

### Version 18.0

Build	Module	Description	ID
19.04.18	General	Program maintenance and support	12497

### Version 17.0

Build	Module	Description	ID
21.04.17	Design	<b>Concrete compressive stresses in prestressed components</b> In the analysis of the concrete compressive stresses of prestressed components, the variance coefficient has been corrected corresponding to the new EN standards.	11289
21.04.17	Design	<b>Stress-strain curve for reinforcing steel</b> The steel strain has been limited to 10 ‰ for the limit states of serviceability and fatigue, i.e. the stress-strain curve for reinforcing steel maximally ranges from -10 to +10 ‰.	11281
17.02.17	General	The prestressing method database has been extended with the prestressing method for single strands without bond by DSI.	10844
17.02.17	Design	<b>Structural fire protection</b> The distance of the tensile reinforcement from the neutral axis was not calculated correctly, if a lateral reinforcement for the buckling stability existed.	10544

### Version 16.0

Build	Module	Description	ID
28.09.16	Design	<b>Fire protection</b> The minimum height was not calculated correctly for recesses. Now, the web height between recess and bottom edge of the beam is calculated correctly.	10250
28.09.16	Design	<b>Decompression analysis</b> The initial prestressing steel stress Sig.p0 was wrongly applied without consideration of the concrete shortening in the creep and shrinkage calculation. The initial prestressing steel stress was corrected and thus the cross-section stresses are correct. For the time-dependent stresses, however, the calculation was correct.	10214
24.08.16	Calculation	The calculation of the deformations in the cracked state was terminated and the corresponding results were not issued for some beams with an in-situ concrete addition.	9977
24.08.16	Calculation	<b>Fatigue strength coefficient alfa.cc</b> The coefficient for the long-term effect onto the concrete compressive strength is assumed according to DIN EN 1992-2 NDP 3.1.6 for the short-term and long-term loadings equally to 0.85 in bridge construction. Up to now, alfa.cc had been set to 1.00 for short-term loadings.	9812
08.04.16	Analyses	<b>Tabular fire protection</b> An incorrect web height was calculated for inclined I-beams in the area of the recess. Furthermore, the minimum axis distance of the reinforcement is compared to the existing mean axis distance "am" of the tension reinforcement, i.e. am = 1 for non-prestressed structural members.	9756
08.04.16	General	Blanks in the project path are considered correctly, when generating a reinforcement drawing by transferring the ZAC macro to the CAD editor.	9719

Build	Module	Description	ID
04.03.16	Calculation	A non-linear stress resultant calculation is carried out for the buckling stability analysis in the cracked state. The modulus of elasticity for the deformation calculation is reduced for limestone and sandstone aggregates and increased for basalt according to DIN EN 1992-1-1/NA 3.1.3 (2). However, the stress-strain-curve has negative stresses, maximum/minimum turning points and sharp bends in the area of the admissible concrete compressive strains for the reduced values of the modulus of elasticity for sandstone in the deformation analysis and for non-linear methods of the stress resultant calculation. In order to avoid numerical problems in the calculation of the stress resultant and the effective stiffnesses, the compressive strain $\epsilon_{s,c1}$ of the concrete is increased by 1,15 under maximum stress $f_{cm}$ for these aggregates, as it was recommended by the <i>Arbeitsausschuss NA 005-07-01 AA Bemessung und Konstruktion</i> of the DIN standard committee for the construction industry.	9576
04.03.16	Design	A normal force orthogonal to the joint can be specified in the shear joint design.	9729
07.01.16	General	Program modifications for the <b>compatibility with Windows 10</b> .	9531
07.01.16	General	Generating a reinforcement drawing by exporting the ZAC macro to the CAD program is now carried out with RTviewer by default. The program ZACview is hereby replaced. With an existing installation of ZEICON (from version 15) this CAD system is started automatically.	9459
07.01.16	Output document	The crack width is now also issued in the short list.	9385
07.01.16	User interface	The prestressing time can now be specified at a concrete age of 1 day, hitherto this had to be at least 3 days.	9384
07.01.16	Input	The specified prestressing steel class for the stress range was not saved in the dialog "Edit prestressing method".	9338

### Version 15.0

Build	Module	Description	ID
27.11.15	Design	fctd is now calculated with $\alpha_{ct}=0.85$ according to DIN EN 1992-1-1/NA.	9505
09.10.15	Calculation	Sometimes the material was no longer saved when changing the prestressing data and the program terminated.	9255
09.10.15	User interface	For a cross-section interpolation and a shifted point of origin, a numerical tolerance problem could occur in the calculation of the web widths.	9319
28.07.15	Design	Deformations in the cracked condition can now also be calculated with the method according to "Krüger/Mertzsch". However, this calculation is not suitable for composite cross-sections.	9040
28.07.15	Design	Special cases in the tendon alignment could cause the program to terminate during the printout of the anchorage analysis.	9186
22.04.15	Analyses	The analysis of terminated cracking according to CSN EN is no longer carried out if no stress resultants are existent in the analysis section.	8941
22.04.15	Design	Incorrect concrete compressive stresses in the cracked state were possible for a z-displacement of the cross-section origin of co-ordinates.	8974
22.04.15	Evaluation	<b>Fire protection</b> For a cross-section type <i>Upstand beam</i> the web width instead of the in-situ concrete slab width has been used as cross-section width.	8946
22.04.15	Evaluation	The graphs were not updated when repeatedly starting the output via RTconfig, which is why the print output is only possible once from now on. In order to display several lists at once, RTprint is available as output or an export to RTprint as well as *.rtf from RTconfig.	8928
27.02.15	Analyses	The <b>analysis of the terminated cracking under CSN EN</b> standards is performed on the basis of the general EN 1992-1-1 again, whereupon the coefficient $k_3$ for the calculation of the crack spacing $s_{r,max}$ is calculated according to a change (2015) in the national annex of the CSN EN.	8818
27.02.15	Design	Exis.w,k, respectively the compression zone height $X_{II}$ , is now logged depending on the decisive stresses in the <b>detailed printout for the terminated cracking</b> .	8824

Build	Module	Description	ID
27.01.15	Analyses	For prestressed pretensioning an analysis of the anchorage according to EN 1992-1-1 is also performed upon request. For cracking in the area of the anchorage length, the tensile force coverage is calculated. Cracking is not permitted with the setting "Bridge construction".	7145
27.01.15	Design	<b>Tabular fire protection analysis</b> The fire protection analysis for a downstand beam (T-beam with bottom flange) is now performed correctly.	8460

### Version 14.0

Build	Module	Description	ID
06.11.14	Input	In connection with the new database of the prestressing methods, allocation errors of tendon to material could have occurred for multiple concurrently used prestressing methods.	8506
27.10.14	Design	<b>Concrete compressive stresses</b> The concrete compressive stresses are always issued, independently whether it is necessary or not.	7126
27.10.14	User interface	The torsion parameters for the torsion design are calculated by the program depending on the standard. Differing specifications can be made, for which a selection option is available in the cross-section input.	8466
27.10.14	Design	Results of the shear joint design are also issued for an area by area shear joint.	8503
27.10.14	Design	Stresses in the cracked condition are also issued in the short output if the analysis is to be performed.	8502
20.08.14	User interface	If only one tendon had been entered, the corresponding prestressing method was not saved correctly sometimes.	8349
23.06.14	Analyses	The shear force design for beam recesses is being performed with a variable strut inclination. The inclination is adjusted in a way, that $V_{Rd,max}$ can be adhered to as possible and the shear force reinforcement is low. The input value of the strut inclination is only applied for the strut-and-tie model, if a value $> 0$ is specified; otherwise the program also tries to determine the best possible value. For "small openings" according to Heft 459 DAfStb it can be assumed that the cross-section remains plane, so that the longitudinal reinforcement of the bending design under consideration of the opening is sufficient. Additions are no longer determined for this case. For "large openings" the longitudinal reinforcement is calculated by assuming the normal forces from prestressing as external load. A deduction of the existing prestressing steel in the particular girder is currently not done.	8060
23.06.14	Design	The cross-section by cross-section analysis control for <i>prestressing only in subareas</i> has been improved.	8111
23.06.14	Evaluation	Action combination for decompression according to EN 1992, Tab. 7, Footnote b, is now also considered for all other national annexes besides the German national annex.	8109
23.06.14	User interface	Quotation marks (") in the labeling of the structural member caused a stop of the program when reloading the project.	8122
23.04.14	General	Temporary files are no longer necessary for the licensing query.	7921
23.04.14	Design	Before a fatigue analysis for the design is performed, a check for the existence of fatigue loads is carried out.	7745
23.04.14	User interface	ZAC output for a gable roof functions again.	7767
26.02.14	Input	When generating a new precast beam via RTnew, the initialization of the material has been corrected. A program termination after "Save as" has been resolved thereby.	7731

Build	Module	Description	ID
21.01.14	Analyses	Alternatively to the strut-and-tie model according to Heft 399 DAfStb, a design of an opening can be performed according to Heft 459 DAfStb. Thereby, it is being distinguished between "small openings" and "large openings" in correspondence to the sections 3 and 4 of Heft 459. The program tries in advance to prove the opening as a "small opening" with a strut-and-tie model according to the pictures 3.2 and 3.3 of Heft 459. If the geometrical requirements are not sufficient or the required strut inclination is not met, the analysis for "large openings" is performed according to the design recommendation in figure 4.31 and 4.32. Since geometrical inadmissibilities can possibly arise for flat (possible and admissible) strut inclinations, the program tries to check for these. In addition, a manual check should be performed close to the supports and for several openings. The strut-and-tie model can hereby be influenced via the specification of a strut inclination.	7465
21.01.14	Design	The fatigue analysis is now also performed for the shear force. Details about the analysis are included in the detailed design.	7162
21.01.14	Design	<b>Minimum reinforcement due to the discharge of the hydration heat</b> The analysis is now limited to areas in which contacts between the in-situ concrete slab and the precast cross-section exist.	7256

### Version 13.0

Build	Module	Description	ID
04.10.13	Design	For virtual flanges with a flange height of 1 mm, a tolerance problem which was resolved, arose for notches.	7177
04.10.13	Output document	Utilization level of the crack width is issued with 0.00 even if no crack width was determined.	7178
19.09.13	Design	<b>Tabular fire protection analysis</b> The tabular fire protection analysis is not performed at the ends of the beam.	7093
19.09.13	Analyses	<b>Fire protection analysis in the area of the notch</b> The remaining web height reduced by the notch height was calculated incorrectly. The program can now distinguish between recess and notch and it determines the remaining web height in each case to check the requirement according to EN 1992-1-2 Chapter 5.6.4.	6866
19.09.13	Design	<b>Notches</b> There were problems in the area of the notch associated with short reinforcement edges, which occur when the bottom flange doesn't exist in a standard I-section.	7099
19.09.13	Design	The required compression flange width was only issued for composite cross-sections according to Eq. 5.40a in the buckling stability analysis. This value is now generally issued as the transient situation for later on.	6965
19.09.13	Design	For the decompression analysis in building construction according to DIN EN/NA 1992-1-1 the footnote b of table 7.1DE is considered.	6962
19.09.13	Input	In the dialog of the prestressing methods the selection after a reload is now also made with the material of the current tendon.	7014
17.06.13	Design	<b>Shear joint bearing capacity</b> The shear joint analysis has been extended and can now be carried out for <ul style="list-style-type: none"> <li>• sectionally build beams; i.e. rectangular beams with in-situ concrete addition</li> <li>• composite trusses, i.e. precast T-beams with in-situ concrete addition</li> <li>• lattice girder, i.e. precast slabs with in-situ concrete addition</li> </ul> Inclination angle and material of the tie bars are adjustable.  <b>Fatigue analysis of the tie bars in the shear joint</b> As of now, a fatigue analysis is performed under dynamic shear force loading.	6978

Build	Module	Description	ID
17.06.13	Design	When determining the connecting bars for a tension flange, a reinforcement is determined approximatively that results from the change of the tensile force in the flange over $a_v$ in condition I. The designated reinforcement has to be reviewed under consideration of the actually inlaid reinforcement and its distribution as well as the therefore resulting change of the tensile force in the flange.	6977
17.06.13	Design	<p><b>Glass fiber reinforcement</b></p> <p>Glass fiber reinforced structural elements can be designed. The program currently resorts to 2 manufacturers : <b>Schöck ComBAR</b> and <b>Halfen FiReP REBAR</b>. The following design analysis can be carried out:</p> <ul style="list-style-type: none"> <li>• Bending and shear force bearing capacity</li> <li>• Limitation of the crack width</li> <li>• Limitation of the stresses</li> </ul>	6524
17.06.13	Design	For the <b>shear joint analysis</b> a reinforcement tensile strength can now be specified.	6523
17.06.13	General	Now, the <b>release notes</b> are available in <b>English</b> .	6454
17.06.13	General	Program modifications for the <b>compatibility with Windows 8</b> .	6365
17.06.13	User interface	The analysis control for minimum reinforcement and the crack width analyses is now more differentiated.	6161
17.06.13	Calculation	For fully stripped tendons, unbalanced results were possible in the non-linear calculation of the overturning analysis.	6549
17.06.13	Design	The design of the solid cross-section for girder recesses is only carried out with a preset web reinforcement.	6979
17.06.13	Non-linear analysis	A nonlinear calculation is not possible when auxiliary columns exist. A note to upcoming program versions with this option has been removed.	5444