

# ETABS v22.5.1 Release Notes

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**Notice Date: 21-February-2025**

This document lists changes made to ETABS since v22.5.0, released 18-February-2025. Items marked with an asterisk (\*) in the first column are more significant.

## Internal

### ***Enhancements Implemented***

*	Ticket	Description
	11255	The version number has been changed to 22.5.1 for a new minor release.

## Analysis

### *Incidents Resolved*

*	Ticket	Description
*	11253	An incident was resolved where compression only or tension only area springs were not working correctly in nonlinear analysis. This was a bug inadvertently introduced in v22.5.0 only. Models run in v22.5.0 need to be reanalyzed in v22.5.1 or later.

## Database Tables

### *Incidents Resolved*

*	Ticket	Description
	11246	An incident was resolved in the NBCC 2020 auto seismic load pattern where editing the load pattern via interactive database would revert all load pattern parameters to NBCC2015 with default values.

# ETABS v22.5.0 Release Notes

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**Notice Date: 17-February-2025**

This document lists changes made to ETABS since v22.4.0, released 23-December-2024. Items marked with an asterisk (\*) in the first column are more significant.

## Database Tables

### **Enhancements Implemented**

*	Ticket	Description
	10911	An enhancement has been implemented to include horizontal null areas with diaphragm assignment in the database table for area object diaphragm assignments. Previously, only the floor areas that had a diaphragm assigned to them were available in the table.

## Design – Composite Beam

### **Enhancements Implemented**

*	Ticket	Description
*	10961	An enhancement to composite beam design was implemented. Design per the CSA S16-24 code is now available.
*	10962	An enhancement has been made to add composite column design according to CSA S16:2024.

## Design – Concrete Frame

### **Enhancements Implemented**

*	Ticket	Description
	10991	An enhancement has been made to include a table showing axial compression check for column design in the right-click design report for the TS-500 and TS-500(R2018) concrete frame design code. Previously, this check was performed during the design but the check information was not displayed in the design report.
	11141	An enhancement was made in concrete beam design for IS 456:2000 code, where "Rebar Asvt/s" in "Shear Details" tab now only reports the transverse rebar which needs to be provided as closed hoops enclosing the corner longitudinal rebars. Previously, Avmin requirement were also enforced for reporting "Rebar Asvt/s."

## Design – Shear Wall

### **Enhancements Implemented**

*	Ticket	Description
	10588	An enhancement has been made to allow the circular concrete section to be added in the embedded pier section through the section designer. Previously, only rectangular concrete section was allowed to be embedded in the pier section.

## Design – Steel Frame

### **Enhancements Implemented**

*	Ticket	Description
	9799	An enhancement has been made for Canadian steel frame design codes CSA S16-14 and CSA S16-19 in which the section classification of channel sections is now allowed to be Class 1 or Class 2 if the b/t ratios are less than the corresponding limits for being Class 1 or Class 2. Previously, the program did not allow the channels as part of the Type D and Type MD moment-resisting frames, and now it will. As previously calculated, the flexural capacities of all channel sections were based on the capacity equations in section 13.6(b) of CSA S16.
*	10960	An enhancement has been made to add CSA S16:2024 steel frame design.

* Ticket	Description
11208	An enhancement to steel design per all available design codes was implemented. User-defined steel sections are now considered rolled sections for the purpose of steel design when their fillet radius is not zero. User-defined steel sections were previously systematically considered built-up sections, unless the user applied a steel design overwrite to the members with such sections – a feature available for select codes only. This enhancement will occasionally result in lower demand/capacity ratios being reported for the affected members.

## Documentation

### ***Enhancements Implemented***

* Ticket	Description
11073	Documentation for Steel Joist Design has been updated to reflect that selected beam cannot be designed as a joist because the floor objects next to it have a slab section instead of the required deck section.

## Installation and Licensing

### ***Enhancements Implemented***

* Ticket	Description
11125	The version number has been changed to 22.5.0 for a new minor release.

## Loading

### ***Enhancements Implemented***

* Ticket	Description
10751	An enhancement was implemented to add the AS 1170.4-2024 auto seismic loading and response spectrum function.
11183	An enhancement was made for NBCC 2020 response spectrum function to add smaller time-steps for computing the intermediate acceleration based on Log-Log Interpolation as specified in Section A.4.1.8.4.(6) of NBCC 2020 code. This change may cause response spectrum results to change for NBCC 2020 function. Previous implementation was using a linear interpolation between two given periods which provided slightly conservative values.

## Miscellaneous

### ***Enhancements Implemented***

* Ticket	Description
11232	The name of the link property type "Damper - Sumitomo Viscoelastic" in the Link Property Data form (Define menu>Section Properties>Link/Support Properties) has been changed to "Damper - Sumitomo Rubber GR4". No changes were made to the behavior of the link property itself.

## Results Display and Output

### ***Enhancements Implemented***

* Ticket	Description
11177	An enhancement has been made for the concrete frame design code "Chinese 2010" in which the program now shows the nominal interaction curves (based on characteristic strengths $f_{ck}$ and $f_{yk}$ ) in addition to the design interaction curves (based on design strengths $f_c$ and $f_y$ ) in the "Interaction Surface (Chinese 2010)" form. This allows easier comparison with the fiber model interaction diagram which uses characteristic strengths.

## Structural Model

### ***Enhancements Implemented***

*	Ticket	Description
	11131	An enhancement has been implemented to allow the definition of Elasto-Plastic nonlinear behavior for the area spring property without the need to define a link property to specify this behavior.

## User Interface

### ***Enhancements Implemented***

*	Ticket	Description
	10684	An enhancement was made to display the forms w.r.t the main application MDI form for single and multiple screens. Floating windows are loaded from their previous locations (in any screen).
	10981	An incident has been resolved where, for a fiber P-M3 hinge, changing the length and thickness of wall for overlaying user-defined wall on the plot would change the length and thickness for all other user-defined P-M3 fiber hinges. It should be noted that the specified length and thickness of the wall is only used in the current session and not saved as part of the hinge data.

## API

### Incidents Resolved

*	Ticket	Description
	11174	An incident was resolved where the following API functions returned the step number rather than the time in seconds for the "Step Number" argument for time history (direct integration and modal, linear and nonlinear) load cases: cAnalysisResults.AreaForceShell cAnalysisResults.AreaJointForceShell cAnalysisResults.AreaStressShell cAnalysisResults.AreaStrainShell cAnalysisResults.AreaStressShellLayered cAnalysisResults.AreaStrainShellLayered cAnalysisResults.BaseReact cAnalysisResults.BaseReactWithCentroid cAnalysisResults.FrameForce cAnalysisResults.FrameJointForce cAnalysisResults.GeneralizedDispl cAnalysisResults.LinkDeformation cAnalysisResults.LinkForce cAnalysisResults.LinkJointForce cAnalysisResults.PanelZoneDeformation cAnalysisResults.PanelZoneForce cAnalysisResults.SectionCutAnalysis cAnalysisResults.SectionCutDesign cAnalysisResults.JointDrifts cAnalysisResults.StoryDrifts cAnalysisResults.JointAcc cAnalysisResults.JointAccAbs cAnalysisResults.JointDispl cAnalysisResults.JointDisplAbs cAnalysisResults.JointReact cAnalysisResults.JointVel cAnalysisResults.JointVelAbs

## Database Tables

### Incidents Resolved

*	Ticket	Description
	11229	An incident was resolved where the fields "Shear Rebar Size in End Zone", "Shear Rebar Spacing in End Zone", and "Shear Reinf. in End Zone Confined?" in the Database Table "Area Assignments - Wall Hinge Reinforcement" were always being set to the default values when the table was modified through Interactive Database Editing (Edit menu>Interactive Database). This issue only affected wall objects where the Wall Hinge Reinforcement was set to Specified Rebar Layout (Assign menu>Shell>Reinforcement for Wall Hinge) and the affected fields correspond to the Shear/Confinement Detail parameters for the "End" Station.

## Design – Composite Beam

### Incidents Resolved

*	Ticket	Description
	11138	An incident affecting composite beam design per all applicable design codes was resolved. When some beams were designed assuming composite action for some but not all the ultimate strength design load combinations owing to some variation in the number of shear studs contributing to composite action - i.e. those shear studs between the locations of zero-moment and that of the maximum positive moment - the worse ultimate strength composite bending demand/capacity ratio was reported in the interactive composite beam design form and in the reports but the worse ultimate strength non-composite bending/capacity ratio was missing. This was a reporting error only and the designs were unaffected, with both ratios internally checked. This affected ETABS v22.4.0 only.
	11153	An incident affecting composite beam design per Eurocode was resolved. Attempts to specify web openings in a beam with non-composite section resulted in an abnormal program termination.
	11187	An incident affecting composite beam design per the IS11384 code was resolved. In models for which a large number of composite or strength design combinations were prescribed, resulting in a variable location of the maximum bending moment for some beams, ETABS issued a series of error messages instead of designing these beams. Attempting to interactively design these beams resulted in an abnormal program termination. This affected all versions of ETABS capable of designing composite beams per the IS11384 code. When this occurred, designs were unavailable for the affected beams.

**Design – Concrete Frame**  
**Incidents Resolved**

*	Ticket	Description
	11195	An incident has been resolved for the CSA A23.3-19 concrete frame design in which the check for condition $M2, \min > M2$ to set the factor $C_m = 1.0$ has been included. Previously, this check was not implemented although it was mentioned in the design manual.
	11197	An incident was resolved for ACI 318-19 prestress beam design where $A_{vmin}$ as specified in Table 9.6.3.3 equation (e) was not enforced. The $A_{vmin}$ specified in Table 9.6.3.3 equation (e) is only applicable when $T_u < T_{cr}$ and no torsional redistribution is made (i.e. torsion stiffness modifiers are not used).

**Design – Shear Wall**  
**Incidents Resolved**

*	Ticket	Description
	11149	An incident was resolved for ACI 318-19 shear wall design code where the $C_m$ factor was conservatively taken as 1. Now it is calculated based on the end moments.
	11171	An incident was resolved where shear wall design became unresponsive for some models which had large number of shear walls forming several wall stacks.

**Design – Slab**  
**Incidents Resolved**

*	Ticket	Description
	11147	An incident was resolved for FEM based slab design where load combinations which are double valued (for example combos involving response spectrum cases) and have significant in-plane forces were not designed accounting for all combinations of non-corresponding forces. This issue only affected FEM based design, strip based design was not affected.

**Detailing**  
**Incidents Resolved**

*	Ticket	Description
	11186	An incident was resolved where minimum and maximum rebar spacing for unconfined bars for pier rebar rules under the wall stacks section were not saved (Detailing menu > Bar Selection and Curtailment Rule > Wall Stack Bar Selection and Curtailment Rules).

**External Import and Export**  
**Incidents Resolved**

*	Ticket	Description
	11165	An incident has been resolved where the XML file for joist auto select list(s), created by exporting from the frame section definition form, could not be imported into the program because of schema validation error(s). The auto select list for other section types did not have this issue.

**Loading**  
**Incidents Resolved**

*	Ticket	Description
	11119	An incident was resolved for Eurocode 8-2004 auto seismic loading for Malaysia National Annex where unchecking the option "Soil deposit exceeding 30m in depth" was not accounted for in the seismic loading.

**Results Display and Output**  
**Incidents Resolved**

*	Ticket	Description
	11132	An incident was resolved where shear wall design report could not show when pier was designated as "To be Checked" for ACI 318-19 code. This issue was only present in v22.4.0. Also, a warning message has now been added when delta_ns exceeds 1.4.
	11140	An incident was resolved where ACI 318-19 concrete column design report was showing code reference as ACI 318-14 when delta_ns factor was exceeding 1.4. This was just a reporting issue.
	11198	An incident was resolved where, when a user-defined Shear V2 type hinge (Define menu > Section Properties > Frame/Wall Nonlinear Hinges) that has a "Stress-strain" Type and scaling set to "Use Yield Force" was assigned to a Wall object as part of a vertical shear wall hinge assignment, the hinge would not be able to yield. An abnormal termination error would be triggered if the results for the affected shear hinge was requested when viewing Hinge Response (Display menu > Hinge Results).

**Structural Model**  
**Incidents Resolved**

*	Ticket	Description
	11161	An incident was resolved where the acceptance criteria values generated for ASCE 41-23 Steel Column auto-hinges with axial load values of less than or equal to zero (compression) were not correctly scaled by the rotational scale factor and may be too small. This issue only affect the hinge status output and did not affect other analysis results.

**User Interface**  
**Incidents Resolved**

*	Ticket	Description
*	11118	An incident was resolved where viscous proportional damping applied to linear or nonlinear direct integration time history load cases (Define menu>Load Cases) can be incorrect when using the "Direct Specification" option while the "Specify as Ratio for This Mode" checkbox is checked. This is rare because the "Specify as Ratio for This Mode" checkbox is disabled when the "Direct Specification" option is selected, but can occur if the user selected a different damping option before switching to "Direct Specification". The damping values reported in the .LOG file are correct and correspond to the values used for analysis.
	11175	An incident has been resolved where the text boxes for specifying contour range on the Frame/Pier/Spandrel/Link forces display form were disabled when the form was opened for the first time in a session. Also, the specified values for the contour range were not being applied to the display. Also, an issue was fixed where the units for the specified contour range were incorrect on the same form.