PERFORMANCE HIGHLIGHTS
ALLPLAN BRIDGE CODE–BASED DESIGN

Allplan Bridge Code-Based Design complements Allplan Bridge Modeler and Allplan Bridge Linear Analysis. The analysis model automatically derived from the geometrical model and the results from the structural analysis are the starting point for code-based design and checks. Once the relevant envelopes have been created, the user can apply the code-dependent design capabilities to determine the required reinforcement. Checks in the ultimate limit state (ULS) can be performed once the reinforcement has been calculated or manually specified. Allplan Bridge enables the user to easily and quickly create and convincing, safe and economical design for any concrete bridge.

ULS CHECK FOR FLEXURE

Allplan Bridge can be used to check prestressed and/or reinforced sections for resistance in flexure. Checks can be performed at any time, during the virtual construction process or in the final state, with no limits in section shape and considering the effects of creep, shrinkage and relaxation. Flexure checks are based on the calculated 3D interaction diagram (surface) intersected with the resulting bending moment vector based on the design normal force. The check procedure uses non-linear material stress-strain relationships, so that the user can achieve the most economical results.

REINFORCEMENT DESIGN FOR FLEXURE

Allplan Bridge can also be used to design the reinforcement content. The required longitudinal reinforcement area is determined at the defined reinforcement position with respect to acting internal forces and certain detailing rules (maximal area and minimal clearance between bars). The procedure enables not only to optimize the reinforcement area for several envelopes, but can also respect the minimum reinforcement area given by the user and add additional reinforcement where needed.

LINEAR STRESS CALCULATION

Allplan Bridge calculates the linear elastic stress in relevant fibers of the cross sections used. This allows the user to better understand the design of the bridge, especially with regard to pre-stressing geometry, and facilitates the fine-tuning of the structure. The minimal and maximal stresses are calculated with respect to the transformed cross-sectional characteristics and the results of construction stage analysis.

AUTOMATIC REPORT GENERATION

All results of the design and check procedures can be seen in the automatically generated document snippets for the selected section and can be merged in a Microsoft Word document. The snippets contain all relevant information about the design and the check respectively: for which cross section, at which point of time the code-based design was performed and the position in the structure that was evaluated. In this way, the engineer can check and understand all details of the calculations and assumptions given by the code and prove the correctness of the results.

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