ETABS® 2015 Version 15.1.0
Release Notes

Notice Date: 2015-07-27

This file lists all changes made to ETABS since the previous version. **Most changes do not affect most users.** Incidents marked with an asterisk (*****) in the first column of the tables below are deemed more significant.

Changes from v15.0.0 (2015-02-23)

User interface
Enhancements Implemented

*	Incident	Description
	78112	An enhancement was made by adding a Select/Deselect All button to the Check Model Form.

Graphics and Drafting
Enhancements Implemented

*	Incident	Description
	79302	An enhancement has been made so that the graphical zoom level is no longer changed when performing certain operations, such as setting building view limits, hiding or un-hiding grid lines from the current view, or moving through the elevations using the arrow buttons. Previously these operations caused the view to zoom out to show the full model.
	81221	Two enhancements have been implemented to make drafting easier: (1) An option has been added to "Draw using Snaps Only". (2) An option has been added to show colors by story.

Modeling
Enhancements Implemented

*	Incident	Description
*	14367	A new two-dimensional concrete model has been added to the nonlinear layered shell. This model is based on the Darwin-Pecknold model, with consideration of Vecchio-Collins behavior. This model represents the concrete compression, cracking, and shear behavior under both monotonic and cyclic loading. The direction of cracking can change during the loading history, and the shear strength is affected by the tension strain in the material. The given material stress-strain curve is simplified internally to account for initial stiffness, yielding, ultimate plateau, and strength loss due to crushing. Zero tensile strength is assumed. The layered shell allows this material to be used for membrane and/or flexural behavior and to be combined with steel reinforcement in arbitrary directions and locations. Transverse (out-of-plane) shear is assumed to be elastic.
*	27098	The specification of the notional size used for time-dependent creep and shrinkage analysis has been enhanced to now be specified with the frame and shell section properties instead of with the material property. This now provides three options: (1) "Auto", in which the notional size will be calculated automatically based on the section dimensions, when applicable. (2) "User", in which the user specifies an explicit value to be used for the section. (3) "None", in which creep and shrinkage is ignored. Models from older versions that used the notional size in the material property will be updated so that each frame or shell section uses the previously specified value from the material as a "User" value in the section definition. Models from older versions that used material overwrites may produce different creep or shrinkage results if the notional size in the material overwrite assigned to a frame or shell object is different from that in the material used by the section assigned to that same

*	Incident	Description
		object. Identical results can be obtained by manually adding new sections with the notional size value equal to that in the material overwrites, and assigning them to the affected objects.
*	61923	Time-dependent material behavior has been expanded to include the CEB FIP-2010 and ACI 209R-92 codes, as well as to support user-defined curves. Time-dependent behavior includes creep, shrinkage, and stiffness aging during staged-construction analysis.
	78111	An enhancement was made for the specification of diaphragm mass eccentricities in the definition of the mass source. Previously the eccentricity was specified as an eccentricity ratio and an angle. This has been changed to instead specify independent eccentricity ratios in the X- and Y-directions. The effect of this is to give a more elliptical shape to the generated locations of the diaphragm centers of mass with respect to the direction of movement. This will have no effect on models that only move the diaphragm center of mass parallel to the global axes, which is the most common case. However, results may change from previous versions of ETABS for models where the center of mass was moved at an angle to the global axes. In either case, the most meaningful results will be obtained if the global axes are aligned with the principal inertial axes of the structure. This enhancement only affects the movement of the center of mass using mass source definitions, which is not common. It does not affect eccentricities defined in lateral load patterns or response-spectrum load cases.

Loading

Enhancements Implemented

*	Incident	Description
*	81620	Automated response-spectrum functions have been implemented for the following codes: Costa Rica Seismic code 2010, Ecuador (NEC-SE-DS 2015), Mexico (CFE-93 and CFE-2008), and Peru (NTE E.030 2014).
*	81621	Automated seismic loading has been implemented for the Dominican Republic R-001 code.

Analysis

Enhancements Implemented

*	Incident	Description
*	75659	A new stability check has been added for nonlinear static load cases. For force-controlled load cases, including staged construction, the stiffness matrix will be formed, solved, and checked at the final converged state for negative eigenvalues. The number found will be reported in the analysis log file (.LOG), and a stability warning issued in the log file if the number is greater than zero. Displacement-controlled load cases are not checked as these typically are used to analyze unstable structures, whereas force-controlled load cases are intended to be stable.
*	79573	The speed of nonlinear static and nonlinear direct integration time-history analysis has been increased for models containing many linear shell elements.

Composite Beam Design

Enhancements Implemented

*	Incident	Description
	76726 77928	Several enhancements were implemented that affect beams that are part of a composite-beam design group: (1) The "Show Group Results" option is now unchecked when the Interactive Composite Beam Design Review form is first displayed. (2) If the user subsequently checks the box "Show Group Results", a series of progress messages will be displayed while ETABS evaluates each of the various alternative designs for each of the beams in the group. (3) if no acceptable design can be found for the composite beam that is being designed interactively, the "Show All Alternates" mode is automatically entered, and the "Show Group Results" check box is unchecked and disabled. (4) When the user chooses a new design for the beam, the confirmation form now includes a warning if the design does not work for some other beam in the design group.
	80841	Three enhancements to the composite beam design output were added: (1) When design is controlled by a strength capacity other than the positive flexural capacity under service conditions,

*	Incident	Description
		the loading of the beam is listed for both the load combination which governs the design and the load combination which controls the positive flexural demand under service conditions. Previously only the loading for the latter condition was listed. (2) Loads of type "Other" are now reported when present in the beam loading. (3) Some intermediate stations at which no change in loading occurred were occasionally being listed in the output. These are no longer listed, for conciseness.

Results Display and Output

Enhancements Implemented

*	Incident	Description
*	61275	The display of plots and tables for the results of modal time-history load cases, particularly FNA load cases using many modes, has been made significantly more efficient. This will reduce the time taken to produce displacements, stresses, and forces, including story shears and other types of section-cut forces.
	66225	An enhancement has been made to optionally show the plot of a time-history function when an AVI animation is created for a time-history load case.
	78993	The cyclic animation option for the deformed shape, as well as the cyclic option for videos (command File > Create Video), have been enhanced to present a smoother motion in time. In addition, the video feature now defaults the size to the active window, and the animation rate (frames per second) has been corrected. Previously the video rate was one frame per second regardless of the user-specified value.
	81220	An enhancement has been made to better synchronize the music with the animated deformed shapes.

Application Programing Interface (API)

Enhancements Implemented

*	Incident	Description
	76669	An enhancement was made to the ETABS API, implementing functions to set, get, and delete pier and spandrel labels, as well as assign the labels to frame and area objects.

Installation and License

Enhancements Implemented

*	Incident	Description
	80321	All significant installed EXE and DLL files are now digitally signed to avoid sand-boxing and other interference from anti-virus products. It is important to note that there never was a threat from any of the installed files in any previous release, but a few anti-virus products are overly cautious, which could cause them to prevent the software from running. No results were affected.

Miscellaneous

Enhancements Implemented

*	Incident	Description
	78152	The version number has been changed to v15.1.0 for a new intermediate release. ETABS v15 will be known as "ETABS 2015".

User Interface
Incidents Resolved

*	Incident	Description
	71779	An incident was resolved where closing the Model Explorer affected the ability to resize the Properties of Object form used for drawing. No results were affected.
	75023	An incident was resolved where abnormal termination errors could occur when area objects having invalid joint coordinates were present in the model. Such illegal area objects are now removed from the model when the file is opened.
	77660	An incident was resolved where some forms were not properly scaled, including the size of internal fields and/or the size of the fonts, on certain machines, particularly at higher resolutions. No results were affected.
	78028	An incident was resolved where the software would sometimes go into an infinite loop of error messages if the story response plot window was active when the model was unlocked. Results were deleted as expected, but the software had to be terminated externally and restarted. The model was unaffected.
*	78047	An incident was resolved where an abnormal termination error could occur in certain cases when trying to display plot functions again after previously displaying them and then closing the corresponding plot window. In addition, defining certain combinations of plot functions and then saving the model could corrupt the model file (.EDB), which then could not be reopened in ETABS. When this occurred the model could be recovered by importing the corresponding text file (.E2K or .$ET). This was not common.
	78079 81672	An incident was resolved where the up/down buttons to cycle through the stories in a plan view would not function properly when multiple towers were present. No results were affected.
	79301	An incident was resolved where certain walls objects could not be selected on-screen in some views. This was a user interface issue only.
	79757	An incident was resolved where certain Define menu items (such as properties) would cause an error if the user named the item "None", which is a reserved name indicating the absence of an item. The user can no longer name those Define menu items "None".
	81538	An incident was resolved for the Model Explorer tree where selecting “Frame Load Assigns”, “Shell Load Assigns”, or “Frame/Pier/Spandrel/Link Forces” from the Display tab would produce forms that were too small to utilize on certain Windows 8 machines. No results were affected.
	81740	An incident was resolved where using the command Edit > Edit Stories and Grids Systems to add stories to a model already having wind or seismic loads defined could results in an Abnormal termination, depending upon the order of operations performed. When this occurred, results agreed with the model as re-opened or re-imported.

Drafting
Incidents Resolved

*	Incident	Description
	74766 80768 81540	An incident was resolved where the command Draw > Draw Floor/Wall Objects > Draw Wall Opening was not working properly when the display units were different from the database units. When this occurred, the results were consistent with the objects as actually drawn and visible in the model.

Graphics
Incidents Resolved

*	Incident	Description
	76782	An incident was resolved where switching to the DirectX graphics mode would result in an error message on certain machines having adequate graphics hardware when running the 64-bit version of ETABS.
	78511	An incident was resolved where the wall section was not visible in plan view at a reference plane when the wall was being cut by the reference plane. No results were affected.

Modeling
Incidents Resolved

*	Incident	Description
	77407	An incident was resolved where the software could terminate when trying to generate a spectrum-matched time-history functions when both the reference time-history function and the target response-spectrum function had a very large number of data points. Now instead an error message is returned when a new time-history function cannot be generated in such a case.
	77929	An incident was resolved where abnormal termination errors could occur when an illegal area object having only two joints was present in the model. Such illegal area objects are now removed from the model when the file is opened.

Loading
Incidents Resolved

*	Incident	Description
	78856	An incident was resolved for Eurocode 8-2004 auto seismic load patterns where selecting the Country as Singapore and changing the Ground Type was not updating the Soil Factor (S), and Spectrum Periods (Tb, Tc and Td).
	80131	An incident was resolved for the automated response-spectrum function for code "Colombia NSR-10" where the Importance Factor "I" used to calculate values of "Sa" was being taken as 1.0 instead of the expected 1.25 when the "Group of Use" was set to 3. Results for other values of "Group of Use" were unaffected. Results agreed with the function as generated and displayed.
*	81499	An incident was resolved where the self-weight could be incorrect for models containing the SidePlate type of moment-frame beam connections when the model had database units for length in units other than inches.
	81688	An incident was resolved where the ground type specified by the user in the form for the Eurocode 8-2004 response-spectrum function was not being saved, but was instead always using the default value of "B". This value "B" was shown in the tables and reports, and results were consistent with this value.

Analysis
Incidents Resolved

*	Incident	Description
	74604	An incident was resolved where the analysis was unable to run using the advanced or multi-threaded solvers on certain machines that use an AMD CPU chip branded as APU (accelerated processing unit). Such machines are not commonly used for engineering purposes. When this occurred, results were not available. If the analysis was run in the GUI process (typical for smaller models), a message was shown and the software was closed. If the analysis was run as a separate process (typical for larger problems), only the analysis was terminated and the user could continue working with the model. This error did not affect analyses run using the standard solver. Setting the environment variable MKL_DEBUG_CPU_TYPE = 2 using the Windows Control Panel before starting the software could be used to avoid this error, but this is no longer required with the new version.
*	75749	An incident was resolved where, in certain rare cases, the shell forces used to calculate story forces, base reactions, and section cuts could be incorrect for a linear load case that used the stiffness from the end of a nonlinear load case that included P-delta effects, including linear load cases using the automated P-delta option based on loads. When this occurred, the error was generally large and obvious. This was not common.
	76102	An incident was resolved where the analysis could fail to complete when running multiple load cases that used different mass sources in the same run. When this occurred, no results were not available. Any results from successful runs were not affected. This error was not common. Only v15.0.0 was affected.
*	77488	An incident was resolved where link elements of type "Damper - Exponential" could add negative stiffness to the structure in a nonlinear modal time-history (FNA) load case if it was based on mode

*	Incident	Description
		shapes from a modal case that used the stiffness from the end of a nonlinear static or nonlinear direct-integration time-history load case. This included modes calculated using the Preset P-delta option "Iterative - Based on Loads". When this occurred, the effect was generally obvious, and was more pronounced for larger stiffness values used in the damper property. This affected versions 13.2.0 to v15.0.0.
*	77939	An incident was resolved where the results of linear direct-integration time history analysis with stiffness-proportional damping could become unstable for models with spring supports. When this occurred the error was obvious because the displacement, force and stress results would diverge and become unrealistically large. Models without spring supports were not affected. Note that spring supports could be automatically created for frame or wall objects containing hinges and that are connected to restrained joints. This error affected version 15.0.0 only.
*	78311	An incident was resolved where the stiffness used for the iteration of frame and/or wall hinge response during nonlinear modal time-history (FNA) analysis could be incorrect if (1) the modes used for the FNA analysis were calculated from zero initial conditions, and (2) the FNA analysis was run after another FNA load case but not continued from that previous case. When this occurred, the iteration could be slow, fail to converge, or even converge to the wrong results. This error did not occur if the FNA load case was run after solving other linear or modal load cases starting from zero initial conditions. This error did not affect FNA load cases that used modes calculated using the stiffness from a nonlinear static or direct-integration time-history load case. This error did not affect FNA load cases that had link elements but no hinges.
	78685	An incident was resolved where the model would remain unlocked and results were not available after running the analysis in certain cases when multiple versions of ETABS were present and run on the same machine. This could be resolved by turning off the auto-sandboxing feature of the certain antivirus products before running ETABS. No results were affected. Affected versions were v13.0.0 to v15.0.0.

Frame Design
Incidents Resolved

*	Incident	Description
	73630	An incident was resolved for steel frame design in which auto-select sections were not being utilized as expected for certain models in which a regular section shape (i.e. I-section, angle, etc.) was assigned to frame members and later the section property was changed to an auto-select list. This affected all steel frame design codes.
*	78232	An incident was resolved for concrete frame design where the command Design > Concrete Frame Design > Verify All Members Passed always reported that all members passed even when several members were over-stressed, as indicated by being displayed on the screen in red color with the message "O/S". This was an error only for this specific command, and did not affect the design results as displayed on the screen, in the tables, or in the individual member design reports.

Composite Beam Design
Incidents Resolved

*	Incident	Description
	76726 77928	Two incidents were resolved affecting composite beam design. (1) An issue was resolved where attempting to interactively design a composite beam that was part of a composite-beam design group containing a large number of beams could cause an abnormal program termination before the Interactive Composite Beam Design Review form could be displayed. (2) An issue was resolved where, when an auto-select family included several sections with the same weight, only one of those sections was shown in the list of available designs. Neither of these issues affected the availability or the validity of composite beam designs obtained in automatic, non-interactive, mode. They affected ETABS versions 13.2.0 through 15.0.0.
	80841	Two issues were resolved that affected composite beam design output with all codes: (1) The controlling demand-capacity ratio was not being reported for the case where the section was

*	Incident	Description
		inadequate in negative flexural capacity when the design was controlled by construction conditions instead of service conditions. For such beams, failure was correctly reported but the corresponding construction demand-capacity ratio was not being listed. This was a reporting error only and the design was not affected in any way. (2) The live-load reduction factor was mislabeled in the output. A ratio between 0 and 1 was being reported but labeled as "%". Now a percentage between 0 and 100 is being reported. This was a reporting error only and design was not affected in any way.

Shear Wall Design
Incidents Resolved

*	Incident	Description
	78359	An incident was resolved for Shear Wall design for C&T type design where area of reinforcement indicated by "AsLeft" and "AsRight" were sometimes incorrectly reported in the table "Shear Wall Pier Summary". Specifically, for multi-leg shear walls, the values reported for the bottom were the same as for the top; the top values were correct but the bottom values could be incorrect. This was reporting issue in tabular format only and other design results were not affected. The design report via right-button mouse click and the Project Report were correct and not affected.
	80864	An incident was resolved for shear wall design where the table “Material Properties” in the spandrel design report could show incorrect material properties. This was just a reporting issue and design results were unaffected.

Results Display and Output
Incidents Resolved

*	Incident	Description
	81428	An incident was resolved where the shell stresses for area objects with layered-shell section properties failed to plot, the database tables returned zero stresses, and the corresponding API function cAnalysisResults.AreaStressShell() failed to return results. Shell layer stresses were not affected, nor were shell resultant forces and moments. Area objects with homogeneous shell section properties (thin, thick, and membrane) were not affected.

Database Tables
Incidents Resolved

*	Incident	Description
	77827	An incident was resolved in which the Section Cuts database table reported the Design Angle as zero for design section cuts even when it was defined as non-zero. This was a reporting issue only and did not affect section cut results.

Data Files (.EDB, .E2K, .$ET)
Incidents Resolved

*	Incident	Description
	79238 80535	An incident was resolved where an "Error saving Model" message was given in some rare cases. This was due to data corruption of User-defined wind loads when they were imported from text files and the given Story names were not correct.
*	79289 80051 81014 81185 81656	An incident was resolved where in some rare cases an "Error saving file." message would appear when trying to save the model file. This was due to editing pier assignments or adding wall objects after the wall design had already been run. The saved text file (.E2K, .$ET) was able to be read back in without any loss of data.