

SAFE v22.1.0 Release Notes

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Notice Date: 11-July-2024

This document lists changes made to SAFE since v22.0.0, released 31-May-2024. Items marked with an asterisk (*) in the first column are more significant.

Design – Concrete Frame

Enhancements Implemented

*	Ticket	Description
	10638	An enhancement has been made to ACI concrete codes "ACI 318-14" and "ACI 318-19" for torsion design if redistribution of torsion and forces are identified. The members for which redistribution is identified are designed for a torsion maximum of T_u and $\phi * T_{cr}$ per section ACI 318-14 22.7.3 and ACI 318-19 22.7.3. The members for which redistribution is not identified are designed for a torsion T_u obtained from analysis. If a member is overwritten with a reduction factor for torsional stiffness or if the member is assigned a section for which a reduction factor for torsional stiffness is applied, it is considered to redistribute torsion. If a member is not overwritten with any reduction factor for torsional stiffness and if the member is assigned a section for which no reduction factor for torsional stiffness is applied; in this case SAFE automatically applies a torsional stiffness reduction factor of 0.1 and torsion redistribution is assumed.

Design – Slab

Enhancements Implemented

*	Ticket	Description
	10283	An enhancement was made for CSA A23.3-19 and CSA A23.3-14 design codes to use slab total thickness for allowing punching shear rebar for stirrup design. Previously, enforcement was done based on slab effective depth.
	10434	An enhancement was made for ACI 318-19 slab design code where a toggle for "Special Seismic Systems" has been added in the design preferences. When "Special Seismic Systems" is set to "Yes", area type is either mat or footing and seismic load is present in the design combination, f_y for shear rebar design can be taken as maximum of 80,000 psi as permitted in ACI 318-19 Table 20.2.2.4(a), Note 7.

Installation and Licensing

Enhancements Implemented

*	Ticket	Description
	10620	The version number has been changed to v22.1.0 for a new intermediate release.

Results Display and Output

Enhancements Implemented

*	Ticket	Description
	1734	An enhancement has been made to the concrete punching shear check for prestressed concrete slabs per ACI design codes, in which the "Punching Shear Check & Design" report has been enriched by adding additional information on α_s , β_p , f_{pc} , and v_p . The affected codes are "ACI 318-19", "ACI 318-14", "ACI 318-11", and "ACI 318-08". This was a reporting issue only.

SAFE v22.0.0 Release Notes

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Notice Date: 30-May-2024

This document lists changes made to SAFE since v21.2.0, released 30-November-2023. Items marked with an asterisk (*) in the first column are more significant.

API

Enhancements Implemented

*	Ticket	Description
*	10577	Following enhancements have been made to the API: SAFE (SAFEv1.dll) and cross-product API (CSiAPIv1.dll) libraries have been updated to target .NET Standard 2.0, increasing range of compatibility to API clients targeting .NET Standard 2.0, .NET Framework 4.6.1 to 4.8.1 and .NET (Core) 2 to .NET 8. Increased support for complex plugins where dependencies of the plugin might conflict with dependencies of SAFE. Better error handling for API clients calling API functions that were not implemented by the connected version of SAFE. The Remote API feature, used to start and/or connect to a running instance of SAFE on a Remote Computer, has been disabled with the release of SAFE v22.0.0. This functionality may be added back to the program in a future release. Please see API help file for details regarding backward & forward compatibility.

Data Files

Enhancements Implemented

*	Ticket	Description
	10381	Three new frame section libraries have been added conforming to AISC Shapes Database v16.0. These libraries are consistent with the shape properties and dimensions tabulated in AISC Steel Construction Manual, 16th Edition, 1st Printing. The new shapes database files are (1) AISC16.xml - Shapes database in US customary units, (2) AISC16M.xml - Shapes database in metric units, and (3) AISC16-A1085.xml - This database contains dimensions and properties for HSS shapes covered under ASTM A1085/A1085M and is in US customary units.

Detailing

Enhancements Implemented

*	Ticket	Description
	10331	An incident was resolved for detailing where in some cases the beam reinforcement was shown outside the beam cross section when the beam section changed within the span.

Drafting and Editing

Enhancements Implemented

*	Ticket	Description
	10213	An enhancement was made to allow drawing of walls above and below the floor that extend beyond the height of the story above/below.

Graphics

Enhancements Implemented

*	Ticket	Description
	10450	An enhancement was made to now show the effect of joint offsets assigned to slabs when viewed in extruded elevation views. Joint offsets can be assigned using command Assign > Shell > Insertion Point. The effect of the cardinal point was already included in extruded elevations, but not the additional joint offsets.

Installation and Licensing *Enhancements Implemented*

*	Ticket	Description
*	10225	The version number has been changed to 22.0.0 for a new major release.

Loading *Enhancements Implemented*

*	Ticket	Description
*	10448	A new feature has been added for assessing the serviceability of steel-framed floor systems subjected to vibrations caused by walking activities. The methodology follows the procedures outlined in Chapter 7 - Finite Element Analysis Methods - of the AISC Steel Design Guide 11: Vibrations of Steel-Framed Structural Systems Due to Human Activity, Second Edition. Various walking excitations and their response at different locations can be specified through the definition of excitation sets. Utilizing steady-state analysis, a walking load is applied at each excitation location and the corresponding accelerations are measured at the response location. These accelerations are then compared to established human-comfort tolerance levels. The results are displayed in an interactive form featuring a table of key calculations and various plots for visualization of the response. Results can also be displayed and exported as database tables.

Structural Model *Enhancements Implemented*

*	Ticket	Description
	10518	An enhancement was made to allow conversion of curved concrete beams to shell slabs. Previously, only straight beams could be converted.

User Interface *Enhancements Implemented*

*	Ticket	Description
*	10576	SAFE has been updated to support Windows .NET 8. This does not affect most users directly, except perhaps by associated changes to the Application Programming Interface (API), either by explicit use of the API by the user or through the use of third-party applications or Plug-ins. API programmers should see Ticket 10577 for more information. Users experiencing problems with third-party applications or Plug-Ins should contact the supplier for an updated application or Plug-In that will work with SAFE v22.0.0.

Analysis

Incidents Resolved

*	Ticket	Description
	10440	An incident was resolved where nonlinear springs were linear elastic and did not produce nonlinear behavior when run using the Standard Indian and PT Chinese license levels in SAFE.

Design – Slab

Incidents Resolved

*	Ticket	Description
*	9283	An incident was resolved where the impact of openings was not considered correctly in some cases for punching-shear perimeter calculations. Specifically, it affected openings inside the perimeter and openings that traversed the positive local 2-axis of the column. Both cases were obvious from a check of the perimeter being considered. The latter case always resulted in a very large D/C ratio.
	10511	An incident was resolved for ACI 318-19 concrete slab design where the concrete shear capacity, V_c , was being determined from the minimum value of two equations (a) and (b) of Table 22.5.5.1. Now slab design uses the maximum value of the two equations (a) and (b) of Table 22.5.5.1. Previous results were over-conservative.

Detailing

Incidents Resolved

*	Ticket	Description
	10038	An incident was resolved for detailing where footing bottom reinforcement was shown outside the footing boundary when both top and bottom rebars were shown together in same plan view.
	10484	An incident was resolved where detailing was not recognizing the "support" locations within the middle strips, and therefore was not specifying any top reinforcement at support location despite the presence of a negative moment.
	10485	An incident was resolved for detailing where the Bill of Quantities (BOQ) for footings was not reporting the correct length of rebar in the rebar weight summary table.

Drafting and Editing

Incidents Resolved

*	Ticket	Description
	10282	An incident was resolved where, when adding a column by tracing the Architectural layer, the column and the column section property were being created but the section property was not always correctly assigned to the column.
	10439	An incident was resolved where, in some cases, drawing a tendon at area-edge intersections could cause an abnormal termination of the software. Similarly, an abnormal termination could occur when drawing a tendon in a plan view for which drawing limits had been turned on.

Graphics

Incidents Resolved

*	Ticket	Description
	10223	An incident was resolved where circular curved lines imported to the architectural plan were not able to be displayed correctly in DirectX graphics mode. This did not affect standard graphics mode. Results were not affected.

Structural Model
Incidents Resolved

*	Ticket	Description
	9628	An incident was resolved where deformed shape plots displayed inadvertent discontinuities around shell elements with shell line releases. This was a plotting issue and joint displacements displayed in tables, used by design etc. were not affected.
	10258	An incident was resolved where drop panels defined as part of a column section property were not always being displayed in the specified color. Results were not affected.