

CT-Steel Version 3

Using Version 3

To use version 3, select Version 3 using the radio button on the “Control” worksheet of CT-Steel.

Since the output location for the results has changed, users can run Version 3 without overriding results generated by Version 2, allowing users to compare results between the two versions.

Getting Started

Before running members in Version 3, select the desired members (check box in member list), then click the “Update” button on the Control sheet.



This function will migrate the member data to the latest input book. This will make available new control options and input fields required for Version 3.

Control Options

The following control options have been added:

- NonPrismaticMethod
- GammaE_MethodC
- UseMethodAForNonCompositeSinglySymReverseCurve
- ConsiderFatigueShear

Input Fields

- Bridge – Span – Boundaries
- Bridge – Span – Vertical Geometry
- Stiffeners – LstiffenerDefinition – Include in Section Properties
- Stiffeners – LstiffenerDefinition – Stage

SpecCheck Locations

The SpecCheck output for version 3 has been relocated to a sub-folder, named [STL-SpecCheck V3](#). This change will prevent version 3 runs from overriding existing version 2 runs.

Additionally, SpecChecks folders now use the file name of the bridge model as opposed to the entered member identification. Note: if the user changes the file name of the member after running, the user will need to rerun the member.

Reports Location

Version 3 Reports are now saved to a sub folder of the version 2 reports locations, named [Version 3](#).

Boundary Conditions

In version 2, users entered locations of simple supports and hinges. This input was used to set the boundary conditions of the span, to determine which sections were considered statically determinate and locations of the end panels for shear. For situations of cantilevers, users would use a workaround by setting the fixed end of the cantilever as a “hinge”, to force a statically indeterminate condition. This would also conservatively, mark the panels adjacent the fixed end of the cantilever as end panels. In version 3, users can now specify locations hinges, simple supports, continuous supports, free ends, and fixed ends to better control the statically determinate condition without effecting the shear calculations.

For legacy models with only the locations of hinges or simple supports defined, CT-Steel, will assume any entered station under boundaries without a boundary type specified is simple support and the starts and ends of spans, without a station defined in the boundary conditions, is a continuous support. See User Manual for additional examples for entering the boundary condition data.

Vertical Geometry

A new input field for vertical geometry has been added to CT-Steel. The vertical geometry is required for members where variation in girder web depth is made in the top flange. Members which constant depth girders or members where the variation in web depth is made in the bottom flange, this input field may be left blank.

Methodology Changes

Lateral Torsional Buckling

Lateral Torsional Buckling and its associated parameters are computed in accordance with 2022 AASHTO Bridge Committee Agenda Item 30 (Revision 1). Method's A, B, C of the Ballot Items are fully supported. In the Lateral Torsional SpecCheck output, the notes column will indicate this by 10thB. (Note the B indicates it's a ballot item proposal for the 10th edition of the BDS).

The ballot items better addresses non-prismatic unbraced lengths. For prismatic unbraced lengths, changes were incorporated in the 10th edition ballot items, which can improve LTB rating factors.

The following control options have been disabled in version 3:

- CbMethod
- isPrismaticTolerance
- PrismaticRangeLimits

These control options may not be required based on the new LTB provisions. If these control options are needed to be reinstated, please Contact CTDOT.

Web-Bend Buckling Rating with Longitudinal Stiffeners

CT-Steel will check if the longitudinal stiffener meets the current AASHTO rigidity requirements and detailing to be considered effective for determining the optional Service II load rating criteria for web-bend buckling.

Sections with Multiple Longitudinal Stiffeners

Webs with multiple longitudinal stiffeners in its web depths, the most optimal stiffener will be used to determine web load shedding factor.

Structural Longitudinal Stiffeners

Users can now indicate if longitudinal stiffeners can be included in the section properties (e.g., moment of inertia and plastic moment capacity). Existing models will default to not consider the stiffener in the section properties. User's will have to enter "TRUE" for the Structural Stiffener input on the Longitudinal Stiffener Definition input. User's will have to determine if the longitudinal stiffener can be included in the section properties for the specific bridge.

Fatigue Shear

Added fatigue shear ratings for web subjected to post-buckling. Users can enable or disable this rating check with a control option.

Progress Tracking

The List Box of members will highlight the current member which it is rating. The status bar will show the progress for each member based on the number of rating events.