BRIDGES NETHERLANDS

Weather assist during final phase construction, the transport with SPMT and installations

Assist on Go-NoGo decisions transport large bridges

In both cases (Muiden and city of Utrecht), we (I worked at MeteoGroup) were requested to assist during the final phase of the construction, lifting and transport of large bridges. The large structures were constructed on reasonable distance of their final position. Lifting,transport and installation was weather sensitive and with additional challenges the impact on daily traffic which was not possible and therefore detour and highway and waterway were shutdown for several days.. so when started there was NO rollback option

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Bridge projects and weather impact – in short:

Spoor boog brug Muiderberg
on 6-8th of May 2016

Construction remote, transport on SPMT's

255m long / 17m wide

8500 ton structure

Crossing A1 highway

Risk cross winds on the bridge during lifting, moving and positioning.

Limited time due closing of highway / no direct Train traffic from Amsterdam /Schiphol to Flevoland (max Friday – Sunday night whole process)

Spoor boog brug Utrecht

on 17-19th November 2017

Construction remote, transport on SPMT's

255m long / 13,5m wide

10000 ton structure

Crossing Amsterdam Rijn canal

Risk cross winds on the bridge during lifting, moving and positioning.

Limited time due closing of Amsterdam Rijn Canal – and no train traffic (max Friday – Sunday night whole process)

Project:

I included two projects as they had a similar approach.

In both cases the bridges were constructed remotely on several 100 meters from the final position. Main reason to have limited (just one weekend) closing of traffic (trains, highway and canal)

During the constructions the weather was monitored and only in case of extreme events (storm winds) the forecaster was on call.

Based on the expected date of transport, I ran historical model data as well as 10 years of observation data of WMO approved weather stations in the area of the project. The reports showed the risk percentage of succeeding the criteria of the project. Of high importance was of course wind speed at 10 and 50 meters as both structures were about this height. Also the wind direction was an important parameter as cross wind with a certain m/s was the most critical value as can be expected.

Due the fact that the large constructions needed to be transported on SPMT's and crossing roads and highways as well as a large and busy waterway, the planning of transport needed to be optimal.

- Once started there was in fact no point of return
- When structures were raised/ lifted the structure became vulnerable for cross winds (conditions known, not presented here)
- The conditions had to remain favourable for 60 hours minimum

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14 days prior the initial planned transport date, we supported the operations manager and decision team with detailed weather forecasting and risk data (ensemble prognoses). A short training was given to get product awareness and understanding of presented data. We started with twice daily forecast, this was intensified towards the GO-NOGO decision moment. The forecasters had a hot line number as well that operations and project leader was allowed to call the forecasters any time of the day.. the project was under monitoring 24/7.

More information, just submit an email of call to Jan Groot Bramel

Details in footer

Pictures of the bridge under construction Utrecht location.

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Picture of bridge under construction Muiderberg

Also some nice presentation of projects at you tube e.g.:

[World Record Bridge movement: Railway Bridge Muiderberg 8400 Tons]

[Timelapse inschuiven Spoorbrug Utrecht]

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