

ALLPLAN BRIDGE

NEW FEATURES IN VERSION 2020-1

HIGHLIGHTS

Allplan Bridge 2020-1 can now be used to define traffic loads very easily.

With Allplan Bridge 2020-1, the most unfavorable effects due to traffic loads can be analysed quickly and easily.

In the new version the code-based design is included as Technical Preview.

Via the cloud-based BIM platform Allplan Bimplus, the structural analysis model can be transferred to other structural analysis solutions that are connected to Allplan Bimplus.

Allplan Bridge is the professional BIM solution for modeling, analysis, design and detailing. Engineers work with a single solution from parametric model creation with high level of detail including pre-stressing to integration of the construction process, structural analysis and reinforcement design.

3D TANGENTS FOR TENDON MODELING

Allplan Bridge provides several workflows of modeling the tendon geometry and makes it easy to model a wide range of pre-stressing types: with immediate or later bond, internal and external, longitudinal, transverse and vertical, as well as with non-standard geometry. A new approach was developed allowing to define certain tendon geometries even easier: the user defined 3D tendon points (tangent intersections points) define the tendon tangents in 3D space which represent the basis for calculating the tendon geometry using the given curvature radius.

TRAFFIC LOADS

Traffic loads can be defined/applied in a very comfortable way. On the one side, the traffic load is automatically applied in accordance with the selected standard. On the other side, the generic approach of live load definition implemented in Allplan Bridge allows the user to consider any type of moving load.

INFLUENCE LINES

The moving load analysis in Allplan Bridge allows for considering the most unfavorable effects due to traffic. The approach is based on the theory of related influence lines allowing an easy and fast calculation. The final result is saved as an envelope.

CODE-BASED DESIGN (TECHNICAL PREVIEW)

Once the global effects are calculated and the relevant envelopes have been created the user can perform code dependent design tasks to determine the required reinforcement content. Once the reinforcement content is calculated or manually specified, ULS checks can be performed. A 3D interaction surface (axial-force/biaxial-bending moment) is hereby calculated and intersected with the internal moment vector MRes giving the user the detailed information of the girder capacity.

ELEMENT & LOAD REMOVAL

Part of every construction process are temporary structures. In Allplan Bridge, the time as 4th dimension is considered when specifying the construction phases. New in this release is the possibility to consider these structures within the construction plan not only geometrically but also analytically. The product analyzes the defined construction schedule and assembles all necessary calculation tasks in an automated



© Project: Queensferry Crossing, United Kingdom © Andras / Fotolia.

process, like load case definition, element deactivation, calculation actions and updating the summation load-cases.

CREEP, SHRINKAGE AND RELAXATION ACCORDING TO AASHTO LRFD

Particularly important for the construction stage analysis of prestressed and reinforced concrete structures is the correct consideration of the time-dependent effects. In Allplan Bridge the calculation of creep and shrinkage of concrete and relaxation of prestressing steel is code-compliant and now also available for AASHTO LRFD.

ENHANCED VIEW OPTIONS

The complex 3D parametric model created and calculated in Allplan Bridge can be displayed in two different views. The first view visualizes the geometrical model with all the details defined while modeling. In the second view, the automatically derived analytical model reduced to the statically relevant components is displayed. Geometric bridge models usually contain a large amount of information. For the user there are several possibilities to keep the overview, nevertheless. New in this release are the options

to use the isolation box or to "hide objects from the view" to display only the part of the structure in which the user is interested.

LOAD VISUALIZATION

Many different loads can be applied on the structure in the construction sequence or in the final state. Superimposed dead loads can be derived automatically from the geometrical system and for all other loads (except traffic loads) standard load types can be used. Such as uniform load, point load, pressure load, and many more. The loads are applied in 3D on the geometrical model and automatically transferred to the analysis model. In the new version the loads can be also visualized. This gives the user a further control of the input.

EXCHANGE ANALYSIS MODEL

The analysis model is automatically derived from the geometrical model can be uploaded to Allplan Bimplus. This allows to share this model with all other analytical solutions connected with Allplan Bimplus.

Current system requirements can be found at allplan.com/info/sysinfo