

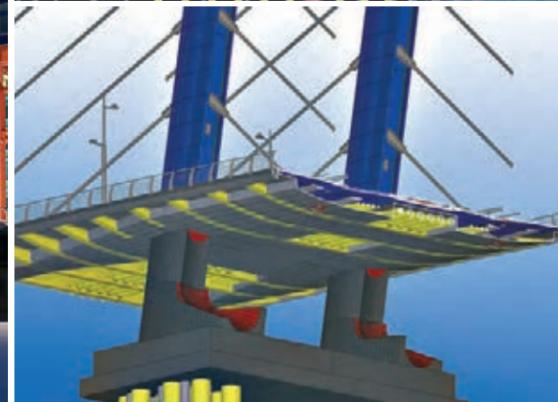
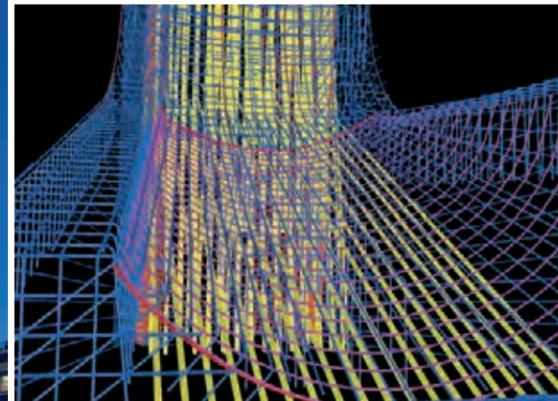
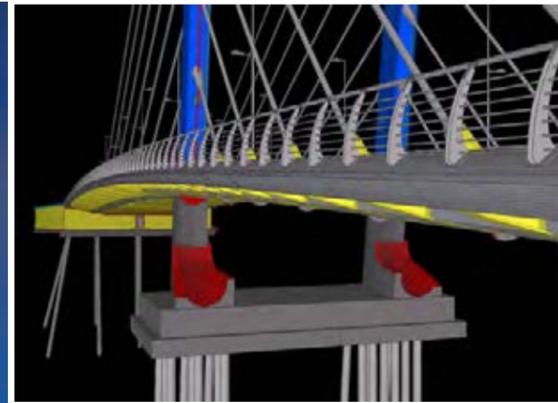
BIM in Civil Projects

# Crusell's Bridge

Helsinki, Finland

"Utilizing BIM provided us with plenty of benefits and a clear view on the essence of modeling. In designing and building versatile infrastructural entities, anything can happen during the process, so seeing the big picture at all times is necessary. BIM makes simulation, resourcing and decision-making a lot more efficient. It certainly proved the point of adding value at all stages, and should be included in future projects on a regular basis."

Ville Alajoki & Peter Henny  
Project Directors, Public Works Department, City of Helsinki



The model of Crusell's Bridge is one of the most detailed ones currently available. Details were crucial in this relatively small but complex project where BIM was used on site comprehensively. On this project, the entire bridge, including all the rebar and details, was designed using BIM.

The various benefits of BIM became clear as soon as the project got underway. The model synchronization feature provided fast information exchange that ensured the continuous availability of updated design data on the jobsite. Bridge-building logistics were easier to understand when designed in 3-D format. In addition, problem solving, communication and work planning became faster and easier. Schedule reliability was enhanced because the foreman of the steel fixing group was able to use the model to plan the team's work more precisely. The decision making in the design and project meetings was streamlined as less time was needed to explain the issues that could now be understood simply by viewing the model.

The 4-D construction simulation provided the client with a comprehensive view of how the bridge was to be constructed. At the same time, it produced accurate understanding of the task sequencing by dem-

onstrating how the work could actually be executed in the planned time frame.

The model was also used between the contractor and subcontractors to ensure that every party shared the same understanding of what should be built, which further improved the reliability of the entire project schedule. Model data was used to prefabricate steel beams and rebar to minimize human errors in interpreting the design solutions to the machinery. The client's supervisors could use the model to verify the quality of rebar installations. Furthermore, prior to the casting of concrete, laser scans were produced to document how the rebar inside the concrete structures were placed and to verify that the excavation and filling work of the seabed was executed as planned.

At completion the whole bridge was laser scanned, and in addition to traditional as-built drawings, a di-

mensionally accurate, easy to use, lightweight version of the point cloud data was handed over to the client. This lightweight viewer version of the point cloud data can be used to review the as-built information, take measurements and check coordinates, whereas the full-blown point cloud can be used as initial data for designing renovation or repair work.

Crusell's Bridge	
Total length	173.4 meters (570ft)
Width	24.8 meters (80ft), spans 92 and 51.5 meters (170ft)
Client	The City of Helsinki
Designer	WSP Finland Oy
Project value	EUR 18 million (USD 23 million)