

Release Notes for LATERAL3 V4.3.2

New/Changed Features in V4.3.2 (since V4.3.0)

- This is a maintenance release. There are no new features in the program itself but the licensing changed to a web activation model from the hardware key with license file model.
- Development of V4.3.1 ceased after Beta 56 to accommodate the change in license activation.

Bugs Fixed in V4.3.2

¹ Fixed since V4.3.1 Beta 56

- 1508¹ The default values for C_t and x used by Eq. 12.8-7 with the Building Frame System selected for the structural system in 2012 IBC are now correct.
- 1406¹ Clarified in the Help that the pop-up message for a value less than 5% entered into the box for the Seismic Parameters S_s or S_l is not an error but a prompt to double check your entry.
- 1402¹ The parapet load is now calculated with GC_{pn} as a single value of +1.5 for the windward side and -1.0 for the leeward side. A separate gust factor is no longer applied as the previous version did. (IBC 2012, 2009, 2006 only)
- 1397¹ The R and C_d values are reported correctly in the 2012 IBC Input Data section of the report.
- 1393¹ When User Defined Loads are selected for the Building Code, the report option for Maximum Wall Forces now works and reports the maximum among the three eccentricity values. A future release will include an option to check the Orthogonal Combinations per ASCE 7-10 Sec. 12.5.3(a).
- 1376¹ On the IBC 2012 Building Parameters page the [Reset Defaults] button will now reset the Base Area value as well as the Eff. Length and Seismic Accidental Eccentricity values.
- 1375¹ IBC 2012 wind analysis now uses the correct eccentricities for both the rigid and flexible classifications. The program correctly reports any error during the calculation of the shear center for flexible buildings.
- 1374¹ The program will not apply accidental eccentricities when SDC A is appropriate (for IBC 2012, 2009, 2006 only).
- 1373 Fixed a crash when switching to seismic Alternate period from either the Rayleigh or the User Defined period selection.
- 1370 Combination of orthogonal seismic loads is checked per ASCE 7 Sec. 12.5.4 for SDC D, E or F.
- 1369 The Help explains the combinations that are checked. Not for user-assigned lateral loads.
- 1368 Eccentricity amplification values are now calculated from the maximum displacement with forces at locations with +/- 5% accidental eccentricity as well as at the C.G. of mass. Also for IBC 2012 the eccentricity reported below the NOTE for torsional irregularity in the Floor Loads section is no longer multiplied twice by the amplification factor.
- 1366 The background color of checkboxes will change when they receive focus making it easier to use the keyboard for navigation of the input controls.
- 1362 Changing the Period Calculation selection will activate the Save option.

- 1360 Error messages have been improved to help identify the cause when an invalid problem
1249 specification or error terminates the calculations. For seismic analysis, at least the selected SDC
1194 is reported so when, for example, a height limit is imposed for a higher than expected SDC, you
will be aware of the selection.
- 1359 The Help explains better the need to check the irregularities boxes, the calculation of the
1358 amplification factor for eccentricities and the relationship of the two.
- 1357 You now can select the Alternate period without getting the Base Area error message.
- 1354 A new Example 5 in the Help shows how torsional irregularity and the extreme drift are
calculated in Lateral3.
- 1352 For user-defined floor forces, if you leave the force at a floor set to 0 kips the (+/-) eccentricity
locations will be reported as 0 for that floor.
- 1350 Reporting of one floor only is fixed.
- 1347 Fixed the bug in the calculation of C_s for Sec. 12.8.1.3. The report now indicates Sec. 12.8.1.3
when the maximum is applied to S_s for the calculation. The maximum was applied to S_{DS}
instead of to S_s as the code specifies. This applies to 2012, 2009 and 2006 IBC. A similar (but
different) provision at the end of Sec. 9.5.5.2.1 of ASCE 7-02 for 2003 IBC is not included in
the calculations for that code. ASCE 7-98 has no similar provision.
- 1316 For the Rayleigh period option with seismic analysis, if the period is limited in Sec. 12.8.2, all
of the factors used to calculate the limiting period are reported. This also includes reporting the
period used for the drift check when the Rayleigh period is limited.

New/Changed Features in V4.3.0 (since V4.2.3)

- This release adds 2012 IBC and 2009 IBC to the list of building codes. All codes prior to 2000 have been removed.
- The program will calculate fundamental building frequency for wind using ASCE 7-10 Eq. 26.9-5 or you can enter a frequency value directly. Alternatively, you can simply specify rigid or flexible classification and the Gust Effect Factor (2012 IBC only).
- The program will now calculate wind loads for some simple sloped roof configurations. Also there are new options to enter roof or parapet wind loads directly (2012 IBC only).

Bugs Fixed in V4.3.0

¹ Fixed since Beta 47

² Fixed since Beta 49

³ Fixed since Beta 51

1323³ The program will now restore the position and size of the main window from one session to
1240³ the next.

1320³ The Wind Analysis and Seismic Analysis frames on the Report Options page won't overlap for
larger Common Data window sizes.

1318³ All report section headers now specify Wind or Seismic as appropriate. When the program
1317³ can't calculate the building frequency for wind analysis the message instructs you to enter a
wind frequency value directly.

1310³ The program will catch a missing wall label instead of crashing.

1305³ For 2012 IBC wind analysis if none of Flexibility, Gust Effect Factor or Eccentricity will be

calculated the program will not require a Frequency value.

- 1296² The program will show the message "This license has expired." instead of crashing when the license period is up.
- 1292² The average calculated for Summary of Max. Story Drift... is now calculated from the single force eccentricity value for which the maximum occurs. Previous beta version calc'd the average of the two maximum values displayed on the same line of the table which occur at different force eccentricities. Also the note after Story Drift Ratios Due to Seismic... now says the "...story drifts *are* based on the floor's c.g. of mass," which they are. (IBC 2012, 2009, 2006)
- 1284² The problem with C_s being too low and reported shear value for seismic analysis the same low number for all floors is fixed.
- 1281¹ Mean roof height is reported correctly for wind analysis with user-specified roof lateral load. (IBC 2012 only)
- 1280¹ Wind floor loads now show and use the correct values. (IBC 2012 only)
- 1278² Report Options now allow more complete manipulation of the report. It is now possible to completely remove the individual wall force for each load case and show only the overall maximum wall forces. A list of levels can be specified for each section of the report. (2012 IBC has the full enhancement but the older codes are also improved.)
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- 1277¹ Shear center now is calculated and report for flexible building with wind loads. (2012 IBC only)
- 1256¹ The correct code page displays when the [Edit Code Parameters] button is clicked.
- 1239² The wall label for the 50th wall is now displayed.
- 1238³ The file name in the report footer will wrap at folder names as well as spaces possibly allowing longer file names to be displayed.
- 1224 The program now will calculate an approximate fundamental natural frequency, n_a , for wind and use this value to assess the rigid/flexible classification of the building. The calculated frequency (or one you enter directly) is used to calculate a Gust Effect Factor and load eccentricity for flexible buildings. See 1222 below. (2012 IBC only)
- 1222 The program now will calculate a Gust Effect Factor for use in load calculations and an eccentricity for use in the design cases of Fig. 27.4-8. You can still enter a Gust Effect Factor or eccentricity directly. The Gust Effect Factor is calculated using Eq. 26.9-10 for flexible buildings or Eq. 26.9-6 for rigid buildings. An estimate of the Damping Ratio is required for flexible buildings but a reasonable default for most concrete shear wall buildings is supplied. The eccentricity for flexible buildings is calculated using Eq. 27.4-5. (2012 IBC only)
- 1221 The Gust Effect Factor is included now in the calculation of parapet wind loads.
- 1215 Loads are calculated correctly (when requested) for some simple sloped roof configurations. As an alternative, there is an option to enter roof lateral loads directly. (2012 IBC only. Earlier

codes still calculate sloped roof loads incorrectly.)

- 1212 C_p values for walls are reported for wind calculations. (2012 IBC only)
- 1210 The correct value for Topographic Effects parameter K_I is selected when the "Other" option is selected for Exposure Category. You still can enter a value for K_I directly. (All codes)
- 1207 Wall labels are generated to reflect wall size (numbers are still required). Labels are shown in the Report. (2012 IBC, user-defined loads only)
- 1206 The Story Heights, Floor Weights, Wall Labels, Constant Section Walls and Variable Section
1095 Walls tables supply next-expected-value, max./min. or some other default value for many of the entries. You then can change the supplied value if that's not what you want. This should make filling in these tables easier. The [Backspace] and [Delete] keys work better in these tables also. It's now possible to clear an entire entry with one key stroke (if the entire field is selected) instead of having to delete each character.
- 1181 The [Delete] key now works in table cells.
- 1164³ The Help examples have been updated.
- 1162 The C.G. values for walls entered on the Constant Wall Sections and Variable Wall Sections pages must now be positive. See Wall Layout in the Calculation Overview of the Help. You can still enter wall descriptions that don't comply with first-quadrant rule since this confines only the C.G. to the first quadrant. The new check in item 397 below enforces the first quadrant rule for the whole wall.
- 1122 Vertical irregularity 5b (extreme weak story) selection is now restored from a saved problem file. (2006 IBC)
- 1118 Seismic problems in SDC A won't report coefficients that aren't actually used in the analysis
1094 but will report S_{ds} and S_{d1} to confirm the SDC A selection. (2012 IBC only)
- 1117 User-defined loads now require building footprint dimensions and eccentricities which are used to report the additional load cases for both wind and seismic reports.
- 1112 For newer codes (2009 IBC and later) you must enter a value for the area of the building footprint, A_b , which is used in ASCE 7 Eq. 12.8-10 and the similar equation in Sect. 26.9.3.
- 1111 The values for F_a and F_v used for Site Class A through E now are interpolated for the values of S_s and S_l that are entered. (2006 IBC and later)
- 1098 You now may enter a lateral parapet load directly for wind analysis. The option for the program to calculate the load for a simple, uniform, full width parapet is still there. (2012 IBC only)
- 985 Added option to change the Edit Input window size. Under the Window item on the main menu select Size and then one of the pre-set sizes on the submenu. The size selection will be restored next time the program is started.
- 984 2009 IBC and 2012 IBC are available for load generation.

- 945 The entries for Story Height are now checked for the proper order before the calculations are run. The first (top) row of the table must have "1" for the Beginning Story. Additional entries must be in order (moving down in the table) from lowest to highest and all stories must be included. See also 1206 above.
- 893 Help explains the C_d and design displacement topic in the new Seismic Calculations section. The displacements shown are from the first order elastic analysis and thus are not design displacements. When drift is checked for compliance C_d gets applied to drift ratios so the program never actually shows the design displacements.
- 892 The position on the screen of the Code Page now is saved from one run to the next.
- 783 You now can specify a file to open when starting *LATERAL3* from the command line (affects double-click also).
- 689 The numbers in the table "Summary of Max. Story Drift Ratio Magnitudes at Building Boundaries" are now correct. Along with the drift ratio values the max./avg. value is reported and an assessment of torsional irregularity is reported.
- 397 Now checks for walls outside of the footprint (with the corner at the origin and all walls within the first quadrant) and stops the calculations if any part of any wall is outside the footprint. This enforces the first-quadrant requirement for walls. See Wall Layout in the Calculation Overview of the Help and 1162 above.

Unresolved Issues

- 1503 Base Area rounding to one decimal place causes problems with the check against $X * Y$ with two decimal places.
- 1487 Removing a story from the Story Heights page without making commensurate changes to Floor Weights and Wall Section pages causes problems in the calculations and report.
- 1471 The shear center calculation can fail with a divide-by-zero if all walls for either the X or Y direction are on the axis, i.e. at $X = 0$ or $Y = 0$.
- 1405 Add Rayleigh period calculation method for wind.
- 1401 Clicking the Code Parameters button or pressing [F3] while the Constant Wall Sections page is active but has no data entered triggers an unhappy state.
- 1354 Report the building boundary displacements along with the amplification factor results.
- 1276 Moment from a sloped roof is not used correctly in analysis. Roof load is applied only as a shear load at the top floor level.
- 1255 Warning/error pop-ups appear twice.
- 945 Story height entry order must be followed strictly with lowest stories at top of table, higher stories entered in the table below these.
- 418 Add a table of keyboard shortcuts to the Navigating with the Keyboard page in Help.

- 365 Origin of the wall layout must be in the lower left corner. That is, all walls must be entirely in the first quadrant. (The program now checks this requirement and won't run calculations if it's not met. See 397 above.)
- 362 Allow variable first story height. Enable constant section walls for this.
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- 338 Short period waiver should be disabled when any of the known criteria are not satisfied.
- 310 Add a button to the Toolbar that displays context-sensitive Help. [F1] will do this but wants a toolbar button.
- 152 Wants a flexible diaphragm option.
- 150 Wall labels must be integers starting with 1 to <however many walls there are>. Can't skip numbers or analysis won't run. Labels should be just that, labels, not indexes into an array or some other internal thing. (But see 1095 above.)
- 149 There should be a context menu to insert/delete rows in the data entry grids. You shouldn't have to enter zeros to clear a row. (You can now delete values instead of entering zeros. See 1206 above.)

Please see our web site, PrecastEngineer.com, for additional information about *LATERAL3*.