

Parametrization and BrIM in large infrastructure projects – project study from RV3/25 Norway

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1 Abstract

RV 3/25 is a large infrastructure project consisting of a new 25 km highway in Hedmark County in Norway. The project is organized as a PPP-project and includes 20 concrete bridges and 8 timber glulam arch bridges.

In the project the use of BIM-models and parameterization has been significant and has evolved greatly throughout the project. The work ranged from macro BIM with large coordination models with all disciplines included, to micro BIM-models for bridges including all details needed for construction. For 5 concrete bridges, the BIM-model was the only product delivered to the contractor without producing design or construction drawings.

For the 8 glulam arch bridges in timber, parameterization was employed for establishing both the BIM-models and the analysis models. This was vital to achieving the goal of following the strict design schedule with a small design team. It also proved very valuable in the shaping phase of the bridges. Between 80% and 90% of the objects in the finalized BIM-models were included in the parameterization. The product delivered to the contractor was design drawings, most of which were generated directly from the BIM-model, thus benefiting from its advantages.

The use of BIM has proved to be cost and time-efficient during design. This paper presents the challenges and benefits of using parameterization and BIM in a large infrastructure project with focus on bridge design.

Keywords: BrIM, BIM, parameterization, bridges, infrastructure projects

2 Introduction

RV 3/25 is a large infrastructure project consisting of a new 25 km highway in Hedmark County in Norway. The new roads will improve the road connection between Oslo and Trondheim and enhance Hamar and Elverum as residential and labor markets. The new road will be built as a 4-lane highway or as a two-lane or 3-lane highway with

central barrier, depending on traffic volume and function.

The project includes 3 grade-separated junctions, 9 bridges, 18 over-/underpasses and 2 wildlife crossings. In total there are 28 structures; consisting of 20 concrete bridges and 8 timber glulam bridges. The project overview with some examples of structures are presented in Figure 1.