

Development of extraordinary suspension bridge solutions for Sulafjord in Norway

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Abstract

The crossing of Sulafjord on the Ferry-free E39 project in Norway with a bridge solution is an extremely challenging task. The fjord is 3 to 4 km wide, 450m deep and located in a harsh weather environment with strong and heavy winds and waves. The AMC group (consulting companies Aas-Jakobsen, Multiconsult and COWI with subconsultants) has recently developed four different suspension bridge solutions for this crossing in an extensive preliminary design phase. Client for the project has been the Norwegian Public Roads Department (NPRA). These four alternatives involve a world record single main span of app. 2700m as well as two long-span double span suspension bridge solutions on GBS (Gravity Base Structure) foundation and a triple span floating suspension bridge solution on TLP (Tension Leg Platform) foundation.

Keywords: Record breaking, suspension bridges, preliminary design, creative foundation methods, harsh environment.

1 Introduction

The Sulafjord crossing is a part of the Ferry-Free E39 project, connecting the communities of the island Hareidlandet to main land Ålesund. It is an important project to better work commuting

across the fjord. A comprehensive preliminary design was performed in 2021-2022 in order to be able to choose concept for construction.

The designs are based on an extensive site investigation scheme involving offshore soil investigations, wave, current and wind