Construction progress

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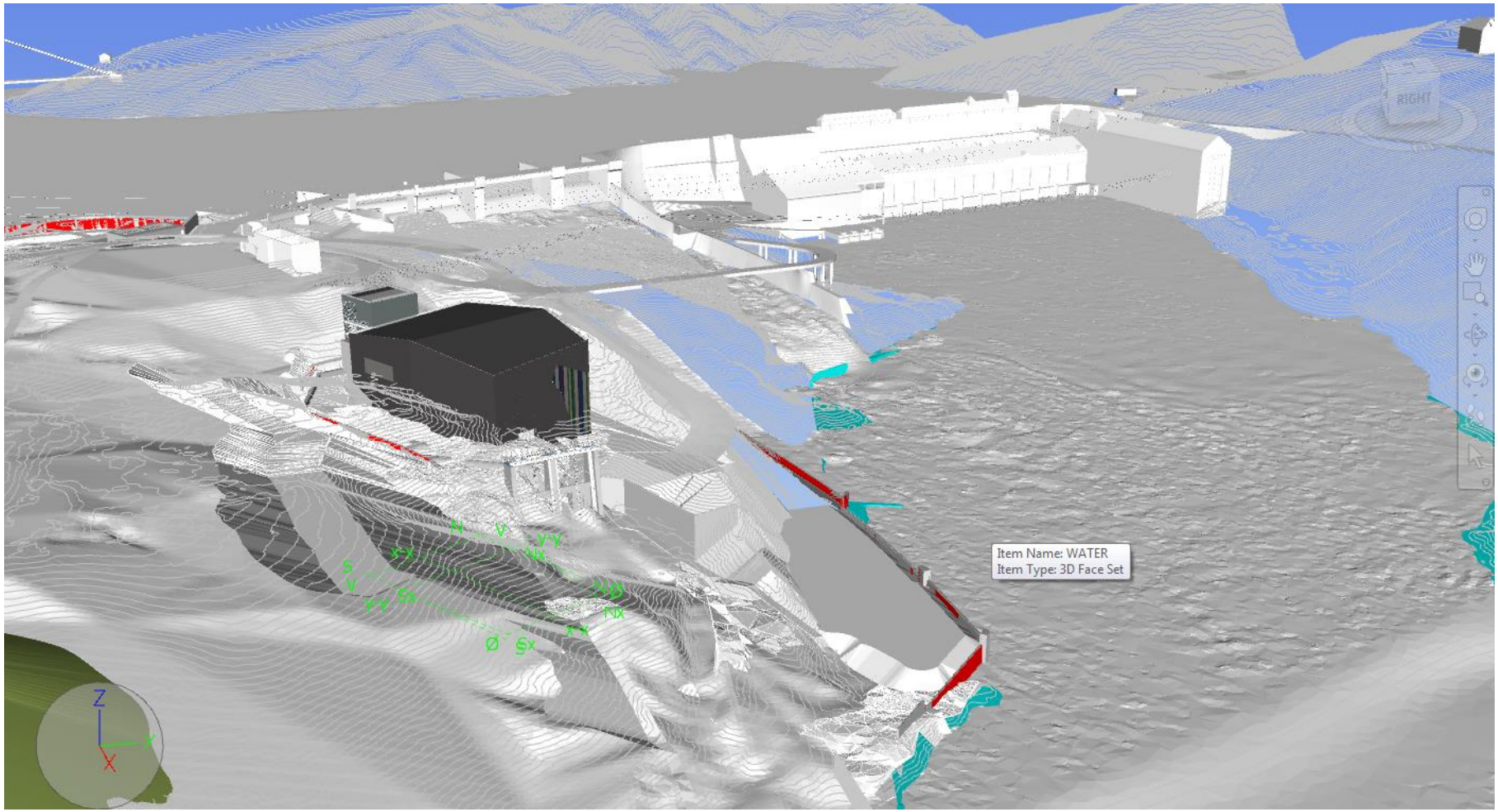
Update to As-Built status



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PROCESS REVIEW AND FEEDBACK

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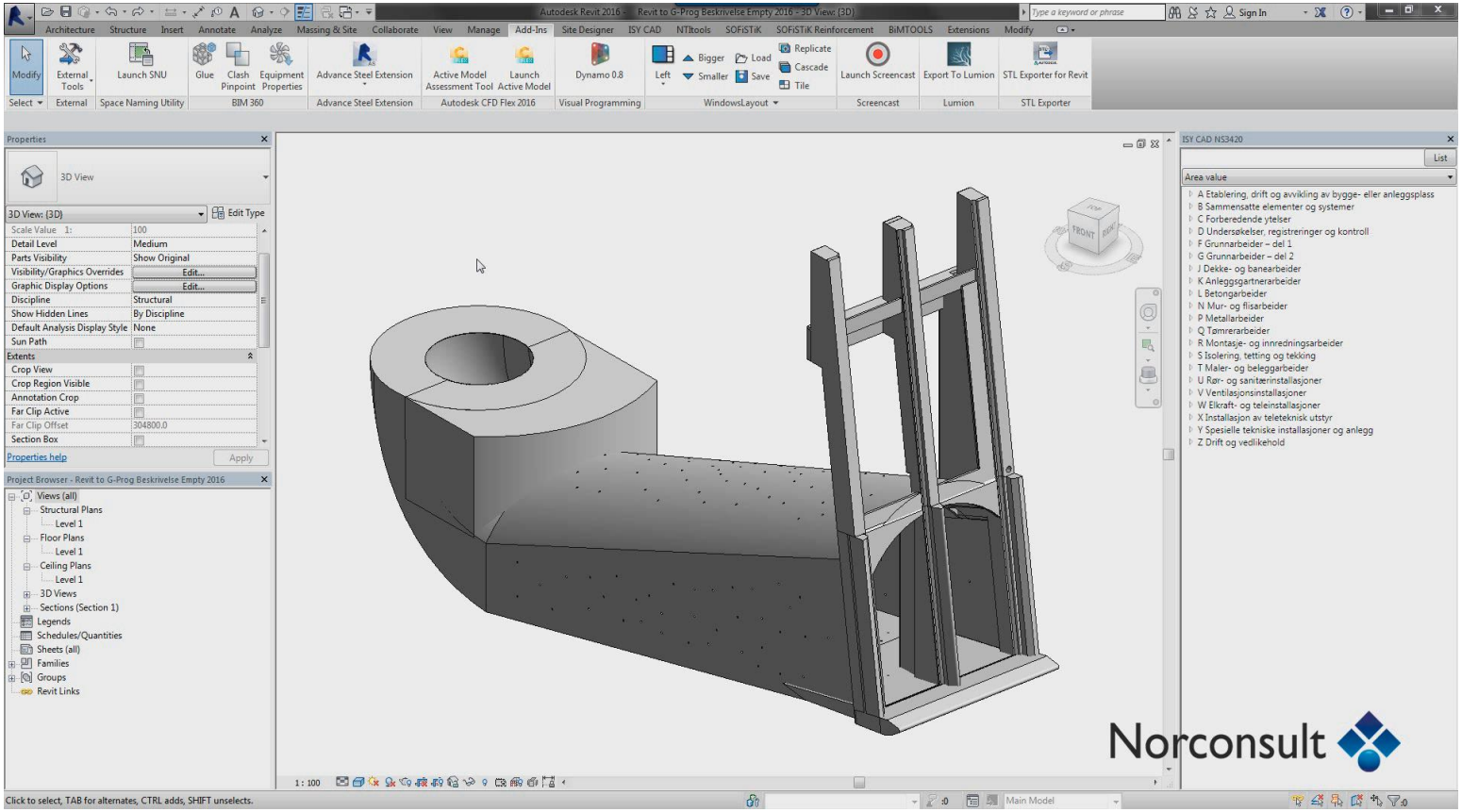
Quality Checked Data



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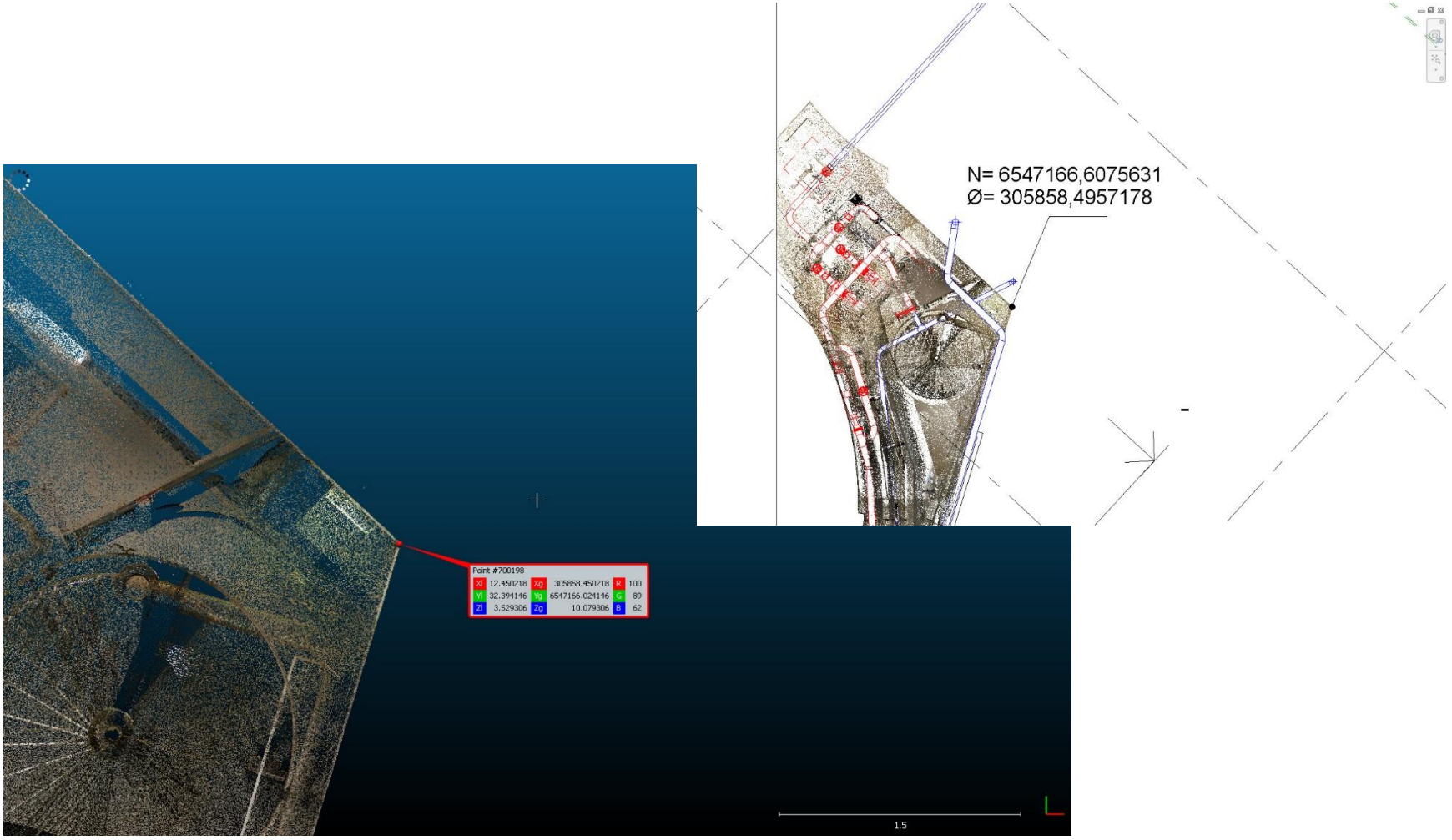
Quality Checked Data



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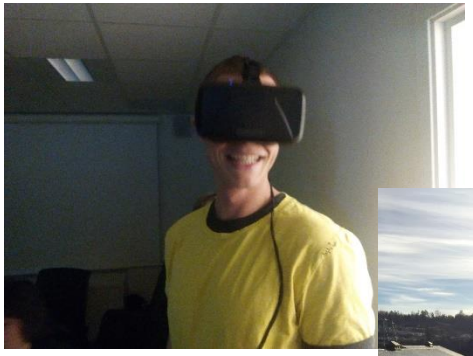
Conclusions

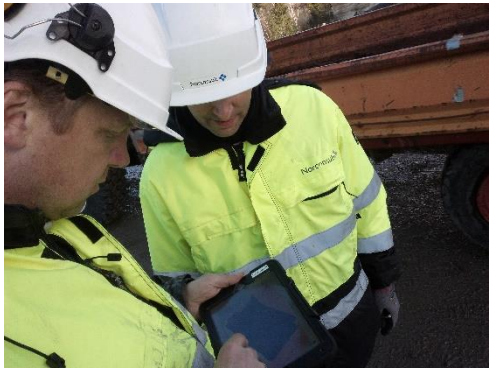
BIM to Construction site benefits

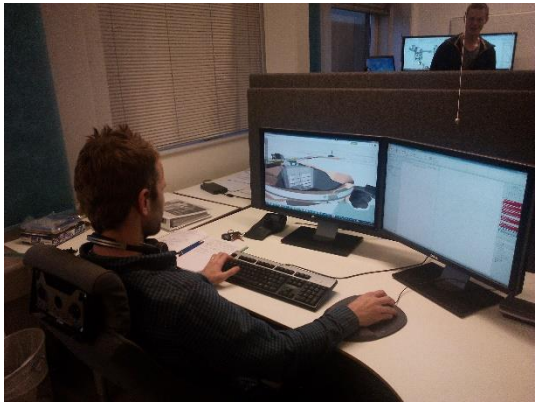
- Paperless construction
- Surveying based on the BIM model
- Navigation in the BIM model on portable devices
- Connection between objects in BIM model and codes on the bill of quantities
- Connection between elements of BIM model and available documentation
- Prefabrication of re-einforcement and various elements based on the BIM model
- Direct quality check by import of field data into collaboration model
- «As built» information integrated into the BIM model
- Control of quantities and costs based on BIM
- Scheduling and audits in BIM
- ...

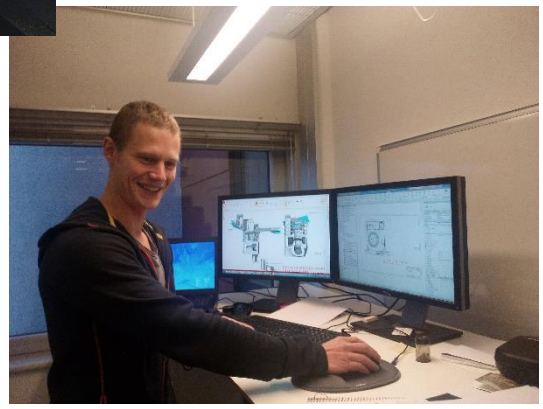
And a bit of BIM fun

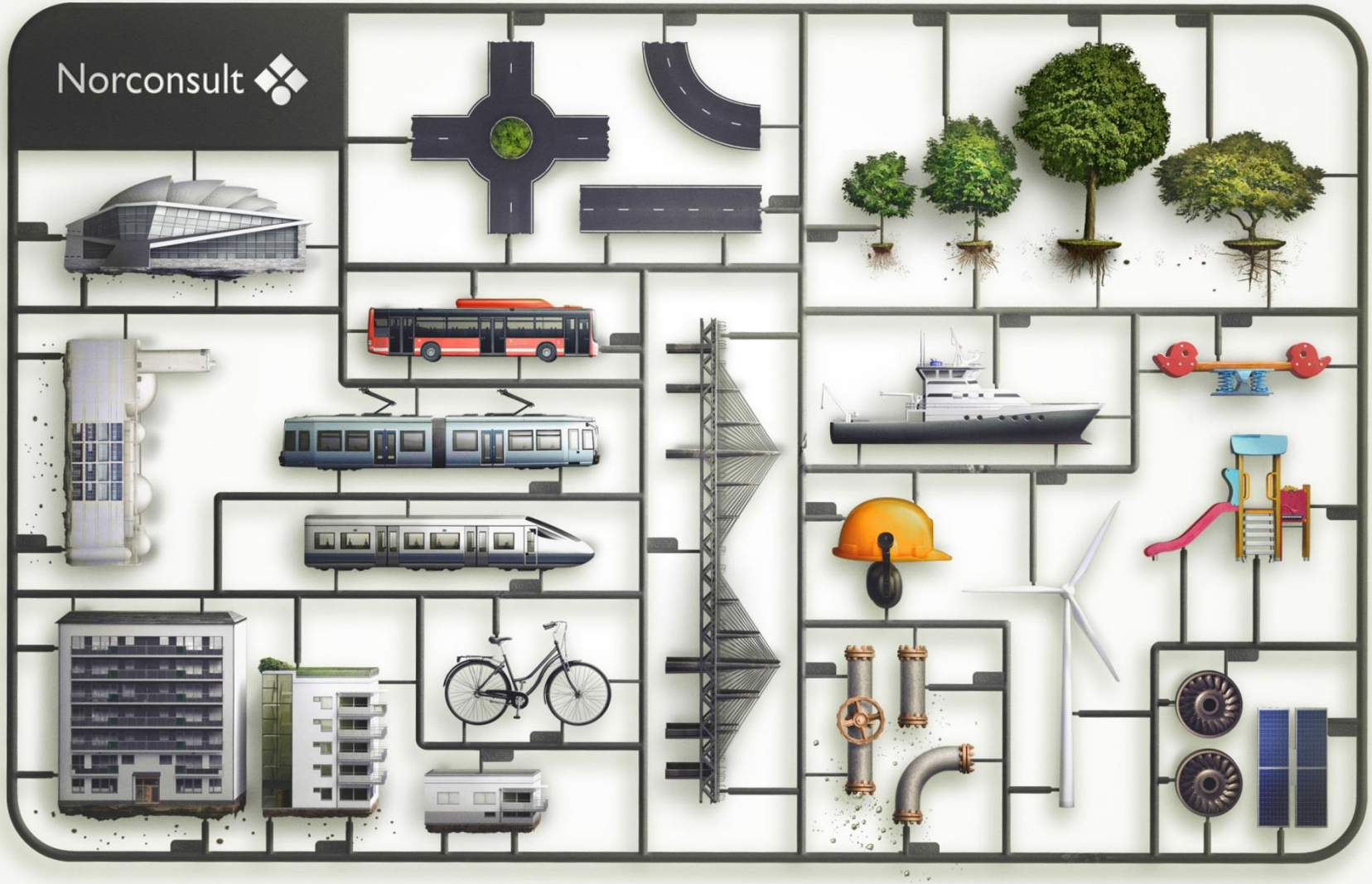
We certainly feel inspired! How about you?











Thank you