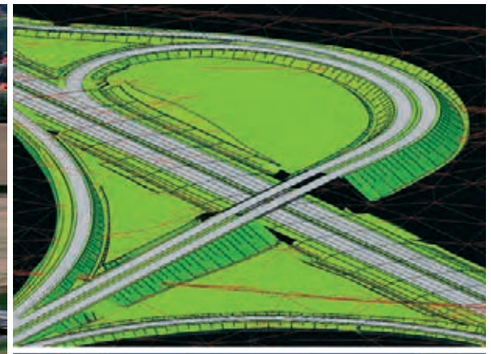
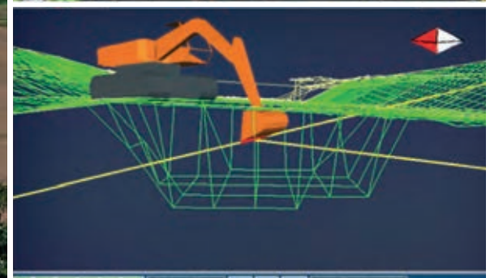
A1 Motorway, Gdańsk – Toruń

Rusocin to Czerniewice, Poland

"Machines working with 3-D machine guidance systems increase the efficiency of construction works on the site and facilitate planning and compliance with the schedule, which is very tight on a project as big as Gdańsk – Toruń motorway. Thanks to the machines equipped with the 3-D system we are certain that irrespective of fast rate the works are completed precisely. To be literal – down to the exact millimeter."

Torbjörn Nohrstedt
President of the Management Board,
Gdańsk Transport Company





A1 motorway, Gdańsk – Toruń is the largest single-road construction project in Europe as far as equipment used is concerned. The project itself is unique because it facilitates BIM technology and 3-D GPS systems, which allow Skanska to complete and deliver the highest quality project a full year ahead of schedule.

A1 Motorway, Gdańsk – Toruń	
Total length	152km (95 miles),
	Phase I – 90km (56 miles), Phase II – 62km (39 miles)
Client	Gdańsk Transport Company S.A.
Contract value	EUR 1.25 billion (USD 1.6 billion)

A1 motorway, Gdańsk – Toruń is one of the most important transportation routes in Poland and throughout Europe. It will become part of the Trans-European Transport Route, leading from Gdańsk, Poland to Vienna, Austria via Katowice, Poland and Brno, Czech Republic. It is a project of strategic and economic importance, creating numerous new investment opportunities.

The Skanska-NDI joint venture is responsible for designing and constructing the entire 152km (95 miles) stretch linking Rusocin near Gdańsk to Czerniewice near Toruń.

In December 2007 the northern part of the first phase of the highway – 25km (16 miles) long – was handed over more than a year ahead of schedule. In October 2008 the team finished the construction of the remaining 65km (40 miles) of the first phase between Swarożyn and Nowe Marzy – this time two months ahead of schedule. In spring 2009 Skanska-NDI started the second phase of the project that covers the remaining 62km (39 miles) of fully-equipped motorway.

During the execution phase Skanska has used new ideas and technologies to fulfill the demanding needs of the investor. The project team has equipped about 60 machines of different types – excavators, diggers, dozers, graders and asphalt pavers – with 3-D GPS systems, which were uploaded with 3-D models prepared by the modeling and surveying staff.

The project was a challenge for the construction team as they had to execute 23,000,000m^3 (810,000,000cf) and 10,000,000m^3 (353,000,000cf) of earthworks, 134,000m^3 (5,000,000cf) and 300,000m^3 (11,000,000cf) concrete works and 1,600,000 and 1,300,000 tons of asphalt works. Due to the large scale of the project, the precision of the work is also crucial. Due to the 3-D system the team was able to reach an accuracy of about +/-2cm (0.8") in earthworks and +/-5mm (0.2") in asphalt works.

To communicate effectively with the investor the project team has utilized its own 3-D software to prepare visualizations. This allowed the client to have a better understanding of the entire project before it was built. Additionally, 3-D models have been used for earth balance calculations, temporary technological road infrastructure and site plan simulations.

With a project of this scale it was essential to allocate heavy equipment to different areas of the site depending on the weather conditions and actual needs. 3-D systems have helped in this task because operators have access to the entire 3-D model of motorway and can promptly respond to the needs of site managers.

The precision of work plus savings in time, quality issues and great flexibility of machine usage led the team to the conclusion that BIM will be implemented on upcoming projects. Using experience gained on the A1 motorway, Gdańsk – Toruń and trained and experienced people, the team is able to deliver a high-quality product to the client.