



Increase Productivity in Your Cold-Formed Steel Design Projects

Webinar Q&A

This document includes questions submitted by webinar attendees during the live webinar, *Increase Productivity in Your Cold-Formed Steel Design Projects*, held on September 28, 2017, along with presenter responses. Please send any additional technical questions to AskSimpson@strongtie.com.

Question

Answer

Software Pricing/Purchasing/Maintenance

Where can I download the CFS Designer program?

Please visit strongtie.com/cfsdesigner to download a free 14-day trial version of the software or to purchase a license. Webinar attendees should check their email for a special discount code.

What is the cost of the software?

The cost of the software is available at strongtie.com/cfsdesigner. There are different licensing options based on the number of users.

Is the price for the software an annual subscription fee or is it a one time purchase price? Is there any maintenance cost?

There is no annual maintenance fee or subscription fee, the license fee that you pay is a one-time purchase. CFS Designer is based on an upgrade and update program. All updates to the program are free to licensed users and occur every few months to correct software bugs and add functionality. Upgrades, which would include new design modules and updated code information, would require an additional purchase. Simpson Strong-Tie anticipates releasing upgrades on a 2 year cycle, and the next upgrade has a projected release of early 2019. If you elect not to upgrade your version of the software, the current version you have will still work, but will not have the new upgrade features.

We have an older version of CFS Designer, is there a way to update to the latest version?

The software is based on an upgrade and update program. All updates are free, however upgrades require a new purchase. You will have to upgrade from Version 1 to Version 2 by purchasing the software at strongtie.com/cfsdesigner.

Determining and Inputting Loads

Is CFS Designer fully compliant with AISI S100-12?

CFS Designer is compliant with AISI S100-2012. Earlier versions of the AISI Specification are also available in the CFS Designer by selecting Project Settings/Code and selecting the version.

Are load inputs in ASD or LRFD? Do the load combination factors have to be applied prior to entering loads in the program? Should factored or unfactored loads be input?

Current Software is all in ASD. The next upgrade version will feature up to 8 stories of stacked x-brace and shearwalls which will be in LRFD. Everything else will be in ASD. The stacked x-bracing and shearwalls will be LRFD due to ACI requirements for concrete. We will also be making the input much more clear on this version on what is ASD and what is LRFD.

Why is the common load combination of 1.2DL+1.6LL not incorporated?

The software is designing with ASD, not LRFD.

Does the software have a wind load calculator per ASCE-7?

The software does not currently have a wind load generator but it is on the planned list of improvements.

Does basic wind speed mean ultimate wind pressure? Are wind loads entered at Ultimate or Basic?

CFS Designer does not use a basic wind speed input. Wind loads inputs should be factored to ASD level.

Does the software calculate wind loading based on a given wind speed?

Wind loads should be calculated based on ASCE7 code and then entered into CFS Designer. Future versions of the program will have a wind module.

The wind was entered as a negative on the Wall with Opening module. Is there any way to do positive wind in combination with the gravity loads?

In the Wall with Opening module, only the wind pressure magnitude is input so there is no need for entering negative values - in fact, the "-" key is disabled for those inputs. Similarly for stacked walls, wind pressure magnitudes are entered as positive for both Windward and Leeward pressures. Windward pressures are treated as positive and Leeward are treated as negative in terms of how they combine with gravity loads.

Can I input horizontal in-plane loads in the Beam Input module?

Currently the module can support uniform bending gravity loads, axial loads, lateral point loads and sloped loads. The program does not handle in-plane loads as this is typically uncommon on the stud framing themselves.

Cold-Formed Steel Member Settings / Program Settings

What is the difference between a punched and unpunched stud?

A punched stud is a stud that has a standard manufacture knockout. The design capacity can be slightly different for a punched stud compared to a non-punched studs. CFS Designer allows the user to change the Member Setting to an unpunched stud if they prefer to specify that the stud needs to be unpunched.

Is 50 ksi steel for CFS common and available?

Yes, cold-formed steel members are typically manufactured with a minimum yield strength, F_y , of 33 ksi and tensile strength, F_u , of 45 ksi for 43 mils (18 ga.) and thinner, and a minimum yield strength, F_y , of 50 ksi and tensile strength, F_u , of 65 ksi for 54 mils (16 ga.) and thicker. Please contact your local steel stud manufacturer for availability.

What is a web stiffener? How would you use one at a stud, header, or jamb?

A web stiffener is typically a stud or track piece that is used to support the wall stud or joist from crippling at a point load or bearing support. There are different ways to do a stiffener at different locations. Some examples include using a cut piece of stud or track attached to the stud or using a clip attached to the beam. Essentially, a web stiffener is a member that is added to the stud to help stiffen the stud from crippling.

What are the "S" and "T" designations for the CFS members?

S is for "Stud" and T is for "track" per AISI nomenclature.

Does this program take into consideration the cold work of forming in the design/analysis?

Yes, the program's Project Settings default is to include cold work of forming in the design and analysis, per AISI.



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Is it more efficient to choose a thicker flange, rather than a longer flange?

Responded in Webinar. See webinar for answer

We generally try to size our cold formed members to avoid the need for web stiffeners, just to save on construction and material costs. Something that helps quite a bit with the web bending and crippling calc is the bearing length. Are there code requirements for bearing lengths, or is this simply based on how much bearing we anticipate the member to have at its supports?

There are no specific code requirements for calculating bearing length for web crippling, it is usually based on engineering judgement and connection detailing to determining how much bearing there will be at the support. A reasonable bearing length may be the length of the connection clip you are using for the attachment. Since web crippling is a 'bearing' phenomenon, where attachments are made through the web, provided the attachment is not isolated near a flange, you may not need to consider web crippling. For stud-to-track type connections, it is common to use the track leg length as the bearing length.

In the older LGBeamer software, the database could accept Z-purlins and the section sizes were available. Is this available in CFS Designer?

Yes, you can create custom Z-sections with or without a lip by selecting "Custom CFS shape" from the Member Settings menu.

Does this software give any stud to stud connection calculation like stud tearing and shearing? checks?

The studs are designed per the AISI code for shear, moment, web crippling, axial load, and the related code required interactions. Net-section rupture near connections is not checked by CFS Designer

Does the program have settings which make it so you can not enter a section which does not exist?

The software is set to AISI standard products, which are products that are available in the market. However, each steel stud manufacturer has their own product line and not all shapes may be available from a given manufacturer. If you are concerned about the availability of a particular shape, contact the stud manufacturer. The program also has a setting that allows the user to manual enter dimensions. These manually entered shapes may be less available. There are code checks to ensure you do not input a non-code allowed member.

What is the weld limitations to cold-formed steel? Can you weld to cold-formed steel studs that are less than 12 gauge?

There are code identified limits for welding to CFS. Typically we find that it is not a good idea to weld to anything less than 16ga. Please refer to AWS D1.3 for more information on welding sheet steel.

Beam Input Design Module

Will the program allow the cantilever length to be longer than the back span length?

Yes. The program will allow a cantilever longer than the back span.

In the webinar example, the results showed "No Solution" for the connector at the R1 (base of the stud) support. What does this "No Solution" mean?

The "No Solution" note means that the user had not selected a connector/clip solution at that reaction location. There is an option to choose a track connection at the base of the stud, where no connector would be needed.

Does the program check the track flange connection?

CFS Designer does not currently consider stud-to-track connections. If a particular design requires explicit consideration of that connection, consult AISI S240-15 B3.2.5.1.

How do you apply the dead loads to the wall in the Beam Input module? Do you use the full height load for compression or 1/2 assuming that the top and bottom support will take the loads?

The program designs the stud assuming the entire load on the stud for designing axial load. Any axial load in the Beam Input module must be input by the user. CFS Designer does not calculate an axial based on self-weight of the wall.

Is there any way for automatic unbalanced live load placement between spans to be calculated, or do we manually have to vary the uniform loading between spans manually?

Unbalanced live loads are checked in our joist module. They are not checked in the beam module program because the type of load is not known. In the joist module program the following conditions are checked and reported in the output.

1. DL + LL All spans
2. DL + LL Even spans
3. DL + LL Odd spans
4. LL All spans
5. LL Even spans
6. LL Odd spans

The on-screen "Member Summary" tab does not show the deflection of the back span if the cantilever portion controls, can this be seen on screen without selecting the summary report?

The "Member Summary" tab is set to only show the controlling deflection. In addition to viewing expanded deflection information in the Summary Report, you could view the deflected shape on the diagrams icon in the view section.

Is it possible to input an axial load with eccentricity in the Beam Design model for wall studs?

Currently it is not possible to enter an axial load with an eccentric load. This is a potential enhancement in future versions. It is possible to treat eccentric axial loads by adding a moment couple in CFS Designer at the location of the eccentricity to simulate the induced eccentric moment.

Bridging/Bracing

Is typical gypsum board considered adequate for flexural and axial bracing?

Please refer to AISI S100 for gypsum board used as flexural and axial bracing.

What is the difference between flexural bracing and axial bracing?

Flexural bracing is bracing that is used to brace for moment capacity of the stud and axial bracing is bracing that is used to brace for the axial capacity of the stud. These might be the same for your design, but we have given the user the ability to designate different spacings.

Can you explain when you need both bridging and bracing?

Bridging and bracing are essentially the same thing and are used to prevent the stud for twisting or buckling out of plane.



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Do you have recommendations for how to properly terminate bridging at the end of the wall?

We agree that termination of bracing is often overlooked by engineers and should definitely be considered in design. Accumulation of bridging forces should also be considered. AISI S100-2012, D3.3 and AISI S240-15 D3.4 provide methods of estimating brace forces. Simpson Strong-Tie has provided some suggestion on our cold-formed steel typical details sheets that show our SFC clip as one method to properly terminate a line of bridging.

Can the program design the diagonal kicker and provide the demand loads for anchorage?

The program does not currently include design of diagonal bracing.

Wall with Opening Module

Can the vertical and lateral loads on the header be considered at the same time to take into account biaxial bending?

CFS Designer treats the header lateral and vertical resistance separately. No attempt is made to treat boxed headers as composite or include bi-axial bending.

I do have lots of small sills without any jack studs. Does this software design cantilever columns and provide connections at the bottom to concrete?

The software does not currently design free-standing parapets or knee-walls. This will be covered in future software versions.

Can the Wall with Opening design module be used for multiple stories?

Currently the Wall with Opening design module is for a one story application. We do have plans in future versions to allow for multi-span openings.

Can you create a built-up box header with studs on sides and tracks top and bottom (flanges pointed toward each other) to act as a composite section?

CFS Designer treats the header lateral and vertical resistance separately. No attempt is made to treat boxed headers as composite.

Stacked Wall Module

In the stacked wall module, if eccentric loading is used, is the wind load applied in both directions?

Stacked Walls include Windward and Leeward wind pressure inputs. Windward pressures are treated as positive (inward acting) and Leeward pressures are considered negative (outward acting).

Does the stacked wall module look at each floor as a simple span stud, or is there bending transfer between floors?

The stacked wall module looks at each floor separately. Essentially a pinned, roller connection.

Connector Product Questions

Are the rigid connectors hurricane wind rated?

Connectors do not have a wind capacity associated with them. Loads are not based solely on the wind load but the span, spacing, wind zone, etc. Each rigid connector has load capacities associated with them that can be compared to the load calculated by the Engineer.

What was the "spacer bracer" product?

The spacer bar is the SBR for structural products and DBR for non-structural products.



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The 2017 Connectors for Cold-Formed Steel Construction catalog specifies the use of #10-16 self-drilling screws for RCA rigid connectors. Can #12 screws or PAFs be used for connections to heavier materials?

Yes, #12 screws or power-actuated fasteners may be used for connecting to heavier materials. Simpson Strong-Tie has provided design tables for #10 screws based on industry feedback that they are the most common screw type used.

Can the kicker connection work to the underside of concrete fill over metal deck?

Yes! The SJC kicker connection has been tested and code-listed to support diagonal brace loads. Simpson Strong-Tie has also provided a wide range of anchorage solutions for the kicker application that include connecting to the underside of concrete fill over metal deck. Concrete over metal deck may be Normal Weight or Sand-Lightweight with f'c of 3,000 psi minimum and 2.5" minimum slab height above upper flute. Minimum deck flute height is 1.5" (distance from top flute to bottom flute). Please visit https://www.strongtie.com/rigidconnectors_coldformedsteelconstruction/sjc_connect/p/sjc for more information and design tables.

Why do engineers use steel posts welded to a base plate for low wall applications?

For wall that are not top-supported, some designers use a welded steel post at a certain spacing and infill with cold form steel studs and a top track. Simpson Strong-Tie has developed an innovative moment-capacity connection called the RCKW rigid kneewall kit, which can support many of these same conditions using cold-form steel studs and eliminating the need for structural steel. Please visit strongtie.com/rckw for more information.

Future software capabilities/Suggestions for improvements/Canadian Codes

Does the software use Canadian codes? Will there be a Canadian Limit States Design (LSD) version of the software?

We do not currently have a LSD version in CFS Designer, but will consider it for future upgrades.

Are there any plans to expand the software capabilities?

We have a long list of enhancements and additions for the software and will continue to make the software better, more user friendly and with more capabilities.

Are there plans to include a two span condition for the Rafter Module or to add eccentricity options to the Beam Input module?

Currently there is not a plan to add this, but we will add this to our development list for potential inclusion for future versions.

Does the program have any capacity to design trusses?

The software does not have truss design capabilities.

Is there a module for in-plane shear design?

There is an in-plane shear design for both single story x-braced and sheathed shearwalls. Our next release we are working on stacked x-brace and stacked sheathed shearwalls.