



Release Notes for Studs V4.2.1

Fixed in V4.2.1

Bug #	Description
445	h_{ef} was incorrectly labeled as l_e in report output
446	Improper calculation of ψ_3 in ACI 318-02 Pullout calculations for Post-Installed anchors in cracked concrete.
447	The required spacing of Post Installed anchors was not being properly updated upon loading of an existing file. This could lead to the omission of warning messages caused by layout not meeting minimum spacing requirements.
448	A divide by zero error may occur when the Post-Installed anchor layout is changed

User Interface Changes

The user interface was given the ability to load files created with the latest beta versions of Studs V4.2.0. This functionality was added as a convenience for users who used the beta versions extensively and will be removed in the future.

New For V4.2.0

A new code option (ACI 318-05) is available.

L/J bolt calculations can now be performed for ACI codes.

Post-Installed Anchor calculations can now be performed for ACI codes.

Load input now gives the option (when using headed anchor studs) of shear being carried entirely by tail bars welded to the plate.

An option to ignore front edge breakout is now available for ACI codes

Report Changes

Fixed output to show Concrete side edge breakout as based on D.6.2.1C for shear force parallel to

an edge when d_{e1} and/or d_{e2} are the only edges. THIS IS NOT USED IF EITHER d_{e3} OR d_{e4} IS CONSIDERED CLOSE TO AN EDGE.

User Interface Changes

ACI 318-05 has been added to the Design Criteria selection options.

Anchor Type selection is available for both ACI code selections.

Anchor spacing grids can now be tabbed out of (either tab or enter key).

Options for editing the included bolt library and the custom post installed anchor library have been added to the edit menu.

Updated graphics on Loads tab to more accurately illustrate the conditions being considered.

We've changed the warning for minimum plate thickness of 3/8". Section D.6.2.3 simply states that IF the plate is a minimum of 1/2 the stud diameter AND at least 3/8" thickness, eq D-24 can be used instead of D-23. Warnings were changed to say "minimum suggested plate thickness is 3/8" for ACI APP D but the warning remains as saying "minimum plate thickness" for PCI methods.

The moment can be based on:

- A) the applied moment input (similar to older versions only in a different box)
- B) the moment due to shear eccentricity ($V \cdot e$, e is a new input value for this version of studs)
- C) the combined effect of the applied moment and the shear eccentricity For files saved with older versions of studs the program assumes that $M = V \cdot e$ and using this, the eccentricity is calculated. Due to the decimal accuracy of the program this may have a small effect on M_u , the user should be aware of this. As an example, if you have entered 10.1 kips as V_u and 40 kips as M_u in a previous version the new version will convert that to $V_u = 10.1$ kips $e = 3.96$ in and $M_u = 39.996$ kip*in.

Changes in Version 4.2.0

- A) Changed calculation of ψ_1 in 318-02 to calculate ψ_1 individually for eccentricity about each axis then we use the product of these values as ψ_1 .
- B) Fixed an issue that caused there to be no recalculation of results when the member thickness was changed.
- C) Changed the way side face breakout capacity is calculated for the 02 and 05 codes, previously it was taken as twice the front edge breakout. Side edge breakout is now calculated in the same manner as front edge breakout with the load oriented towards the

side face and using side edge distances rather than front edge distances. At a corner we now calculate front edge breakout for the front as well as side (per D6.2.1 (d)). We also calculate the eccentricity modifier for each direction of eccentricity and use the product of these values for the eccentricity modifier (per D.5.2.4). When a corner condition does not exist, and side edge breakout is applicable, the value reported is 2 * front edge breakout considering the load acting perpendicular to the side edge.

- D) Changed the logic for limiting of the front edge distance for shear. Previously the distance to the front edge of concrete was limited to the member height / 1.5 prior to determining how many edges influenced the embed. This resulted in a decreased capacity for some embeds. The new version will limit the front edge distance used for shear calculations only if 3 or more edges influence the embed.