# PERFORMANCE HIGHLIGHTS
## ALLPLAN BRIDGE LINEAR ANALYSIS

Allplan Bridge Linear Analysis is the ideal complement to the Allplan Bridge Modeler. The parametric 4D model serves as the basis for the static calculation. The analytical model is automatically derived from the geometrical model. The automation accelerates the workflows enormously. Nevertheless, the engineer retains always full control. Furthermore, also loads are automatically assembled from the 4D model.

### MATERIAL CATALOGUE (EURO NORM) IN ALLPLAN BIMPLUS

Allplan Bimplus is the open BIM platform for all disciplines to collaborate efficiently. In order to improve the collaboration a material catalogue is available. There are several different types of material at hand such as concrete, reinforcement steel, prestressing steel, etc. Each material contains the parameters required for structural analysis and several additional parameters. This allows the user to easily load the materials into the project, assign it to corresponding bridge part and perform the analysis.

### SEMI-AUTOMATICAL GENERATION OF ANALYSIS MODEL

Allplan Bridge automatically generates the analysis model from the geometrical model. This greatly reduces the amount of work and the susceptibility to errors. Hereby the engineer retains full control by specifying structural parts and those ones which contribute as load only. One of additional analysis-relevant definitions is the choice of generating a beam or a grillage model.

### ASSEMBLING CONSTRUCTION SEQUENCE CALCULATION

Allplan Bridge analyses the defined construction schedule and sets up all necessary calculation definitions in an automated process, like load cases, element activations and calculation actions. This includes input data for calculating non-linear time effects, like creep, shrinkage and relaxation. Complete transparency is granted, the user keeps full control of the generated items and an overview of the results at any time of construction.

### AUTOMATED TENDON LOAD APPLICATION

The Analysis model for placing the tendons in the beam elements is generated from their defined position in space. The product analyses the exact position of the tendon in relation to the girder and assigns it automatically the corresponding beam elements with the relevant eccentricity values. Once the user specifies the point in time when the tendon is stressed the product generates automatically the corresponding load cases and calculation action and applies the load on the structure.

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## NONLINEAR TIME DE-PENDENT MATERIAL EFFECTS

Based on the assembled input parameters describing the creep and shrinkage behavior of the concrete and relaxation of the pre-stressing throughout the construction phases, respective creep load cases are calculated for every time interval between relevant changes of the active structural system and/or loading state. The calculation is based on the formulas specified in the selected standard. A final creep load case covers the long-term effects arising during life time.

## SUPERIMPOSED DEAD LOADS DERIVA-TED FROM GEOMET-RICAL MODEL

The weight and the position of superimposed dead loads (like sidewalk, road pavement, etc.) are automatically retrieved from the geometrical model. The user needs to specify the point in time of the equipment installation, and consequently the load is applied. Additional loads, such as temperature change or wind loads, can be defined and applied easily as well.

## NEXT GENERATION SUPERPOSITION

The superposition in Allplan Bridge works very user-friendly . The schematic definition of the superposition combines maximum flexibility with optimal overview. It is possible to select several stress components in user-defined stress points and perform a stress leading superposition. Furthermore, the superposition allows for storing corresponding results for selected elements.

## STRUCTURAL ANALYSIS

A global static analysis based on the Bernoulli beam theory is performed for all automatically and manually generated calculation actions defined previously in the construction sequence definition. The analysis is enhanced to accurately consider the cross-section variation. Furthermore, the nonlinear calculation of time-dependent effects is performed, considering design code formulas.

## DEVELOPED VIEW OF TENDONS FOR DRA-WING PRODUCTION

In addition to the standard transfer of data to Allplan Engineering, Allplan Bridge first calculates the developed tendon geometry and then transfers it to Allplan Engineering. Here the user can use the advanced drafting functionality to create 2D and 3D deliverables.

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