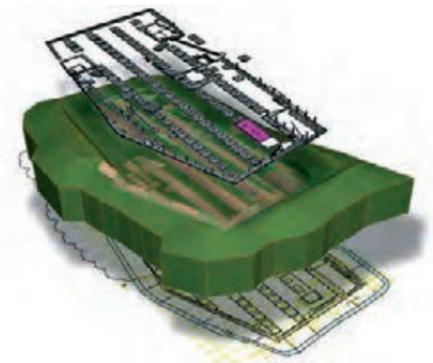
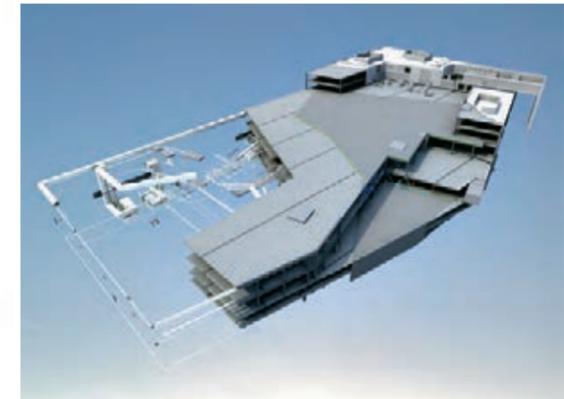


BIM in Building Projects

KBS Shopping Center

Trondheim, Norway



KBS is a combined shopping center with residential apartment blocks on top. The project was originally contracted as a traditional 2-D project. However with the primary designer – in this case also the structural engineer – using 3-D models to design, Skanska encouraged all designers to use BIM and coordinate their models to make this a BIM project. The shopping center and residential blocks have been modeled by two architects. Altogether, seven different design firms featured modeling on this project.

Once established as a BIM project the ambition level was initially set to collision control and quantity take off. The project team's enthusiastic adoption of BIM soon led to an expansion of these ambitions to include visualization both to aid decision making from the client and to sell both retail and residential spaces.

At the kick off, the designers from all disciplines were called into BIM workshops. During these workshops the routines and methods for modeling, model requirements, file exchange, delivery dates and collaboration were agreed upon. A further workshop was run to check for correct coordination of each discipline's model within the merged multidiscipline model.

Through support from the BIM coordinator, Skanska Norway ensured that all designers on the project are taken care of on all technical levels. This means they get the necessary support and training in the software they use on the project. This support and competence

is available at all times throughout the duration of the project.

Using the software competence in the BIM department, any challenges that arise are quickly addressed and solved. Skanska contributes by creating special objects missing from the standard libraries so that the architect's design process was not delayed by creating objects.

Among other objects, escalators and ramps were modeled using internal BIM resources and delivered to the architect to speed up the process so that the structural engineer could run structural simulation on time.

As production started, members of the project team used the models for quantity take-off to order materials for production on a day-to-day basis. The models were used to create excavation plans in 3-D for import to the excavation contractor's machine guidance system. This pioneering use of BIM models saved several

weeks of work usually used to create excavation models from 2-D plans, and proved so efficient that new models from the structural engineer are used to update the excavation models in a matter of hours rather than days. The amount of additional information and 3-D models available to the project team and their subcontractors led to a highly efficient and problem free excavation phase in which all parties were better informed than what had otherwise been possible.

KBS Shopping Center	
Total area	72,000m ² (775,000sf)
Retail area	36,000m ² (388,000sf)
Parking area	28,000m ² (301,000sf)
Residential area	81 units