SAFE v20.2.0 Release Notes
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Notice Date: 31-March-2022

This document lists changes made to SAFE since v20.1.0, released 04-February-2022. Items marked with an asterisk (*) in the first column are more significant.

Analysis
Enhancements Implemented

*	Ticket	Description
	7619	An enhancement was made to automatically re-run analysis and design if cracked short-term or long-term deflection analysis is requested and a previous design to determine the amount of required rebar was not available. This only occurs when using the Run Analysis and Design command or tool-button.

Data Files
Enhancements Implemented

*	Ticket	Description
	8167	The Russian material library has been updated to add materials from the latest standards SP 63.13330.2018 (concrete, rebar, tendon) and SP 63.13330.2017 (steel). The materials from the older standards, available previously, are still present in the updated library.
	8172	Two new Russian frame section libraries have been added to conform to the latest standards. These files are Russian2020_en.XML and Russian2020_ru.XML. The former contains the frame sections with names in the English language, and the later contains the same frame section with names in the Russian language, where applicable.

Design – Composite Beam
Enhancements Implemented

*	Ticket	Description
	8113	Composite beam design per the AISC 360-16, BS5950-1990 and CSA S16-14 codes has been enhanced to now include, in the design details tables, the value of the bottom-flange steel stress produced by the un-factored loads.
*	8245	Composite beam design has been added for the CSA S16-19 design code.

Design – Slab
Enhancements Implemented

*	Ticket	Description
	8292	For concrete slab design, the option to increase flexural reinforcement to improve shear strength design is now defaulted to "No" when a new model is created. This option was added to Concrete Design Preferences in SAFE v20.1.0 for ACI 318-19 and IS 46:2000 slab design codes but was inadvertently omitted from the Release Notes. In SAFE v20.1.0, the default was set as "Yes". In SAFE v20.0.0, this option was not exposed in Preferences but was internally set to yes only when "Impose Minimum Reinforcing" was checked when displaying enveloping flexural reinforcement for strip based design. This change only affects the default value for new models, existing models will retain their setting.

Detailing
Enhancements Implemented

*	Ticket	Description
	7530	An informational message has been added to warn users that clicking OK on the Detailing Preference form will change the strip details.

External Import and Export
Enhancements Implemented

*	Ticket	Description
	8258	An enhancement was made to the import of grids from DXF/DWG files. Circles that are part of grid bubbles and that are drawn on the same layer as the grid lines are no longer imported. Previously, such circles were incorrectly imported as circular grid systems.

Graphics
Enhancements Implemented

*	Ticket	Description
	8204	An enhancement was added for the display of shell/area objects (walls, slabs) to handle joint offsets in the extruded view.
	8248	An enhancement was made to display shell (area) load contours in the 3D view.

Installation and Licensing
Enhancements Implemented

*	Ticket	Description
*	8236	The version number has been changed to v20.2.0 for a new intermediate release.

Loading
Enhancements Implemented

*	Ticket	Description
*	8200	An incident was resolved where load combinations of any type except Linear Add and that contained a Range-type of multi-step load case, such as pattern loading, did not produce the correct results. This was because the multi-step load case was being used as an envelope over the multiple steps, whereas it should have been used as a Range sum over the steps. The effect of this could be unconservative. Note that load combinations of type Linear Add were not affected - the multi-step load case was correctly added in as a Range sum. Combos of type Range Add, Envelope, SRSS, and Absolute Add were affected. This same behavior was exhibited for load combinations that contained other load combinations of type Range Add. Design load combinations automatically created by the program always used a Linear Add when combining Range-type Pattern Load cases with other gravity loads and therefore were not affected.

Structural Model
Enhancements Implemented

*	Ticket	Description
	8006	An enhancement was added for long term cracked section analysis where the age at which the structure was loaded can now be specified in the Floor Cracking Analysis form of the Load Case Data (Define menu>Load Cases) of nonlinear static and staged-construction load cases. Previously, age at loading was assumed to be 7 days.

Data Files
Incidents Resolved

*	Ticket	Description
	8152	An incident was resolved where the options "Thin Plate" and "Orthotropic" for slab properties were not translated when bringing models from SAFE v16 (and older) into SAFE v20. This resulted in the default settings for these options being used, namely "Thick Plate" and "Isotropic". This affected SAFE v20.0.0 and v20.1.0. Older models that have been opened and saved in these two versions should be checked and corrected as needed, or the older models (prior to v20) can be opened again in the new version, which will then retain the correct settings.
	8186	An incident was resolved where the model top and bottom levels could be incorrect for the case where the column bottom level for story below was set to be below the story height.

Database Tables
Incidents Resolved

*	Ticket	Description
	8132	An incident was resolved where the option to generate tabular data for selected slab rebar objects was not working. The tabular data was being generated for all slab rebar objects even when one or more slab rebar objects were selected and the "Selection Only" check box on the database table form was checked.

Design – Concrete Frame
Incidents Resolved

*	Ticket	Description
	8316	An incident was resolved for concrete frame design code "Eurocode 2-2004" so that now the design considers the optimization of tan(theta) even when torsion is present. This optimization is limited to matching $V_{Rd,max}$ with V_{Ed} per equation (6,9) of EC2 6.2.3(3). In the previous version 20.1.0, the calculation of Asw/s was over-conservative.

Detailing
Incidents Resolved

*	Ticket	Description
	7531	An incident was resolved where the rebar detailing in a slab section could be erroneous when the option "Computed reinforcement only" was used. This was corrected in SAFE v20.1.0, but inadvertently omitted from the Release Notes. Note that the rebar shown when editing supports and spans is shown for the computed or defined extents of the bar, but is not trimmed for slab edges. The bars shown in strip details and rebar layout plans and sections is trimmed for slab outlines.
	7532	An enhancement was implemented to display Typical Beam Elevations in the form for defining Rebar Curtailment Rules for beams.
	7862	An incident was resolved where the assignment of a rib location to a ribbed or waffle slab would not show the ribs in the correct location. This was a display issue only and no analysis or design results were affected. Detailing was consistent with the graphical display.

External Import and Export
Incidents Resolved

*	Ticket	Description
	8227	The option to export slab rebar sizes to DXF files, previously available in SAFE 2016 and earlier but missing from SAFE v20, has now been restored. Rebar sizes are exported when design results showing them are displayed in the current window. This is unchanged from SAFE 2016.

*	Ticket	Description
	8304	An incident was resolved where the design-overwrites tables for composite beam design were not not available for selection in the Choose Tables form for the command File > Export to Text File. These tables were also not being saved in the .$SF text file, and hence the design overwrites could not be imported. When importing a model from the text file, the design overwrites for composite beam design were set to default values.

Graphics
Incidents Resolved

*	Ticket	Description
	8137	An incident was resolved where the tendon vertical profile values were not being shown at the correct location when working in DirectX Graphics mode. This issue was not present when working in Standard Graphics mode.
	8201	An incident was resolved where the Graphics mode was always being reset to DirectX mode when the program was restarted, even if it was previously set to Classical graphics in the last session. This was caused by an inadvertent change that affected SAFE v20.1.0 only.

Miscellaneous
Incidents Resolved

*	Ticket	Description
	8157	An incident was resolved where a particular model could not be opened in DirectX graphics mode. It was triggered by showing reaction tables on-screen when the model was saved.
	8198	An incident was resolved where a particular model could not be opened because it was unable to resolve overlapping areas. This was not common.

Results Display and Output
Incidents Resolved

*	Ticket	Description
	8259	An incident was resolved where the contour legend, where applicable, was missing in the Project report for figures was added via a Named Set. In addition, figures were not aligned properly in the project Report when added via a Named Set, or when the report was exported to Word.

Structural Model
Incidents Resolved

*	Ticket	Description
	8275	An incident was resolved where the default material properties created for a new model initialized using the "Use Built-in Settings" option immediately after SAFE was started were always based on the United States material library, although the names of the materials could be for Chinese or Canadian materials. This did not occur after another model was opened or started as new. Note that these were only the default properties, and these could be changed after the model was generated. Results agreed with the material properties as created and displayed in the forms, tables, and reports. Now the default properties will be generated based on the "Region for Default Materials" selected when using the "Use Built-In Settings" option for creating a new model. If the corresponding regional material library does not contain materials of a particular type (such as rebar), then a generic default material will be created that should be reviewed by the user, and modified as needed.

User Interface
Incidents Resolved

*	Ticket	Description
	8199	An incident was resolved where the dimensions of a joint load assigned to a point object were not available in the right-click information form. This information has now been added and is available under the Loads tab on the right-click form.

*	Ticket	Description
	8240	An incident was resolved where story height was not properly updated when using the command Edit > Edit Grid Systems.