Table of Contents

THE GS TRUSS INTERFACE

In this section of the *GS Truss Designer's Manual* we will provide a high-level overview of the windows, menus, and toolbars you will need to use GS Truss successfully. Throughout this document, we will also mention other documents you can refer to for details about specific functionality and "How To" instructions.

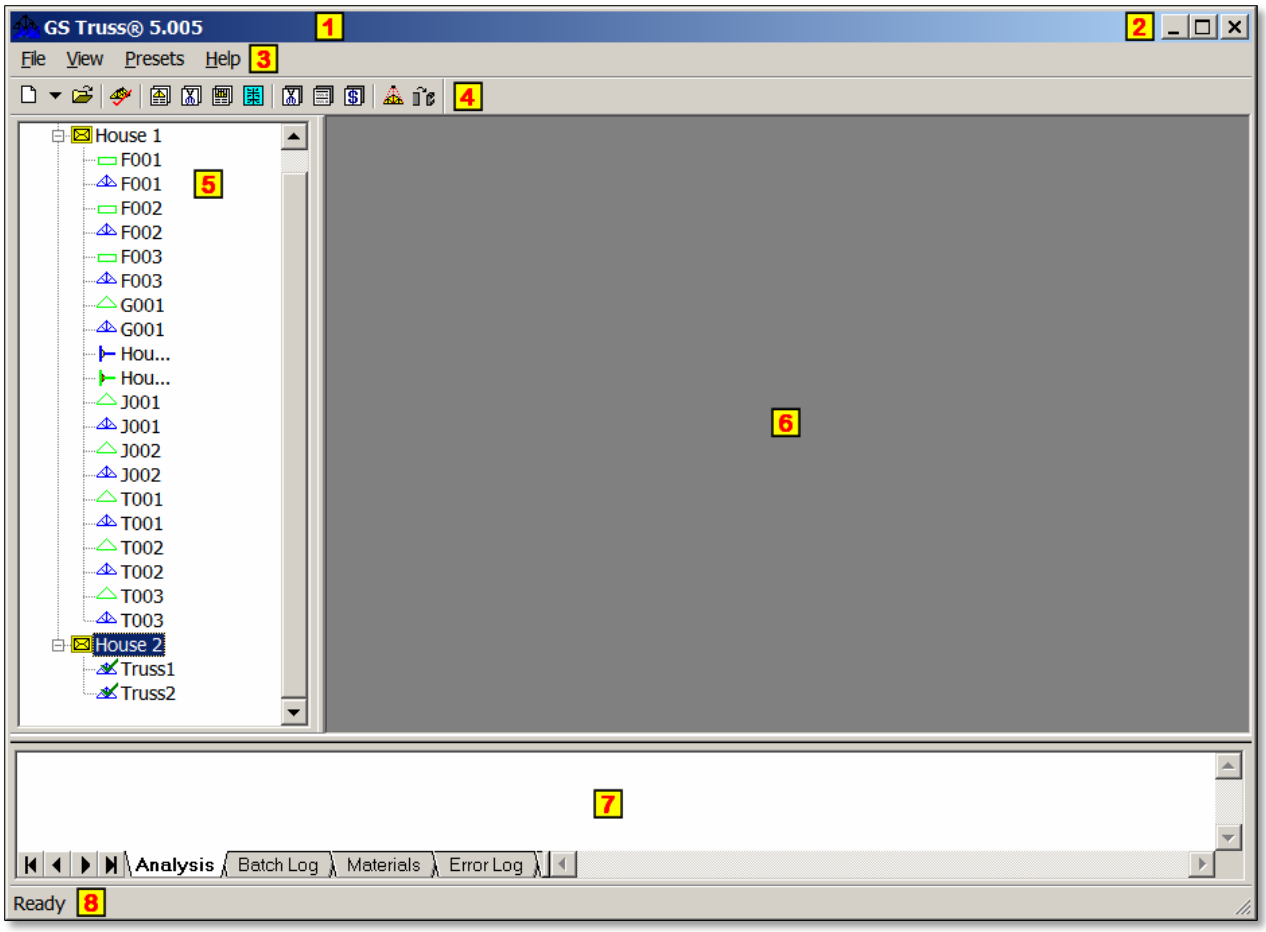


Figure 1: Parts of the GS Truss application window.

Parts of the GS Truss Window

When the GS Truss application is started, it will open a window like the one pictured in Figure 1 above. The GS Truss window consists of some components that are standard to all windows, as well as others that are unique to GS Truss. The label numbers presented in Figure 1 coincide with the descriptions that follow:

1. **Title bar** – A standard windows element that displays the title and version of the application being used; in this case, GS Truss 5.001.
2. **Control Buttons** – These Windows buttons are used to minimize, maximize, and close the GS Truss window. In addition to using the control buttons, you can change the width of the GS Truss window by clicking and dragging on any edge. You can also move the GS Truss window to any location on your desktop by clicking and dragging on the GS Truss window's title bar.

3. **Menu bar** – The GS Truss menu bar provides a comprehensive listing of all features and functions available within the application. The list of commands available in the menu bar will vary, depending upon the tasks being performed by the user.

4. **Toolbars** – GS Truss provides a variety of toolbars containing subsets of the commands listed in the menu bar. The toolbars and commands made available to the user depend upon the task being performed at any given time.

5. **Projects Window** – The *Projects* window appears on the upper left-hand side of the GS Truss window. The *Projects* window displays, and provides access to, the jobs, projects, and truss files a user has created and/or has access to. Truss files can be opened directly from within the *Projects* pane by double-clicking on them. The *Projects* window can be undocked and moved to a different location within – or even outside of – the GS Truss window.

6. **Main/Gray Screen** – The *Main/Gray Screen* takes up the majority of real estate in GS Truss. When no truss file is open (as in Figure 1), this area is referred to as the *Gray Screen*. When a truss file is open (as in Figure 2 on the following page), it is referred to as the *Main Screen*.

7. **Data Window** – The *Data* window provides information about various processes executed by the user, including:

    - **Analysis** – The *Analysis* tab provides details about the specific processes undertaken as part of the analysis, as well as the success or failure of each of those processes.
    - **Batch Log** – The *Batch Log* tab provides information about the specific batch processes being performed.
    - **Materials** – The *Materials* tab displays details about the materials being used in the truss file that is currently active. Information provided includes the name and Combined Stress Index (CSI) associated with each section of truss, along with the material name.
    - **Error Log** – The *Error Log* tab provides detailed information about any errors that occur during the analysis or batching of trusses.
    - **TTC** – When analysis is run, the *TTC* tab provides information about the trusses that carry (i.e. support) the truss being analyzed, as well as the trusses that are carried by the truss being analyzed.

    The *Data* window can be undocked and moved to a different location within – or even outside of – the GS Truss window.

8. **Status Bar** – A section across the bottom-most portion of the GS Truss window, the *Status Bar* provides context-sensitive information about the function currently being performed by the user.

TIP! The toolbars and windows visible when you end your GS Truss session will be the ones visible at your next use. Some tools and toolbars will appear or disappear depending on the current function being performed.

More Parts of the GS Truss Window

Once a truss file has been opened, there are two fundamental changes that occur within the GS Truss interface. As can be seen in Figure 2 below, the first change is that a diagram of the opened truss is displayed in the *Main Screen*. The second change is that the *Job Bar* opens up with detailed information about the truss. For more information about the *Job Bar*, see this document's section entitled "*Creating a Truss from Scratch*."

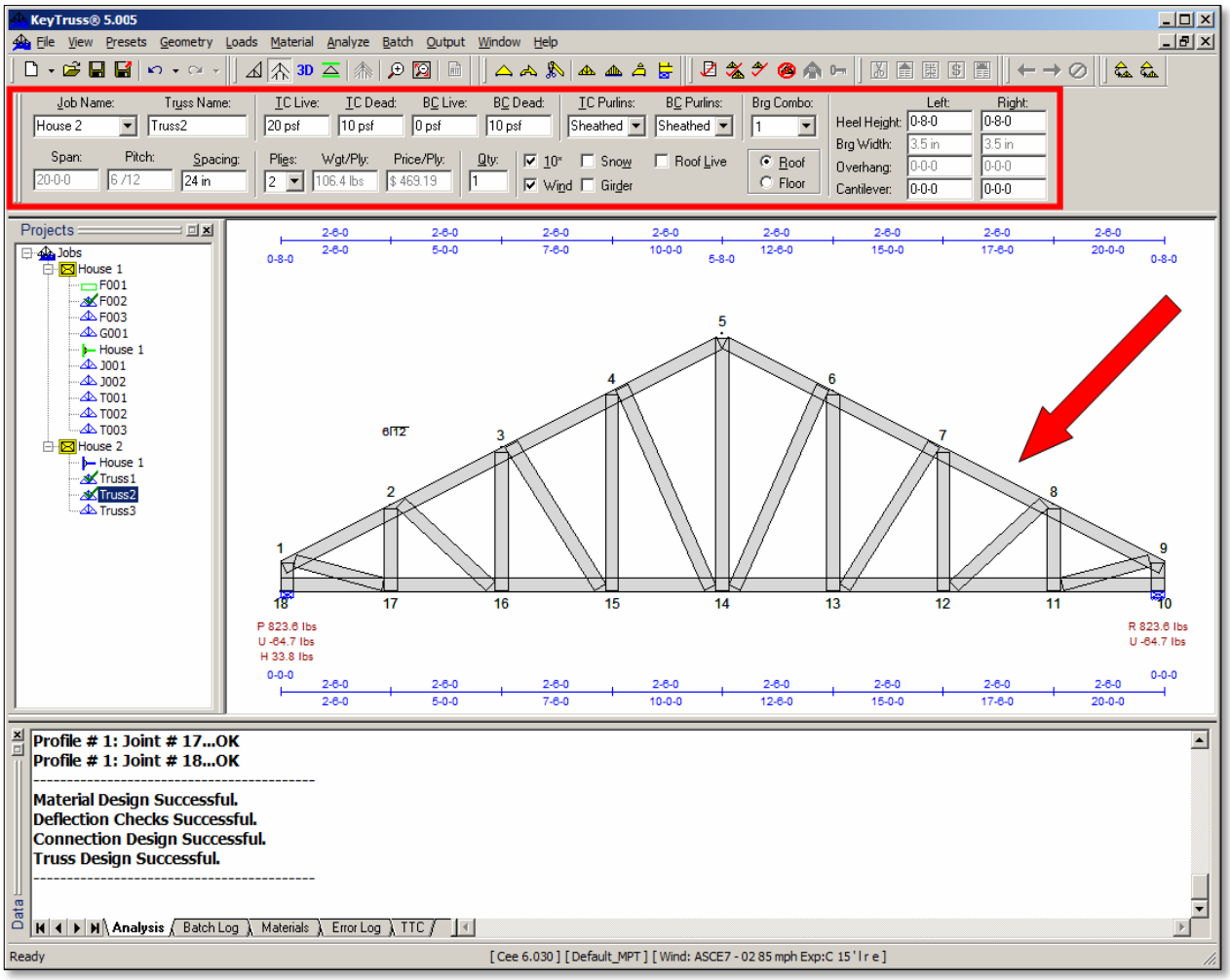


Figure 2: When a truss file is opened, the truss is displayed on the *Main Screen* and the *Job Bar* opens at the top of the window.

Truss Icons

The truss icons in the *Projects* window deserve special mention, because their color and shape provide information about the trusses they represent. As can be seen in the *Projects* window shown in Figure 3 at right, the *Job* entitled "House 3" has numerous trusses associated with it. Icons representing truss profiles imported from GS Plan (.ITR and .ITF files) are displayed as green truss profiles (without webbing). Trusses created in, or converted to, GS Truss files (.KTS) are represented as webbed trusses and are blue in color. Icons that include a green checkmark represent trusses that have successfully completed the analysis/design process. Icons overlaid with a red "X" signify trusses that have failed the analysis/ design process. Icons that look like a sideways letter "T" denote truss-to-truss connection files.

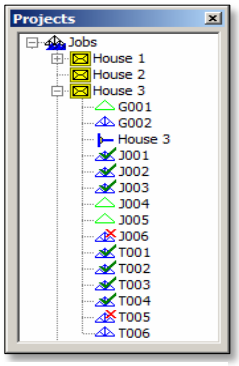
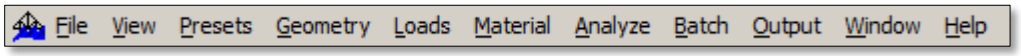


Figure 3: The *Projects* window

The GS Truss Menu Bar



Taken collectively, the menu bar contains all commands and functions available within the GS Truss application. Menu bar listings change, based upon where the user is within the application and the functions he or she is performing.

FILE MENU

The *File* menu provides access to basic commands for creating new truss files, opening existing files, and initiating batch processes.

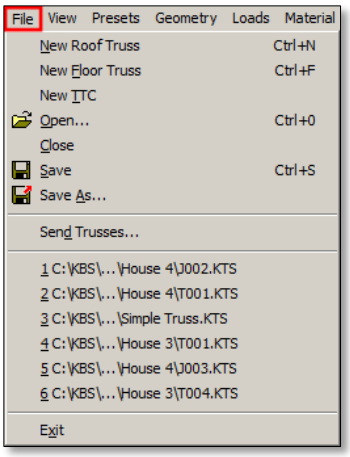


Figure 4: The GS Truss *File* menu.

New Roof Truss – Clicking on the *New Roof Truss* menu item opens the *Job* bar and a blank page on the *Main Screen*. Note that the hot-key combination *Ctrl+N* performs the same function. For more information about creating a new roof truss, refer to the section within this document entitled "*Creating a Truss from Scratch*."

New Floor Truss – Clicking on the *New Floor Truss* menu item opens the *New Floor Truss* dialog box. Note that the hot-key combination *Ctrl+F* performs the same function.

New TTC – Selecting *New TTC* opens a blank truss-to-truss connection table. For more information about truss-to-truss connection tables, refer to the section within this document entitled "*Working with Truss-to-Truss Connection Tables*."

Open – The *Open* function is used to locate and open existing truss files. The *Open* function can also be accessed from the *Main* toolbar using the icon pictured at left, or by using the hot-key combination *Ctrl+O*. Users may also elect to open existing truss files by double clicking on their file names in the *Projects* window.

Close – When the *Close* function is selected, GS Truss closes the truss file that is currently active on the *Main Screen*. If there are any unsaved changes, the user will be prompted to save the file before it is closed.

Save – For newly created files, clicking on the *Save* menu item opens a *Save As* dialog box, where the user is prompted to associate the file with a specific job and enter a file name. If the file has been saved previously, no dialog box will open; the file will simply be saved again under the same file name. The *Save* function can also be accessed from the *Main* toolbar using the icon pictured at left, or by using the hot-key combination *Ctrl+S*.

Save As – The *Save As* function allows the user to save the current truss file with a new file name and/or to a new location. The *Save As* function can also be accessed from the *Main* toolbar using the icon pictured at left.

Batch Process – The *Batch Process* option provides access to a variety of outputs that can be produced for an entire collection of truss files. The potential outputs include: *Design*, *Plotting*, *Cutting*, *Jig Settings*, *Consolidated Cut List*, *Material List*, *Billing*, *Laser Jig Files*, and *Roll Former Files*.

Send Trusses – Clicking on the *Send Trusses* menu item opens Keymark's *KeyComm* application, enabling users to send individual truss files or batches of trusses to Keymark engineers for review.

[Recent Files] – Near the bottom of the *File* menu, GS Truss displays the file name and path of the six truss files that have been opened most recently.

Exit – The *Exit* command closes the GS Truss application. The user will be prompted to save any unsaved changes to open truss files.

VIEW MENU

The *View* menu can be used to hide or display portions of the GS Truss interface, including toolbars, the *Project* and *Data* windows, and the *Status Bar*. It can also be used to zoom in or out, or change the perspective in which truss drawing are presented.

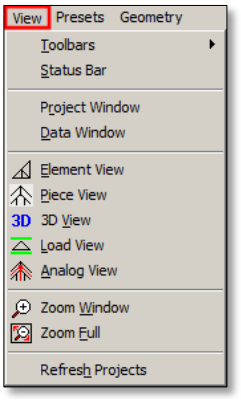


Figure 5: The *View* menu.

Toolbars – The *Toolbars* menu option allows users to select the specific toolbars to be displayed in the GS Truss window. The toolbar options include: *Main*, *View*, *Geometry*, *Batch*, *Design*, *Job*, *Auto Web*, and *Output*.

Status Bar – When this menu item is activated, a *Status Bar* will appear at the bottom of the GS Truss application window. (See Figure 1 on page 6.)

Projects Window – When activated, the *Projects* window will appear within the GS Truss application window. (See Figure 1 on page 6.)

Data Window – When activated, the *Data* window will appear within the GS Truss application window. (See Figure 1 on page 6.)

Element View – When *Element View* is selected, trusses are displayed as two dimensional elements and nodes. (See Figure 6 below.) *Element View* can also be accessed from the *View* toolbar using the icon pictured at left.

Piece View – *Piece View* displays the truss as a collection of numbered members. (See Figure 6 below.) *Piece View* can also be accessed from the *View* toolbar using the icon pictured at left.

3D View – As its name implies, *3D View* displays a three-dimensional image of the active truss. (See Figure 6 below.) Three function keys can be used to hide and display various pieces of the truss in *3D View*:

- *F2* – Controls the display of the top and bottom chords.
- *F3* – Controls the display of all webs.
- *F4* – Controls the display of bearings.

3D View can also be accessed from the *View* toolbar using the icon pictured at left, above.

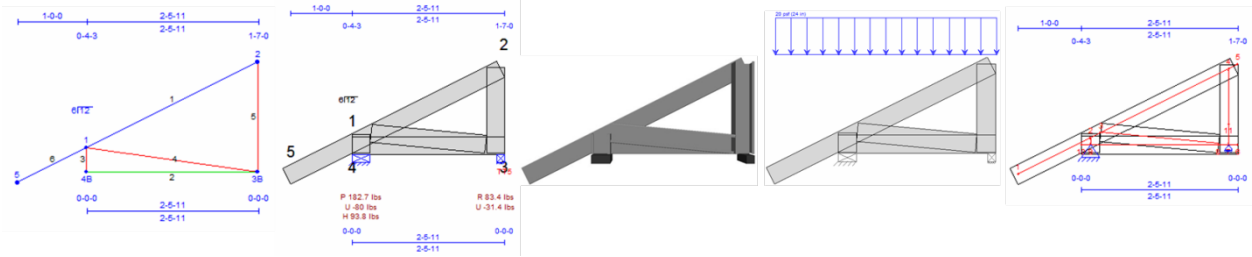


Figure 6: Element View Piece View 3D View Applied Loads View Analog View

Load View – When *Load View* is selected, GS Truss displays trusses in *Piece View* and shows the various loads brought to bear on the truss. (See Figure 6 on the preceding page.) *Load View* can also be accessed from the *View* toolbar using the icon pictured at left.

Analog View – The *Analog View* model is referenced for all design calculations. The members are represented with centerlines, and bearings are placed precisely. (See Figure 6 on the preceding page.) If an analog model has not been created for the active truss, the *Analog View* menu item is grayed out and inaccessible. *Analog View* can also be accessed from the *View* toolbar using the icon pictured at left.

Zoom Window – The *Zoom Window* function allows users to select a specific area of a truss diagram as the focus for zooming actions. The *Zoom Window* command can also be accessed from the *View* toolbar using the icon pictured at left.

Zoom Full – The *Zoom Full* function displays the entire truss in the *Main Screen* of the GS Truss window. *Zoom Full* can also be accessed from the *View* toolbar using the icon pictured at left.

Refresh Projects – The *Refresh Projects* command updates listings in the GS Truss *Projects* window.

PRESETS MENU

GS Truss presets are a collection of user-defined variables that provide the information foundation required to create and modify trusses quickly and efficiently. Presets reflect the most common data and output configurations used by an organization in the creation of trusses. There are eight categories of presets:

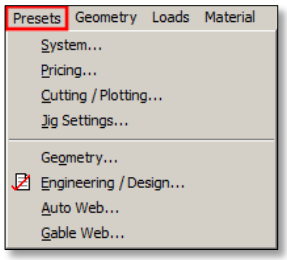


Figure 7: The *Presets* menu.

System – *System Presets* provide basic information about specific files and file paths to be used in conjunction with truss creation. *System Presets* also help define such things as connections, batch processes, and the format of output.

Pricing – *Pricing Presets* allow users to define the price of materials, labor, and overhead for bidding and billing purposes.

Cutting/Plotting – *Cutting/Plotting Presets* allow users to define such things as roll-former output, and the format and content of cutting and plotting reports.

Jig Settings – *Jig Setting Presets* are used to create, define, and modify the configuration of the jig tables used in the assembly of trusses.

Geometry – *Geometry Presets* are used to establish default values for truss heels and overhangs, as well as joint cuts and cap trusses.

Engineering/Design – *Engineering/Design Presets* are used to define default standards for design and loading, as well as material limits and deflection criteria. *Engineering/Design Presets* can also be accessed from the *Design* toolbar using the icon pictured at left.

Auto Web – *Auto Web Presets* are used to control the automated layout of webbing on trusses.

Gable Web – *Gable Web Presets* consist of a set of variables that control how gable trusses are designed.

GEOMETRY MENU

The *Geometry* menu provides quick access to the core set of tools used to create and modify trusses.

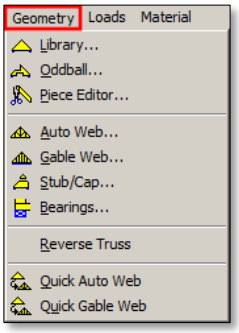


Figure 8: The GS Truss *Geometry* menu.

Library – The *Library* tool consists of a collection of standard truss profiles and webbing patterns that can be used to create or modify trusses quickly and easily. The *Library* tool can also be accessed from the *Geometry* toolbar using the icon pictured at left.

WARNING! It is important to note that using objects in the *Library* negates any changes made to a truss through the use of other tools.

Oddball – *Oddball* is a collection of tools used to design non-standard or complex trusses, and to adjust truss geometry (such as panel points and members) to the desired specifications. *Oddball* can also be accessed from the *Geometry* toolbar using the icon pictured at left.

Piece Editor – The *Piece Editor* is used to add bracing and non-structural elements to the active truss. *Piece Editor* can also be accessed from the *Geometry* toolbar using the icon pictured at left.

Auto Web – The *Auto Web* function is used to web the active truss automatically, based upon parameters established in the user's *Auto Web Presets*. *Auto Web* provides users with an opportunity to review and adjust these parameters before webbing is applied. The *Auto Web* function can also be accessed from the *Geometry* toolbar using the icon pictured at left.

Gable Web – The *Gable Web* function is used to web the active gable truss automatically, based upon parameters established in the user's *Gable Web Presets*. *Gable Web* provides users with an opportunity to review and adjust these parameters before webbing is applied. The *Gable Web* function can also be accessed from the *Geometry* toolbar using the icon pictured at left.

Stub/Cap – The *Stub/Cap* function is used to create or modify base trusses with cap tops. The *Stub/Cap* function can also be accessed from the *Geometry* toolbar using the icon pictured at left.

Bearings – Clicking on *Bearings* in the *Geometry* menu opens the *Bearings* window, which is used to specify bearings and bearing combinations for the active truss. The *Bearings* function can also be accessed from the *Geometry* toolbar using the icon pictured at left.

Reverse Truss – Selecting the *Reverse Truss* menu option turns the active truss 180 degrees on its bottom chord, displaying the truss in mirror image.

Quick Auto Web – The *Quick Auto Web* tool automatically webs the active truss using existing panel points and web-design parameters defined in the user's *Auto Web Presets*. *Quick Auto Web* can also be accessed from the *Geometry* toolbar using the icon pictured at left.

Quick Gable Web – The *Quick Gable Web* tool automatically webs the active gable truss using existing panel points and web-design parameters defined in the user's *Gable Web Presets*. The *Quick Gable Web* function can also be accessed from the *Geometry* toolbar using the icon pictured at left.

LOADS MENU

The *Loads* menu is used to access GS Truss functions for creating and applying a wide range of load cases to truss designs. Users can create as many load cases as needed, and each load case can include multiple loads.

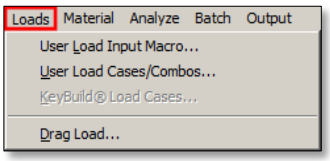


Figure 9: The *Loads* menu.

User Load Input Macro – The *User Load Input Macro* tool is designed for quick entry of load data, and is used as an alternative to the *User Load Case and Combination Entry* screen.

User Load Cases/Combos – The *User Load Cases/Combinations* option under the *Loads* menu allows users to view and edit load cases and apply them in various combinations. Note that, if the truss being viewed is locked, the loads cannot be edited.

KeyBuild Load Cases – This function has temporarily been disabled.

Drag Load – The *Drag Load* function is used to add lateral stresses, imposed by wind or earthquakes, which must be resisted by a structure.

MATERIAL MENU

The features listed on the *Material* menu are used to customize materials for chords, webs, splices, and bracing.

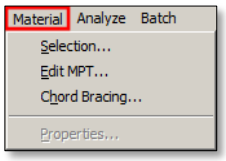


Figure 10: The *Material* menu.

Selection – Clicking on *Selection* opens the *Material Selection* dialog box, which is used to select and force specific materials for user-selected truss pieces.

Edit MPT – The *Edit MPT* function opens the *Material Priority Table Editor* dialog box, which is used to specify the materials to be made available for truss construction, as well as the bumping sequence for those materials. For more information on *Material Priority Tables*, refer to the section within this document entitled "*Working Materials & Material Priority Tables*."

Chord Bracing – This menu option opens the *Chord Bracing* dialog box, which is used to specify the type of bracing (*Sheathed* or *Sparse*) to be used on the top and bottom chords of trusses.

Properties – The *Properties* menu option opens a *Materials* dialog box which provides details about the weight, layout, connectors, plates, and engineering values associated with specific materials. This is an "engineer only" function that is grayed-out for users logged into GS Truss with "designer" credentials.

ANALYZE MENU

The *Analyze* menu lists functions for the analysis of the structural performance of trusses using loading, design, and material criteria.

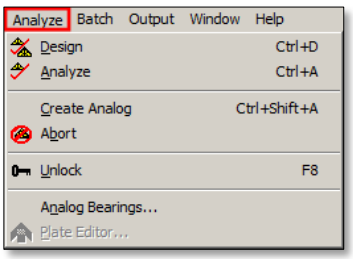


Figure 11: The *Analyze* menu.

Analyze – The *Analyze* function calculates forces, loads, and geometry for a truss. Specifically, the truss is evaluated for deflection, moment, Combined Stress Indices (CSI's), bearings, bracing, loading, screws, gusset plates, and a host of other variables. The analysis process uses only the first material listed in the truss MPT; no material bumping occurs. The *Analyze* function can also be accessed from the *Design* toolbar using the icon pictured at left, or by using the hot-key combination *Ctrl+A*.

Design – The *Design* function calculates forces, loads, and geometry for a truss. The design process is similar to the analysis process except that it is not limited to the first material in the truss *Material Priority Table* (MPT). If there is a material failure for the truss, the design process bumps through the MPT until either a material that passes testing is identified, or material options in the MPT have been exhausted (whichever comes first). The *Design* function can also be accessed from the *Design* toolbar using the icon pictured at left, or by using the hot-key combination *Ctrl+D*.

NOTE: The Design process does not bump truss plate or screw materials.

Create Analog – This function creates an analog model of the current truss. The analog model utilizes a multi-node analysis process which is the industry standard.[1] This method of modeling trusses explicitly describes the flow of forces. The members are represented with centerlines, and bearings are placed more precisely and forces are distributed more accurately than in other model representations. Note that this function can also be accessed by using the hot-key combination *Ctrl+Shift+A*.

Abort – The *Abort* menu option cancels the currently executing analysis/design process. The *Abort* function can also be accessed from the *Design* toolbar using the icon pictured at left.

Unlock – This function is used to unlock a truss that has already been analyzed, allowing the user to modify truss components. The *Unlock* function can also be accessed from the *Design* toolbar using the icon pictured at left, or by using the *F8* function key.

Analog Bearings – The *Analog Bearings* function provides for the override of bearings in an analog model.

Plate Editor – The *Plate Editor* function is used to move and resize plates. The *Plate Editor* can also be accessed from the *Design* toolbar using the icon pictured at left.

BATCH MENU

The *Batch* menu provides commands for managing the execution of batch processes.

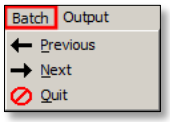


Figure 12: The *Batch* menu.

Next – This function opens the next truss file in the current batch. The *Next Truss* function can also be accessed from the *Batch* toolbar using the icon pictured at left.

Previous – This command opens the previous truss file in the current batch. The *Previous Truss* command can also be accessed from the *Batch* toolbar using the icon pictured at left.

Quit – The *Quit Batch* function cancels the batch process currently being executed. The *Quit Batch* function can also be accessed from the *Batch* toolbar using the icon pictured at left.

[1] As described by "*AISI Standard for Cold-Formed Steel Framing-Truss Design*", Dec. 2000.

OUTPUT MENU

The *Output* menu provides access to all of the reports and diagrams that can be generated in GS Truss.

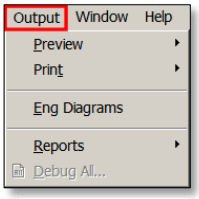


Figure 13: The *Output* menu.

Preview – The *Preview* feature is used to view output prior to printing. The document types that can be previewed include: *Cut Lists*, *Plot Drawings*, *Joint Details*, *Pricing*, and *Jig Settings*.

Print – The *Print* function sends the designated report directly to the printer. The document types that can be printed are the same as those listed under *Preview* above.

Eng Diagrams – This menu option opens the *Applied Loads View* window. For detailed information about the *Applied Loads View*, see page 156.

Reports – The *Reports* menu item provides access to two different outputs:

- **Engineering** – Selecting this option creates an *Engineering Report* (like the one pictured at right) for the truss file that is currently active. This report provides extremely detailed information about the truss, including: geometry, load cases, reaction tables, force and momentum tables, and joint details.
- **Materials** – Selecting this option creates a *Materials Report*, which contains detailed information about materials and the Combined Stress Indices (CSIs) associated with each node within the active truss.

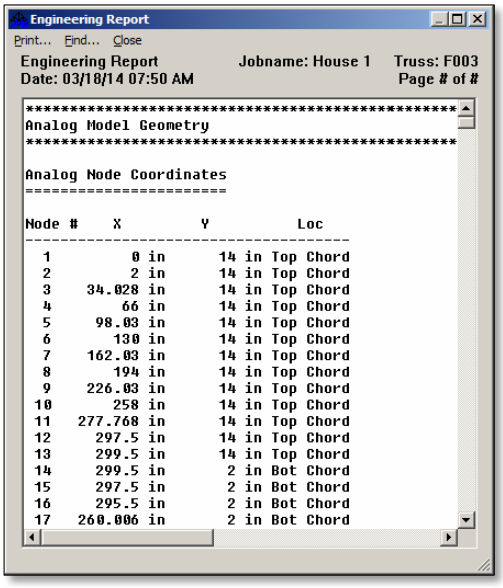


Figure 14: A detailed *Engineering Report*.

Debug All – *Debug All* is an "engineer only" function that is used to produce an extremely detailed report for validating the engineering of a truss. *Debug All* can also be accessed from the *View* toolbar using the icon pictured at left.

WINDOW MENU

The *Window* menu provides access to functions for arranging and managing windows within the GS Truss application.

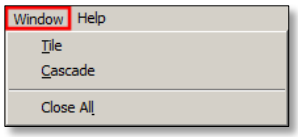


Figure 15: The *Window* menu.

Tile – As pictured in Figure 16 below, the *Tile* option arranges all open truss files side-by-side and top-to-bottom on the *Main Screen*.

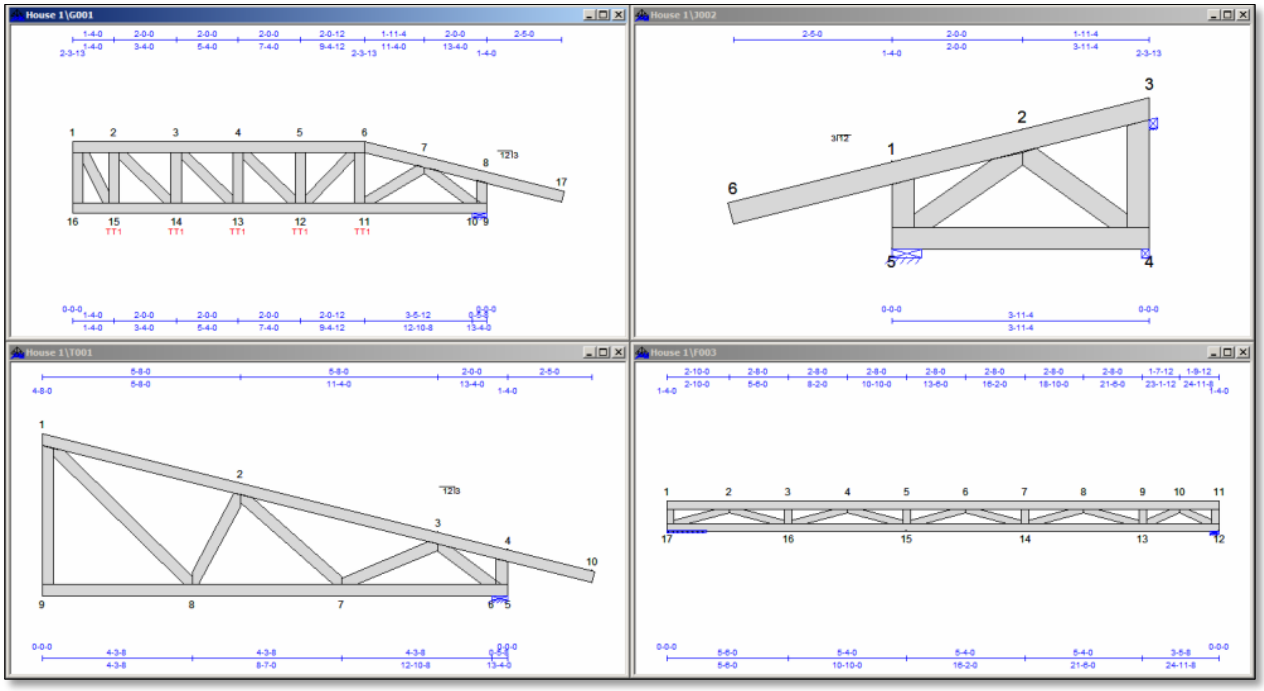


Figure 16: The *Tile* option displays truss files side-by-side and top-to-bottom on the GS Truss *Main Screen*.

Cascade – The *Cascade* option displays all open truss files laid out like a hand of cards, as pictured at right.

Close All – The *Close All* option closes all open truss files.

[Open Files] – At the bottom of the *Window* menu, GS Truss provides a list of all of the truss files that are currently open. The active truss file is highlighted with a checkmark.

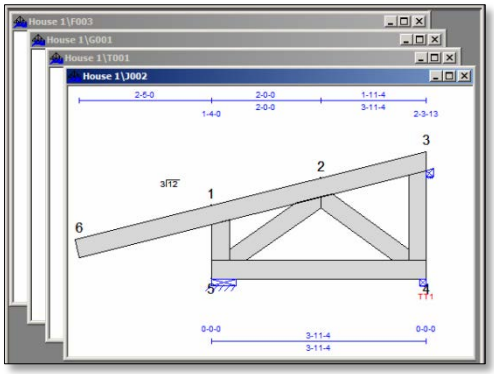


Figure 17: Truss files displayed in *Cascade* mode.

HELP MENU

The *Help* menu contains commands for accessing GS Truss online help files, the Keymark website, and information about the version and build of GS Truss installed on your system.

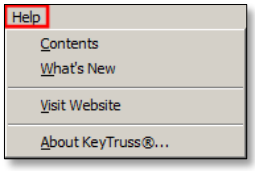


Figure 18: The *Help* menu.

Contents – The *Contents* menu option displays the GS Truss *Help Topics* window, opened to the *Table of Contents* tab.

What's New – Clicking on the *What's New* menu item opens a window displaying *Release Notes* for the installed version of GS Truss.

Visit Website – Clicking on the *Visit Website* option opens the user's default browser to the Keymark website home page.

About GS Truss – The *About GS Truss* option opens a message box with detailed information about the installed version of GS Truss, including the version and build number.

TTC MENU

When you have a *Truss-to-Truss Connection Table* open on the *Main Screen*, the GS Truss menu bar will include a *TTC* listing. This menu provides access to functions for working with your *Truss-to-Truss Connection Tables*. The functions provided in this menu are identical to those found on the TTC toolbar.

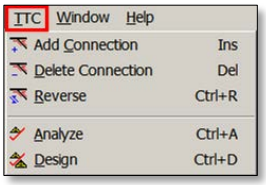


Figure 19: The *TTC* menu.

New Connection – Clicking on the New Connection icon inserts a new, blank row at the bottom of the TTC. If you add a new connection to an existing TTC, GS Truss will display the message box pictured in Figure 20. Click on the *Yes* button to continue the process of adding a new connection to the table.

Delete Connection – Clicking on this icon will delete the currently selected row from the TTC. If you delete and existing connection from a TTC, GS Truss will display the message box pictured in Figure 20. Click on the *Yes* button to continue the process of deleting the existing connection.

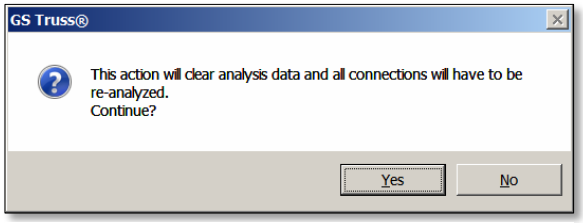


Figure 20: Confirm changes to an existing TTC by clicking on the *Yes* button in this message box.

Reverse Connection – Clicking on this icon exchanges the values in the truss type (*Carrying Truss* and *Carried Truss*), *Offset*, and *V Offset* columns with one another. In addition, the value in the Angle column is changed to its opposite counterpart. (For example, a 315 degree angle is changed 45 degrees, a 90 degree angle changes to 270 degrees, and so on.) If you reverse a connection in an existing TTC, GS Truss will display the message box pictured in Figure 20. Click on the *Yes* button to confirm your intention to reverse the designated connection.

Analyze Truss – After making changes to an existing TTC, click on the *Analyze* icon to update the layout of all trusses affected by your changes without bumping any truss materials in the process.

Design Truss – After making changes to an existing TTC, click on the *Design* icon to update the layout of all trusses affected by your changes, and to bump truss materials as needed during the process.

GS Truss Toolbars

The seven GS Truss toolbars contain a subset of the most commonly used commands and functions available from the GS Truss menu bar.

MAIN TOOLBAR

The *Main* toolbar provides quick access to commands for creating, saving, and opening truss files, as well as the *Undo* and *Redo* commands.

Figure 21: The *Main* toolbar.

New – The *New* drop-down arrow provides a list of new file types that can be created in GS Truss. The three options are: *New Roof Truss*, *New Floor Truss*, and *New TTC*.

Open – The *Open* tool is used to locate and open existing truss files.

Save – For newly created files, clicking on the *Save* tool opens a *Save As* dialog box, where the user will be prompted to associate the file with a specific job and enter a file name. If the file has been saved previously, no dialog box will open; the file will simply be saved again under the same file name.

Save As – The *Save As* function allows the user to save the current truss file with a new file name and/or to a new location.

Undo – The *Undo* button cancels the user's previous action.

Redo – The *Redo* button reapplies the previously cancelled action.

VIEW TOOLBAR

The *View* toolbar provides quick access to *Zoom In* and *Zoom Out* functionality, and offers five different perspectives on truss designs.

Figure 22: The *View* toolbar.

Element View – When *Element View* is selected, trusses are displayed as two dimensional elements and nodes. (See Figure 6 on page 10.)

Piece View – Piece *View* displays the truss as a collection of numbered members. (See Figure 6 on page 10.)

3D View – As its name implies, *3D View* displays a three-dimensional image of the active truss. (See Figure 6 on page 10.) Three function keys can be used to hide and display various pieces of the truss in *3D View*:

- *F2* – Controls the display of the top and bottom chords.
- *F3* – Controls the display of all webs.
- *F4* – Controls the display of bearings.

Applied Loads View – When *Applied Loads View* is selected, GS Truss displays trusses in *Piece View* and provides a view of over 50 different load scenarios that can be applied and reviewed by the user. (See Figure 6 on page 10.)

Analog View – The *Analog View* model is referenced for all design calculations. The members are represented with centerlines, and bearings are placed precisely. (See Figure 6 on page 10.) If an analog model has not been created for the active truss, the *Analog View* icon is grayed out and inaccessible.

Zoom Window – The *Zoom Window* function allows users to select a specific area of a truss diagram as the focus for zooming actions.

Zoom Full – The *Zoom Full* function displays the entire truss in the *Main Screen* of the GS Truss window.

Debug All – *Debug All* is an "engineer only" function that is used to produce an extremely detailed report for validating the engineering of a truss.

BATCH TOOLBAR

The *Batch* toolbar provides users with commands to navigate through the trusses in a batch, as well as to stop a batch in the process of execution.

Figure 23: The *Batch* toolbar.

Next Truss – This option opens the next truss file in the current batch.

Previous Truss – This option moves to the previous truss file in the current batch.

Quit Batch – The *Quit Batch* function cancels the batch process currently being executed.

OUTPUT TOOLBAR

The *Output* toolbar provides quick access to previews for a variety of GS Truss reports.

Figure 24: The *Output* toolbar.

Preview Cut List – *Cut List* reports provide information about the materials, cut types, and piece lengths for cutting and assembling trusses. The specific content and format of these reports is governed by the values defined on the *Cutting* tab of *Cutting/Plotting Presets*. For more information about *Cut Lists*, refer to the section within this document entitled "*GS Truss Outputs*."

Preview Plot – Generally speaking, *Engineering Plot Drawings* provide detailed information about truss load cases, forces, and reactions, however, the precise content of *Engineering Plot* reports is governed by the values defined on the *Plotting* tab of *Cutting/Plotting Presets*. For more information about *Plot Drawings*, refer to the section within this document entitled "*GS Truss Outputs*."

Preview Joint Details – The *Joint Details* report provides detailed information about the all of joints in a single truss. Each report contains a diagram of the entire truss, along with thumbnail-sized diagrams of all joints in that truss. For more information about *Joint Detail* reports, refer to the section within this document entitled "*GS Truss Outputs*."

Preview Single Page Joint Details – Similar in content to the *Joint Details* report, each page of a Single *Page Joint Details* report provides an enlarged diagram of a single joint, along with a diagram of the entire truss as a whole. For more information about *Single Page Joint Detail* reports, refer to the section within this document entitled "*GS Truss Outputs*."

Preview Full Scale Joint Details – Each page of a *Full Scale Joint Details* report provides a life-sized, full-scale diagram of a single joint in a truss.

Preview Pricing – *Pricing* reports provide both summary and detail information about truss material and labor costs. For more information about *Pricing Outputs*, refer to the section within this document entitled "*GS Truss Outputs*."

Preview Jig Settings – The *Jig Settings* report provides information about the jig-table setup required for assembly of the active truss. For more information about *Jig Setting* outputs, refer to the section within this document entitled "*GS Truss Outputs*."

DESIGN TOOLBAR

The *Design* toolbar contains commands for both executing and aborting analysis and design processes, unlocking truss files, and editing plates and some presets.

Figure 25: The *Design* toolbar.

Eng/Design Presets – *Engineering/Design Presets* are used to define default standards for design and loading, as well as material limits and deflection criteria.

Analyze Truss – The *Analyze Truss* function calculates forces, loads, and geometry for a truss. Specifically, the truss is evaluated for deflection, moment, Combined Stress Indices (CSI's), bearings, bracing, loading, screws, gusset plates, and a host of other variables. Unlike the design process, the analysis process uses only the first material listed in the *Material Priority Table* (MPT) to gather data. No material bumping occurs.

Design Truss – The *Design Truss* function calculates forces, loads, and geometry for a truss. The design process is similar to the analysis process except that, unlike analysis, the design process is not limited to the first material in the *Material Priority Table* (MPT). If there is a material failure for the truss, the design process bumps through the MPT until either a material that passes testing is identified, or material options in the MPT have been exhausted (whichever comes first).

Abort Analysis – The *Abort* tool cancels the currently executing analysis/design process.

Plate Editor – The *Plate Editor* tool is used to move and resize plates.

Unlock Truss – This function is used to unlock a truss that has already been analyzed, allowing the user to modify truss components. All data generated during the previous analysis/design process is deleted when a truss file is unlocked.

GEOMETRY TOOLBAR

The *Geometry* toolbar provides quick access to the core set of tools used to create and modify trusses.

Figure 26: The *Geometry* toolbar.

Library – The *Library* tool consists of a collection of standard truss profiles and webbing patterns that can be used to create trusses quickly and easily.

WARNING! It is important to note that using objects in the *Library* negates any changes made using other tools.

Oddball – *Oddball* is a collection of tools used to design non-standard, complex trusses, and to adjust truss geometry (such as panel points and members) to the desired specifications.

Piece Editor – The *Piece Editor* is used to add bracing and non-structural elements to a truss.

Auto Web Settings – The *Auto Web Settings* function is used to define the parameters for webbing the active truss automatically. The initial values listed within the *Auto Web Settings* window are derived from the user's *Auto Web Presets*.

Gable Web Settings – The *Gable Web Settings* function is used to define the parameters for webbing the active gable truss automatically. The initial values listed within the *Gable Web Settings* window are derived from the users *Gable Web Presets*.

Stub/Cap – The *Stub/Cap* function is used to create base trusses with cap tops.

Bearings – Clicking on the *Bearings* icon opens the *Bearings* window, which is used to specify bearings and bearing combinations for the active truss.

AUTO WEB TOOLBAR

The *Auto Web* toolbar provides access to the *Quick Auto Web* and *Quick Gable Web* functions.

Figure 27: *Auto Web* toolbar.

Quick Auto Web – The *Quick Auto Web* tool automatically webs the active truss using the existing panel points and the values defined in the user's *Auto Web Presets*.

Quick Gable Web – The *Quick Gable Web* tool automatically webs the active gable truss using the existing panel points and the values defined in the user's *Gable Web Presets*.

TTC TOOLBAR

When you have a *Truss-to-Truss Connection Table* open on the *Main Screen*, GS Truss will display the *TTC* toolbar. This toolbar provides access to functions for working with your *Truss-to-Truss Connection Tables.* The functions provided on this toolbar are identical to those found in the TTC menu.

Figure 28: The TTC toolbar

New Connection – Clicking on the New Connection icon inserts a new, blank row at the bottom of the TTC. If you add a new connection to an existing TTC, GS Truss will display the message box pictured in Figure 29. Click on the *Yes* button to continue the process of adding a new connection to the table.

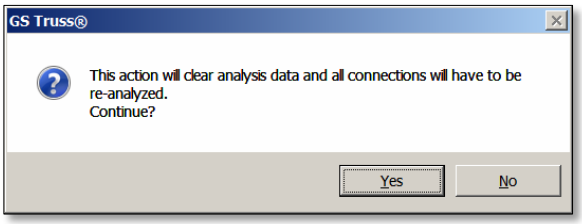


Figure 29: Confirm changes to an existing TTC by clicking on the *Yes* button in this message box.

Delete Connection – Clicking on this icon will delete the currently selected row from the TTC. If you delete and existing connection from a TTC, GS Truss will display the message box pictured in Figure 29. Click on the *Yes* button to continue the process of deleting the existing connection.

Reverse Connection – Clicking on this icon exchanges the values in the truss type (*Carrying Truss* and *Carried Truss*), *Offset*, and *V Offset* columns with one another. In addition, the value in the Angle column is changed to its opposite counterpart. (For example, a 315 degree angle is changed 45 degrees, a 90 degree angle changes to 270 degrees, and so on.) If you reverse a connection in an existing TTC, GS Truss will display the message box pictured in Figure 29. Click on the *Yes* button to confirm your intention to reverse the designated connection.

Analyze Truss – After making changes to an existing TTC, click on the *Analyze* icon to update the layout of all trusses affected by your changes without bumping any truss materials in the process.

Design Truss – After making changes to an existing TTC, click on the *Design* icon to update the layout of all trusses affected by your changes, and to bump truss materials as needed during the process.

WORKING WITH GS TRUSS PRESETS

What Are Presets?

GS Truss presets are a collection of user-defined variables that provide the information foundation required to create and modify trusses quickly and efficiently. Presets reflect the most common data and output configurations used by an organization in the creation of trusses.

System Presets

System Presets provide basic information about specific files and file paths to be used in conjunction with truss creation. *System Presets* also help define such things as connections, batch processes, and the format of output. The *System Presets* dialog box contains three separate tabs of information: *Files*, *Paths*, and *Runtime*.

FILES TAB

The *Files* tab allows users to select files and data that will play a central role in the creation and output of truss designs and their related documentation.

Material Priority Table (MPT)

This drop-down displays a list of all *Material Priority Tables* entered into the system. Each table contains a list of material options for webs and chords, and specifies the desired bumping sequence for these materials. Click on the drop-down arrow to select the MPT to be used as the default for the creation of new trusses.

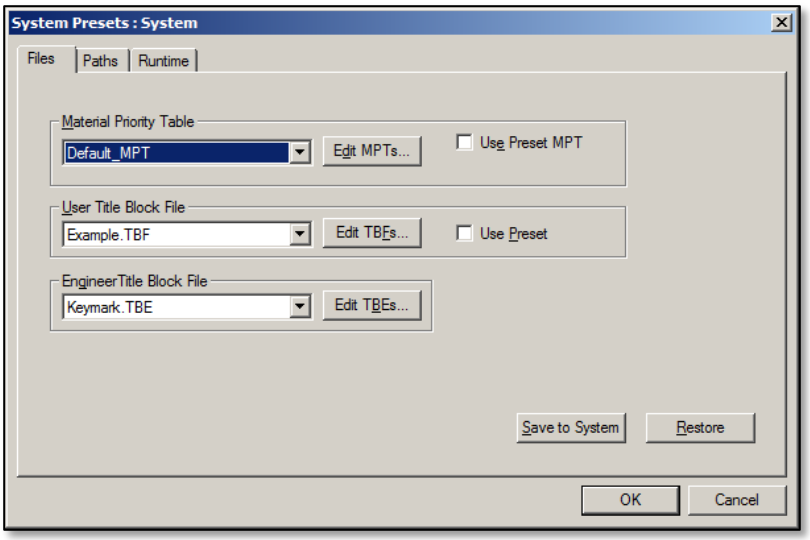


Figure 30: The *Files* tab in *System Presets*.

Edit MPTs – The *Edit MPTs* command button opens the *Material Priority Table Editor*. The *MPT Editor* is used to view, copy, and modify existing MPTs, as well as to create new tables. For more information, refer to the section within this document entitled "*Working with Materials & Material Priority Tables*."

Use Preset MPT – When this checkbox is activated, and a user goes to open an existing truss file, the MPT assigned to the file being opened will be overwritten by the MPT currently selected in the MPT drop-down list.

User Title Block File (TBF)

This drop-down displays a list of all *User Title Block Files* (TBFs) entered into the system. *User Title Block Files* contain general company information to be displayed in GS Truss reports. Users can create multiple *Title Block Files* and, thereby, customize the company information displayed on a

wide variety of reports. Click on the drop-down arrow to select the TBF to be used as the default for the creation of new trusses. Your selection will not affect trusses that have already been created.

Edit TBFs – The *Edit TBFs* command button opens the *Title Block Editor*, which is used to view and modify existing *User Title Block Files*. (See Figure 31 at right.)

Use Preset – When this checkbox is activated, and a user opens an existing truss file, the TBF assigned to the file being opened will be overwritten by the TBF currently selected in the TBF drop-down list.

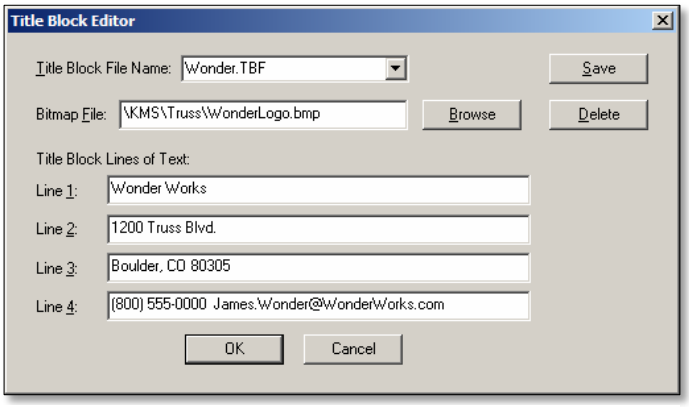


Figure 31: The *Title Block Editor* dialog box.

Engineer Title Block File (TBE)

This drop-down displays a list of all *Engineer Title Block* (TBE) files entered into the system. The *Engineer Title Block* file contains information about the component engineer or company-specific engineering information. Users can create multiple TBEs and, thereby, customize the engineering information displayed on engineering diagrams. Click on the drop-down arrow to select the TBE to be used as the default for the creation of new trusses. Your selection does not affect trusses that have already been created.

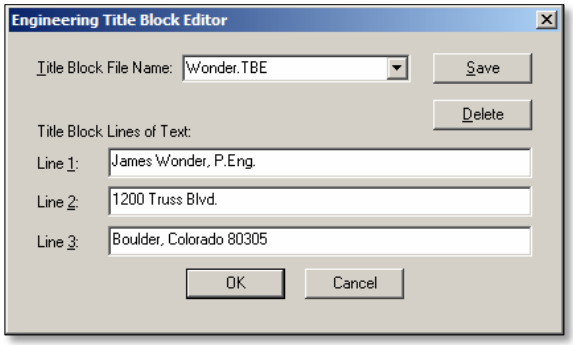


Figure 32: The *Engineering Title Block Editor* dialog box.

Edit TBEs – The *Edit TBEs* command button opens the *Engineering Title Block Editor*, which is used to view and modify existing TBEs. (See Figure 32 above.)

Other Command Buttons

The command buttons at the bottom of the *Files* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

PATHS TAB

The *Paths* tab allows users to define locations for storing and sharing truss-related files.

Jobs Path – The *Jobs Path* field specifies the directory used to store truss folders and files. Click on the drop-down arrow to select from a list of paths and folders that have been used previously. Click on the ellipses button to browse for, and select, a previously unused folder.

Sharing Path – The *Sharing Path* field specifies the directory used to share pricing and material files with other GS Truss users. Click on the ellipses button to browse for, and select, a folder.

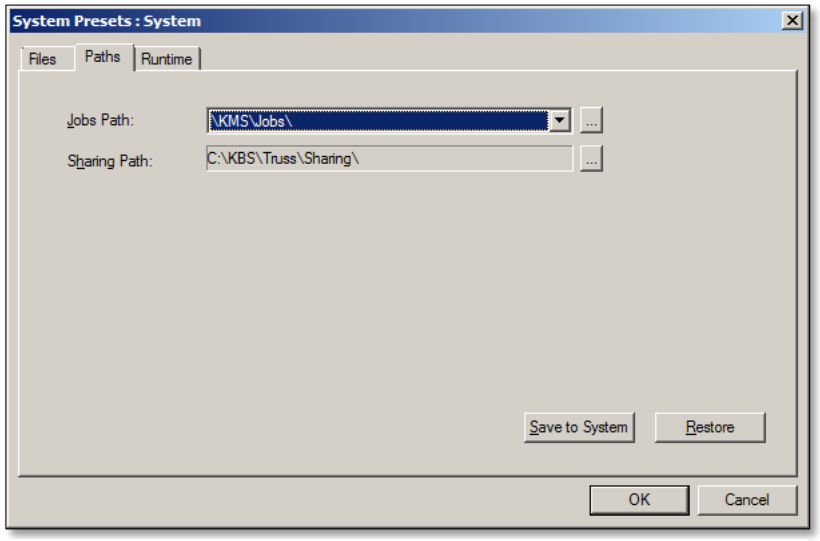


Figure 33: The *Paths* tab in *System Presets*.

Command Buttons

The command buttons at the bottom of the *Paths* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

RUNTIME TAB

The *Runtime* tab is used to define a host of system defaults, including the content and format of file output, batch processes, connection behavior, automated splicing, and more. (See Figure 34 below.)

Output Files

Checkboxes in the *Output Files* section of the tab are used to define the types of files that GS Truss will generate. All file types are created during the GS Truss analysis/design process.

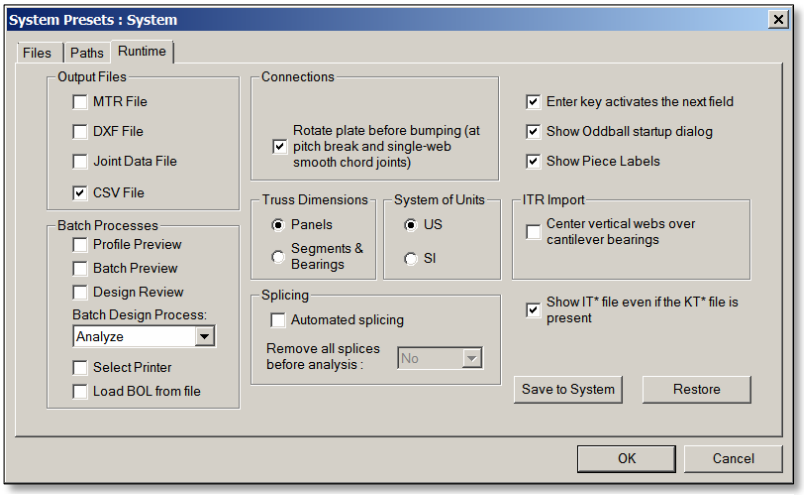


Figure 34: The *Runtime* tab in *System Presets*.

MTR File – When this checkbox is activated, GS Truss creates *Material Management* (MTR) files in the *JOBS/[Project Name]* folder. A separate MTR file is generated for each truss, and each file contains detailed information about truss geometry, member coordinates, and materials. MTR files are used by Keymark's *GSS Output* application.

DXF File – *Drawing Exchange Format* (DXF) is a file format supported by many CAD applications. When the *DXF File* checkbox is activated, GS Truss creates a separate DXF file, containing profile information, for each truss. DXF files are stored in the *JOBS/[Project Name]* folder.

Joint Data File – When this checkbox is activated, GS Truss creates *Joint Data Files* (JDFs) in the *JOBS/[Project Name]* folder. A separate JDF is generated for each truss, and each file contains detailed information about truss materials, joints, and bearings.

CSV File – When this checkbox is activated, and the user runs the *Batch → Consolidated Cut List* process, GS Truss creates a *Consolidated Cut List* in *Comma Separated Value* (CSV) format, and places the file in the *JOBS/[Project Name]/Production* folder. This file contains information about all pieces required to fabricate the trusses in the batch, including their material, length, quantity, and weight.

Batch Processes

Runtime Presets for *Batch Processes* allow users to choose how batches are run. Depending on the combination of the options selected users can, for example, review each truss prior to analysis for verification of proper geometry, loads, and bearings. Alternatively, users can simply let the program import and analyze truss files as a group. To have the batch run as desired, presets must be defined prior to executing the batch process.

Profile Preview – The *Profile Preview* option can only be used in conjunction with the batch importation and conversion of GS Plan roof truss (ITR) and floor truss (ITF) files. ITR and ITF files contain information about truss outline dimensions and load and bearing information, as well as some additional building data.

When the *Profile Preview* checkbox is activated, and a batch design process is executed, GS Truss displays the profile of each truss, one truss at a time, in a window similar to the one pictured at right. The user can chose to accept the truss profile and continue the importation process by clicking on the *Continue* button. Conversely, a user may reject a given profile by clicking on the *Skip* button. If the *Skip* function is chosen, the displayed truss is not imported and the next truss in the batch is processed. The user can also elect to terminate the entire batch-import process at any time by clicking on the *Cancel Batch* button.

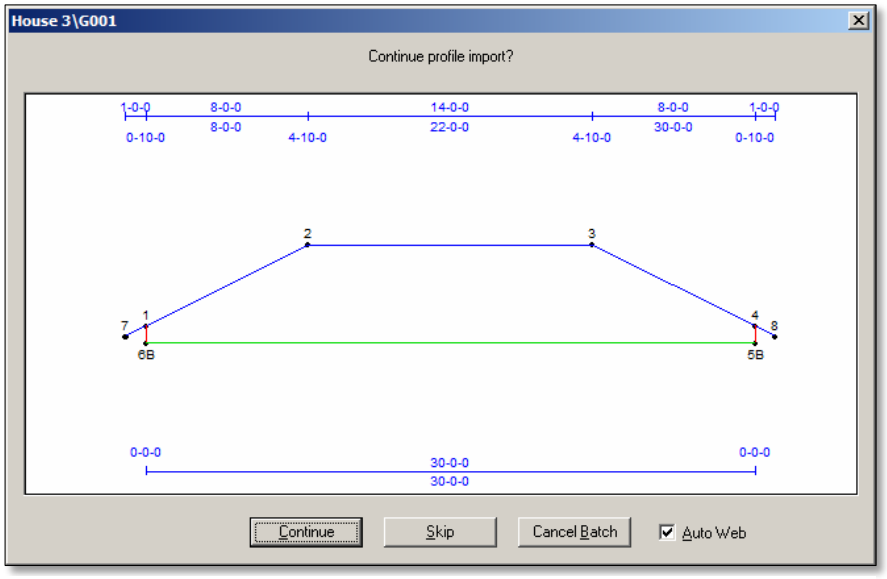


Figure 35: The *Profile Preview* window.

TIP! ITR and ITF files do not contain any webbing information, so enabling the *Auto Web* checkbox in the *Profile Preview* window (above) can be a real time saver.

Batch Preview – When the *Batch Preview* checkbox is activated, GS Truss loads the first truss profile in a *Design* batch and displays it on the *Main Screen*. The application then pauses for user input prior to executing the analysis/design process. This gives the user an opportunity to fine-tune the truss prior to initiating analysis/design. When ready, pressing the *End* key executes the analysis/design process, and information about the success or failure of that process is displayed in the *Batch Log* tab of the *Data* window. When all trusses have been processed in this manner, the *Batch Log* displays the message, "*Batching Complete*."

Design Review – Similar to the *Batch Preview* option, when the *Design Review* checkbox is activated, GS Truss loads the first truss profile in a batch and displays it on the *Main Screen*. Unlike *Batch Preview* however, the analysis/design process for the truss is executed immediately. Information about the success or failure of that process is displayed in the *Batch Log* tab of the *Data* window. The application then pauses, giving the user time to review details about the analysis/design. When ready, pressing the *End* key loads the next truss in the batch. This process is repeated until the batch is complete. When all trusses have been processed in this manner, the *Batch Log* displays the message, "*Batching Complete*."

NOTE! If both the *Batch Preview* and the *Design Review* checkboxes are activated, GS Truss will pause for user input both before and after the analysis/design process has run. If none of the *Batch Process* options are selected, the program will import and analyze all of the trusses in a batch without pausing between trusses for user input.

Batch Design Process – The *Batch Design Process* drop-down list provides two options:

- **Analyze** – When the *Analyze* option is selected, the viability of newly created trusses (and trusses that have not previously completed the *Design* process) is evaluated on the basis of the first material listed in the *Material Priority Table*. Trusses that have previously completed the *Design* process are evaluated on the basis of the final material used in the previous truss design. No materials are substituted for trusses that fail the *Analyze* process.
- **Design** – When the *Design* option is selected, trusses are run through the design process, bumping through the *Material Priority Table (MPT)* until a suitable material is found or all materials in the MPT have been tried and failed.

Select Printer – When the *Select Printer* checkbox is activated, the batch printing process opens a *Print* dialog box rather than automatically printing to the computer's default printer.

Load BOL from file – When this checkbox is activated, GS Truss loads customer name and address information (gleaned from GS Plan LAY files) into the GS Truss *Batch Billing Screen*. Having this information entered automatically helps expedite the process of generating quotes, invoices, and bills of lading.

Connections

Rotate plate before bumping – When this option is selected, GS Truss attempts to resolve design-failure issues by turning the plates on a truss. If plate rotation fails to resolve the issue, material bumping is initiated.

Truss Dimensions

Panels – When this radio button is selected, the *Main Screen* in GS Truss displays dimensions for each individual panel within a truss.

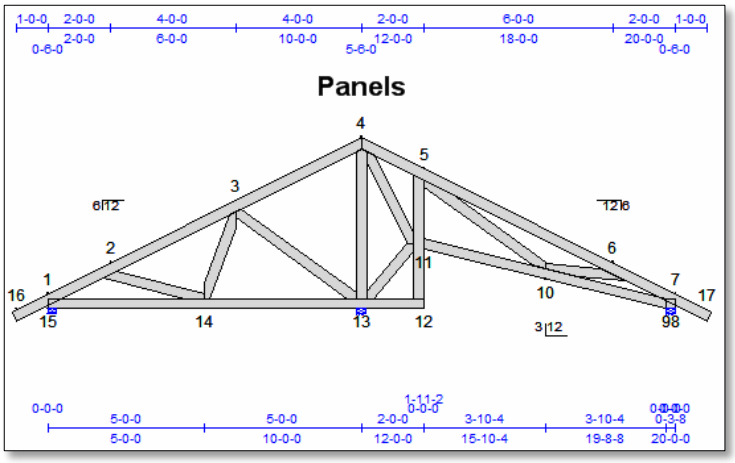


Figure 36: *Panel* dimensions.

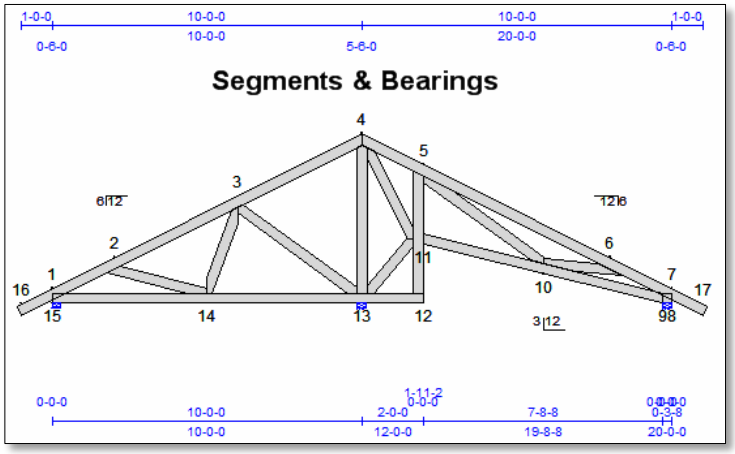


Figure 37: *Segment & Bearing* dimensions.

Segments & Bearings – When this radio button is selected, the *Main Screen* in GS Truss displays dimensions for each individual segment of a truss. (See Figure 37 at left.)

System of Units

This section determines the unit of measure displayed within GS Truss, and in the application's output:

- **US** – United States (imperial units).
- **SI** – International System of Units (metric units).

Splicing

Automated splicing – When this checkbox is activated, GS Truss splices materials automatically, based upon the maximum length of those materials as specified in the *Splice Length* field of the *Member Pricing* tab in *Pricing Presets*. This function works only in conjunction with *Design Mode*; not *Analysis Mode*.

Remove all splices before analysis – This drop-down list is enabled when the *Automated Splicing* checkbox is activated. The list provides users with three choices:

- *No* – When *No* is selected, splices are not removed from a truss prior to analysis/design.
- *Yes* – The *Yes* option temporarily removes all existing splices from a truss prior to execution of the analysis/design process. These same splices are then reinstated after the analysis/design process has completed.
- *Confirm* – When the *Confirm* option is selected and the analysis/design process is initiated, a message box like the one pictured at right will open, asking the user to confirm the removal of all splices. As with the *Yes* option above, all original splices are reinstated after the analysis/design process has completed.

Figure 38: Confirming splice removal.

[Miscellaneous]

Enter key activates the next field – When this option is checked, hitting either the *Enter* or the *Tab* key on your keyboard causes the application to tab to the next field in the user interface. When unchecked, the *Tab* key alone is used for this function.

Show Oddball startup dialog – When this checkbox is activated, and the user is creating a new truss, clicking on the *Oddball* tool pulls up the *Oddball* dialog box pictured at right. When this option is not checked, clicking on the *Oddball* tool takes the user directly to the *Oddball* window without opening the *Oddball* dialog box first. For more information about using the *Oddball* dialog box, refer to the section within this document entitled "*Creating a Truss from Scratch*."

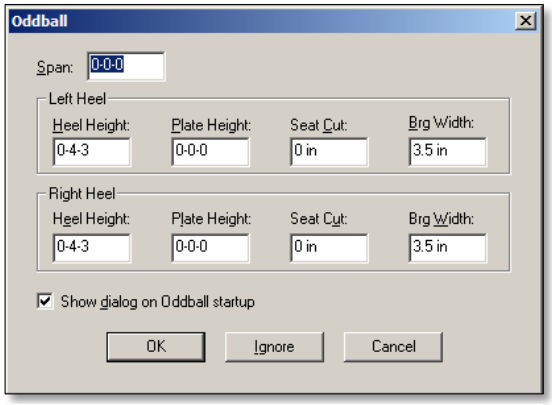


Figure 39: The *Oddball Startup* dialog box.

Show Piece Labels – When activated, this option displays labels for truss pieces on the *Main Screen*, as well as in all drawing outputs.

ITR Import

Center vertical webs over cantilever bearings – If this checkbox is selected, vertical webs for ITR files imported from GS Plan are centered over their cantilever bearings. If this checkbox is not activated, vertical webs are aligned with the outer edge of cantilever bearings.

[Other]

Show IT* file even if the KT* file is present – When activated, this function displays the source truss files imported from GS Plan (ITR and ITF) in the main *Projects* window – even after native GS Truss files (KTS) have been generated. As can be seen in the Figure 40 at right, icons for ITR and ITF files are displayed in green font, while truss files in native GS Truss format (KTS) are displayed in blue.

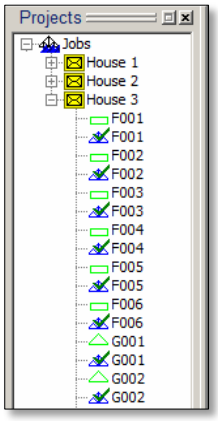


Figure 40: ITR and ITF files in green.

Command Buttons

The command buttons at the bottom of the *Runtime* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

Pricing Presets

Pricing Presets allow users to define the price of materials, labor, and overhead for bidding and billing purposes. The *Pricing Presets* dialog box contains six separate tabs of information: *Overhead*, *Member Pricing*, *Plate Pricing*, *Price Connection*, *Labor Factors*, and *Sharing*.

OVERHEAD TAB

The *Overhead* tab is used to define extraneous costs that will be added to customer quotes and billing documentation.

% Material Overhead – This field is used to establish an additional percentage, over cost, for materials.

Delivery Charge – The *Delivery Charge* field adds a flat fee for delivery that will be passed on to customers.

% Tax Rate – This field allows users to set tax rates for materials and services, based on local standards.

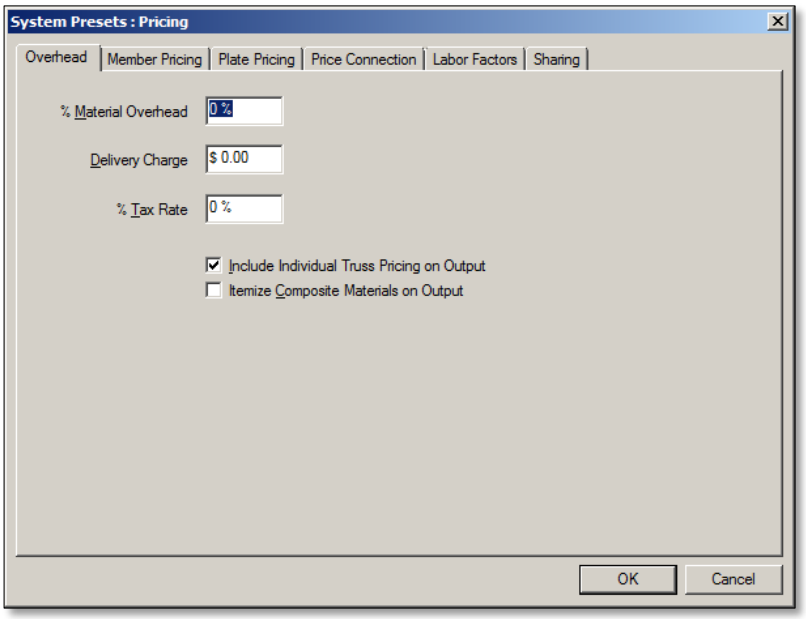


Figure 41: The *Overhead* tab in *Pricing Presets*.

Include Individual Truss Pricing on Output – When activated, this checkbox provides the charges for each individual truss on all document output. If this option is not selected, truss pricing is output as a single, lump sum.

Itemize Composite Materials Output – When this checkbox is activated, GS Truss provides a detailed breakdown of costs associated with multi-part materials.

Command Buttons

OK – To save your changes and close the *Pricing Presets* dialog box, click on the *OK* button.

Cancel – To discard your changes and close the *Pricing Presets* dialog box, click on the *Cancel* button.

MEMBER PRICING TAB

The *Member Pricing* tab allows users to define the cost for each type of material in the *Material Database*.

Material – This field provides a drop-down list of all *Material Databases* available in the system. The contents of the selected *Material Database* are displayed in the columns that appear below this drop-down field.

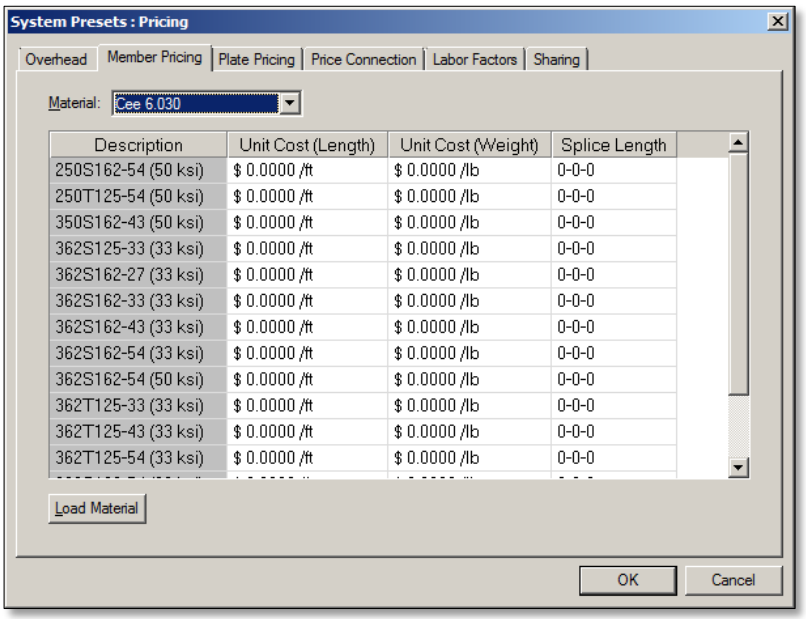


Figure 42: The *Member Pricing* tab in *System Presets*.

Material Details

Description – The *Description* field contains the name assigned to each material. Values in this field may not be edited by the user.

Unit Cost (Length) – This field lists the truss manufacturer's cost, by specified length, for each given material. Values in this field may be edited directly by the user. When a user changes the *Unit Cost (Length)* value, GS Truss automatically recalculates the associated value in the *Unit Cost (Weight)* field.

Unit Cost (Weight) – This field provides the truss manufacturer's cost, by specified weight, for each given material. Values in this field may be edited directly by the user. When a user changes the *Unit Cost (Weight)* value, GS Truss automatically recalculates the associated value in the *Unit Cost (Length)* field.

Splice Length – Values in the *Splice Length* field reflect the maximum length to be used for each given material. Materials that exceed this limit will be spliced. Values in this field may be edited directly by the user.

Command Buttons

OK – To save your changes and close the *Pricing Presets* dialog box, click on the *OK* button.

Cancel – To discard your changes and close the *Pricing Presets* dialog box, click on the *Cancel* button.

Load Material – The *Load Material* command button opens the *Material Pricing* dialog box, which is used to assign cost and splice-length values to materials that have been added to the *Material Database*. As you can see in the Figure 43 at right, the topmost section of the *Material Pricing* dialog box displays a description of the new material, and prompts the user to enter a value for its

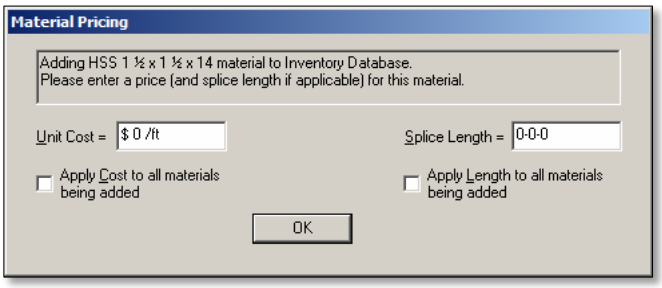


Figure 43: The *Material Pricing* dialog box.

Unit Cost and *Splice Length*. Once these values have been entered, clicking on the *OK* button adds the new pricing and splice-length data to the *Material Database* and pulls up the next new material to be configured. When values for all new materials have been entered, clicking on the *OK* button closes the *Material Pricing* dialog box. If you wish to enter identical values for multiple materials, enable the *Apply Cost to all materials being added* checkbox, and/or the *Apply length to all materials being added* checkbox, as appropriate.

PLATE PRICING TAB

The *Plate Pricing* tab allows users to define the cost for each type of plate in the *Material Database*.

Material – This field provides a drop-down list of all *Material Databases* available in the system. The plate-related contents of the selected *Material Database* are displayed in the columns that appear below this drop-down field. Note that some *Material Databases* do not contain plates.

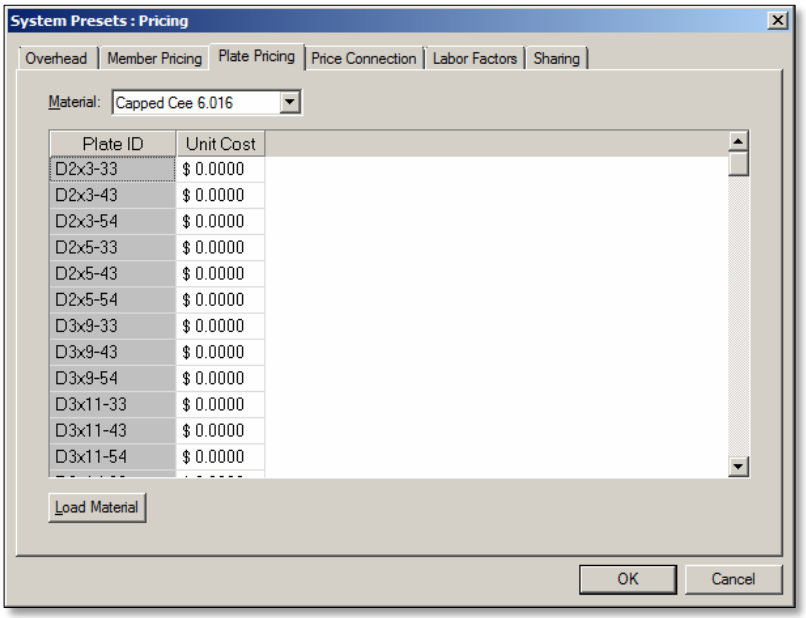


Figure 44: The *Plate Pricing* tab in *Pricing Presets*.

Plate Details

Plate ID – The *Plate ID* column displays a unique identifier for each plate in the database. Values in this field may not be edited by the user.

Unit Cost – The *Unit Cost* field lists the truss manufacturer's cost for each plate type. Values in this field may be edited directly by the user.

Command Buttons

OK – To save your changes and close the *Pricing Presets* dialog box, click on the *OK* button.

Cancel – To discard your changes and close the *Pricing Presets* dialog box, click on the *Cancel* button.

Load Material – The *Load Material* command button opens the *Material Pricing* dialog box, which is used to assign prices to plates that have been added to the *Material Database*. As you can see in the Figure 45 at right, the topmost section of the *Material Pricing* dialog box displays a description of the new plate, and prompts the user to enter a value for its *Unit Cost*. Once a *Unit Cost* value has been entered, clicking on the *OK* button adds the pricing data to the *Material Database* and pulls up the next new plate to be priced. When values for all new plates have been entered, clicking on the *OK*

Figure 45: The *Material Pricing* dialog box for plates.

button closes the *Material Pricing* dialog box. If you wish to enter identical cost values for multiple plates, enable the *Apply Cost to all materials being added* checkbox.

PRICE CONNECTION TAB

The *Price Connection* tab allows users to define the cost for each type of connector in the *Material Database*.

Material – This field provides a drop-down list of all *Material Databases* available in the system. The connector-related contents of the selected *Material Database* are displayed in the columns that appear below this drop-down field.

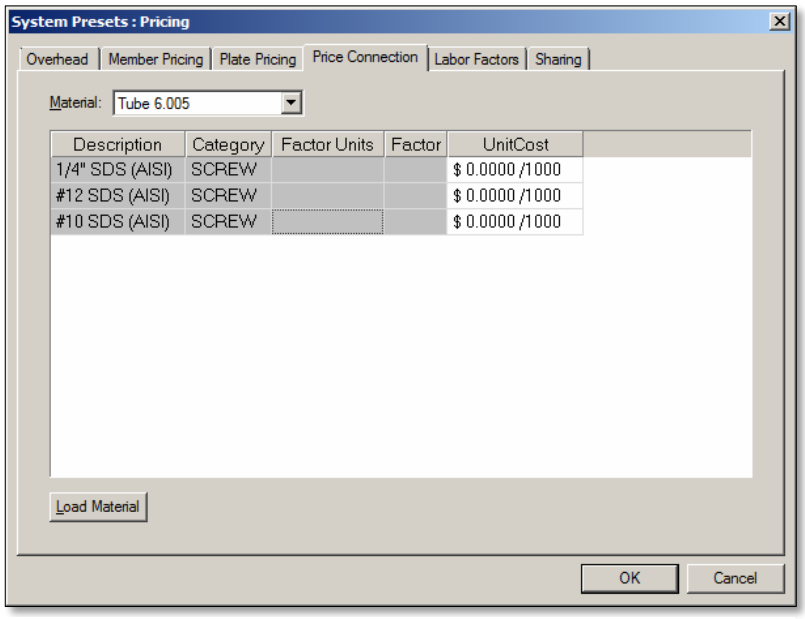


Figure 46: The *Price Connection* tab in *Pricing Presets*.

Connection Details

Description – The *Description* column displays a unique identifier for each connector in the database. Values in this field may not be edited by the user.

Category – The *Category* column provides a classification for each type of connector. Categories of connectors include *Screw*, *Pin*, and *Glue*. Values in this field may not be edited by the user.

Factor Units – The *Factor Units* column applies only to "glue" connector types. It specifies the unit of measure used to express the coverage provided by a given glue type (for example, milliliters). Values in this field may not be edited by the user.

Factor – As with *Factor Units*, this column applies only to "glue" connector types. The *Factor* column lists the number of units of glue that are required to cover a specified area. (For example, the number of milliliters of glue required per square inch.) Values in this field may not be edited by the user.

Unit Cost – The *Unit Cost* column provides the truss manufacturer's cost, per piece or specified number of pieces, for a given connector. Values in this field may be edited directly by the user.

Command Buttons

OK – To save your changes and close the *Pricing Presets* dialog box, click on the *OK* button.

Cancel – To discard your changes and close the *Pricing Presets* dialog box, click on the *Cancel* button.

Load Material – The *Load Material* command button opens the *Material Pricing* dialog box, which is used to assign prices to connectors that have been added to the *Material Database*. As you can see in Figure 47 at right, the topmost section of the *Material Pricing* dialog box displays a description of the new connector, and prompts the user to enter a value for its *Unit Cost*. Once a *Unit Cost* value has been entered, clicking on the *OK* button adds the pricing data to the *Material Database* and pulls up the next new connector to be priced. When values for all new connectors have been entered, clicking on the *OK* button closes the *Material Pricing* dialog box. If you wish to enter identical cost values for multiple connectors, enable the *Apply Cost to all materials being added* checkbox.

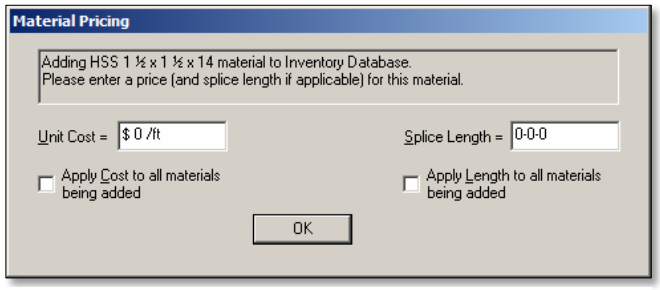


Figure 47: The *Material Pricing* dialog box for connectors.

LABOR FACTORS TAB

The *Labor Factors* tab allows users to define workforce expenses associated with the truss manufacturing process.

Factor Desc – The *Factor Description* column provides a drop-down list of work products associated with specific, labor-related processes or activities. A single value is selected from the drop-down list for each row in this column. Drop-down-list values cannot be edited by the user.

Param – Where applicable, the *Parameters* column provides a variable that is used to constrain the calculation of costs for a given work product. Depending upon the *Factor Description* selected, values in the *Parameters* column may or may not be edited directly by the user.

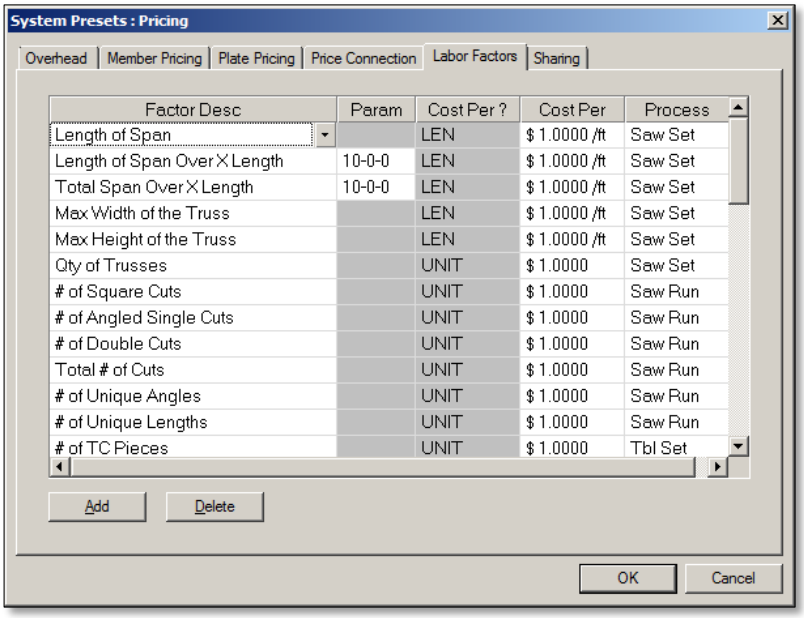


Figure 48: The *Labor Factors* tab in *Pricing Presets*.

Cost Per ? – This column contains the unit of measure associated with the *Cost Per* field. (For example, cost per *unit*, cost per specified *length*, and so on.) Values in this field cannot be edited by the user.

Cost Per – The *Cost Per* column lists the total expense associated with a given *Factor Description*, based on the defined unit of measure. Values in this field can be edited directly by the user.

Process – The *Process* column provides a drop-down of activities to which a cost is to be applied. A single value is selected from the drop-down list for each row in this column. The list of potential values includes: *Saw Set*, *Saw Run*, *Tbl Set*, and *Tbl Run*. Drop-down-list values cannot be edited by the user.

Command Buttons

Add – The *Add* button is used to insert a blank row at the bottom of the current list.

Delete – The *Delete* button erases the currently selected row.

OK – Clicking on the *OK* button saves your changes and closes the *Pricing Presets* dialog box.

Cancel – Clicking on the *Cancel* button discards your changes and closes the *Pricing Presets* dialog box.

SHARING TAB

The *Sharing* tab is used to create a file with pricing information that can be distributed to multiple users. This file provides a way to maintain consistent pricing information across a group of designers.

Name

Name – This field is used to enter a *Name* for a new, shared pricing-information file.

Create – Once a new name has been entered into the *Name* field, the *Create* button is activated. When a user clicks on the *Create* button, GS Truss creates a new pricing file and the newly created file name appears in the *Files* pane below.

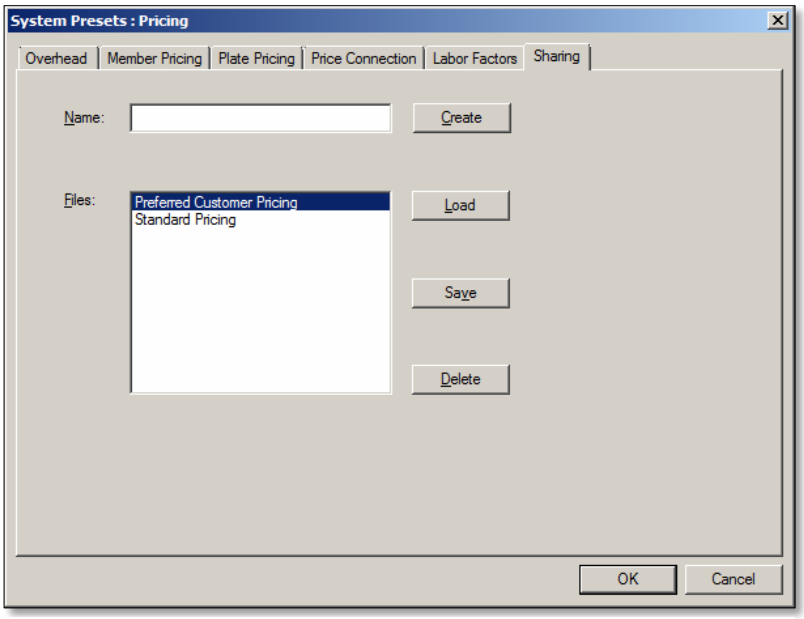


Figure 49: The *Sharing* tab in *Pricing Presets*.

Files

Load – To activate a specific pricing-information file, select the desired file in the *Files* pane and then click on the *Load* button. The *Pricing* values defined in the selected file will be loaded into each of the tabs of the *Pricing Presets* window.

NOTE! Changes made to values in any of the *Pricing Preset* tabs only affect the active pricing file.

Save – When clicked, the *Save* button saves changes to the active pricing file.

Delete – The *Delete* button erases the selected pricing-information file.

Other Command Buttons

OK – Click on the *OK* button to save your changes and close the *Pricing Presets* dialog box.

Cancel – Click on the *Cancel* button to discard your changes and close the *Pricing Presets* dialog box. (Note: Clicking on the *Cancel* button will not undo changes implemented through the use of the other command buttons on the *Sharing* tab.)

Cutting/Plotting Presets

Cutting/Plotting Presets allow users to define such things as roll-former output and the format and content of cutting and plotting reports.

CUTTING TAB

The *Cutting* tab defines options for *Cut List* reports and roll-former outputs.

Report Format

Output Type – The *Output Type* radio buttons are used to designate the kind of *Cut List* reports to be produced. The two potential values are:

- *Individual* – When selected, this radio button outputs a separate *Cut List* report for each truss.
- *Consolidated* – When the *Consolidated* radio button is selected, GS Truss outputs a single *Cut List* report for an entire job.

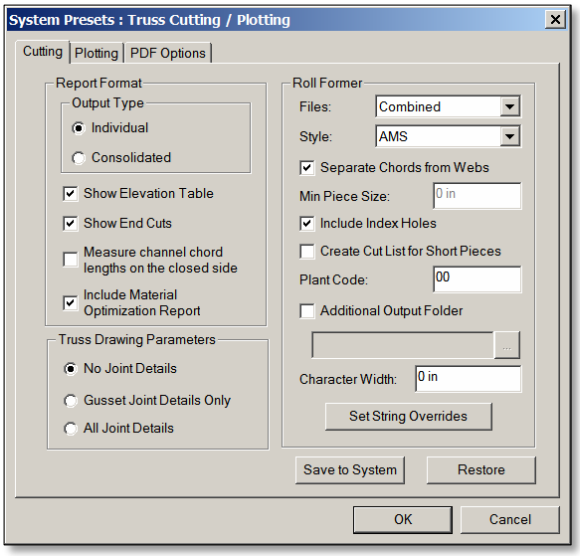


Figure 50: The *Cutting* tab in *Cutting/Plotting Presets*.

Show Elevation Table – When activated, this checkbox adds *Elevation Table* information to the bottom of *Cut List* reports.

Show End Cuts – When this checkbox is activated, *Cut List* reports include a picture of each piece needed to construct the truss.

Measure channel chord lengths on the closed side – Depending on the *Cut Type* specified, the length of the closed and open sides of channel chords may differ slightly. Activating this checkbox ensures that measurements are always calculated using the closed side of channel chords.

Include Material Optimization Report – When this checkbox is activated, GS Truss generates a *Material Optimization Report* when outputting roll former files.

Truss Drawing Parameters

The *Truss Drawing Parameter* radio buttons are used to define the detail level of joint information to be included in *Cut List* reports.

No Joint Details – When the *No Joint Details* radio button is selected, GS Truss omits all joint-specific information from *Cut List* reports.

Gusset Joint Details Only – When this radio button is selected, *Cut List* reports provide detailed information about all truss members joined with a gusset plate.

All Joint Details – When the *All Joint Details* radio button is selected, comprehensive information about each joint is provided in *Cut List* reports.

Roll Former

Files – The *Files* drop-down list determines whether roll-former files are output as *Individual* text files or *Combined* into a single text file.

Style – The *Style* drop-down list defines the type of roll-former files to be produced. Potential values include: *AMS*, *Bosch*, *GSS* (Global Steel Systems), and *JSS*. Other fields within the *Cutting* tab become enabled or disabled, depending upon the value selected in this field.

Separate Chords from Webs – When this checkbox is activated, information about webs is broken out from chord information in roll-former files.

Min Piece Size – The *Minimum Piece Size* field defines the smallest length, for an individual truss piece, that can be accommodated by the roll former. Truss pieces that fall below the *Minimum Piece Size* are not sent to the roll former and must be manufactured by another method.

Include Index Holes – When this checkbox is activated, roll-former output includes index holes for aligning chords and webs.

Create Cut List for Short Pieces – When activated, this checkbox generates a *Cut List* for truss pieces too small to be created by a roll former.

Plant Code – The *Plant Code* field is used to enter the truss manufacturer's internal code, which will be printed on roll-former files and materials.

Additional Output Folder – When activated, this checkbox indicates that roll-former files are to be written to a secondary location. Usually, this secondary location is a network share, made available to all users with a need to access roll-former files. Once the *Additional Output Folder* checkbox is activated, users can browse for, and select, the secondary folder of their choosing by clicking on the ellipses command button immediately below this checkbox.

Character Width – The *Character Width* field defines the size of characters printed on pieces output from the roll former. If the roll former selected in the *Style* field of this tab is incapable of printing, or varying the size of print output, this field is disabled.

Set String Overrides – When clicked, the *Set String Overrides* button opens the *Roll Former String Overrides* dialog box pictured at right. Note that, if *GSS* is selected as the value in the *Style* field, then the *Set String Overrides* button changes to *GSS Settings*. (Additional information about *String Overrides* and *GSS Settings* is scheduled for publication under a separate document.)

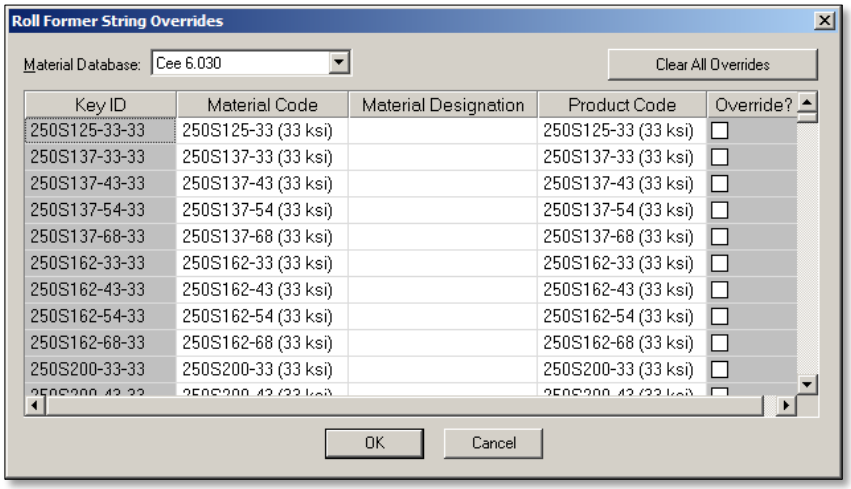


Figure 51: The *Roll Former String Overrides* dialog box.

Other Command Buttons

The command buttons at the bottom of the *Cutting* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

PLOTTING TAB

The *Plotting* tab is used to define the content and format of GS Truss engineering drawings.

Report Format

Output Type – The *Output Type* radio buttons are used to designate the kind of plot drawings to be produced. The two potential values are:

- *Full* – When the *Full* radio button is selected, GS Truss generates plot drawings that contain detailed analysis information, as well as lists of all bearing combinations and load cases.
- *Consolidated* – When the *Consolidated* radio button is selected, GS Truss outputs an abbreviated version of the *Full Output Type*. Detailed analysis information is provided, however, load-case and bearing-combination data are displayed only as brief notes.

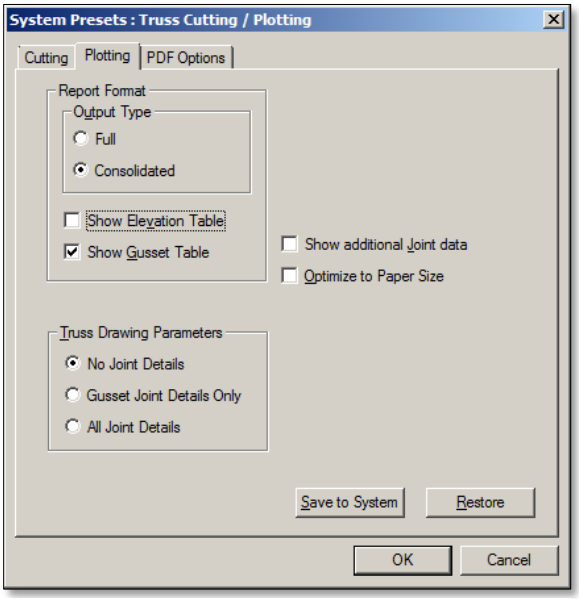


Figure 52: The *Plotting* tab in *Cutting/Plotting Presets*.

Show Elevation Table – When this checkbox is activated, *Elevation Table* data is added to the bottom of all plot drawings.

Show Gusset Table – When the *Show Gusset Table* checkbox is activated, GS Truss inserts a table with gusset plate information into plot drawings. Note that the gusset-table data is not populated automatically for all material types.

Truss Drawing Parameters

The *Truss Drawing Parameter* radio buttons are used to define the detail level of joint information to be included in plot drawings.

No Joint Details – When selected, this radio button excludes all detailed joint information from plot drawings.

Gusset Joint Details Only – When this radio button is selected, GS Truss includes detailed information about gusset joints in plot drawings.

All Joint Details – The *All Joint Details* radio button provides detailed information about all joint types in plot drawings.

[Other]

Show Additional Joint Data – When this checkbox is activated, GS Truss adds coordinate-point data to the *Joint Details* section of plot drawings.

Optimize to Paper Size – When activated, this checkbox adjusts the size of plot drawings to best fit the paper on which they are being printed.

Command Buttons

The command buttons at the bottom of the *Plotting* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

Jig Setting Presets

Jig Setting Presets are used to create, define, and modify the configuration of jig tables. Users may create as many jig tables as needed for the manufacture of trusses.

Height of all tables – This field is used to define the maximum height of jig tables. (See "*Table Height*" in Figure 54 below.)

Distance from bottom of tables to bottom of rails – This field specifies the gap between the bottom portion of the jig table and the rails that are affixed to it. (See "*Bottom Rail Distance*" in Figure 54.)

Stop Diameter – The *Stop Diameter* field defines the width of fixtures (stops) used to hold trusses in place on the jig table during assembly.

Distance from center of stop to pointer – This field specifies the distance between stops and the pointer, which is a measurement guide used for placing stops on the jig table.

Show Stops on Report – When this checkbox is activated, GS Truss displays the location of jig table stops on the *Jig Settings* report. (See "*Stops*" in Figure 54.)

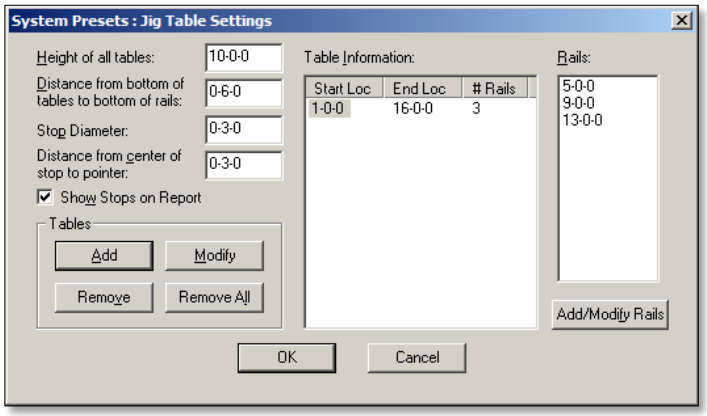


Figure 53: The *Jig Setting Presets* dialog box.

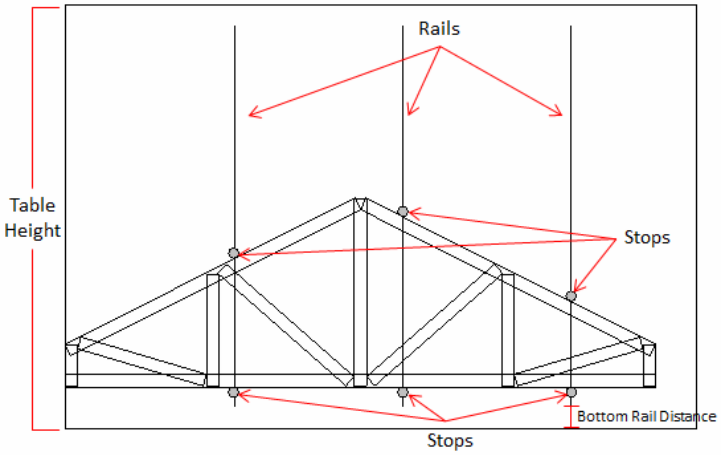


Figure 54: An example of a jig table set up.

TABLES

Add – The *Add* command button opens the *Add Jig Table* dialog box pictured at right. This dialog box is used to create settings for a new jig table within GS Truss.

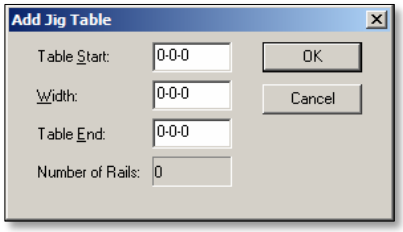


Figure 55: The *Add Jig Table* dialog box.

Modify – The *Modify* command button is used to edit the properties of the jig table currently selected in the *Table Information* pane of the *Jig Table Settings* dialog box.

Remove – The *Remove* command button deletes the jig table currently selected in the *Table Information* pane of the *Jig Table Settings* dialog box.

Remove All – The *Remove All* command button deletes all jig tables listed in the *Table Information* pane of the *Jig Table Settings* dialog box.

TABLE INFORMATION

Columns in the *Table Information* pane display basic configuration information about each separate jig table that has been created in GS Truss.

Start Loc – The *Start Location* column displays the location at which measurement of the jig table begins.

End Loc – The *End Location* column displays the location at which measurement of the jig table ends.

 # Rails – The *# Rails* column lists the total number of rails secured to the jig table.

RAILS

Add/Modify Rails – The *Add/Modify Rails* command button opens the *Rail Settings* dialog box (right), which is used to place additional rails on a jig table, modify the location of existing rails, or delete one or more rails altogether.

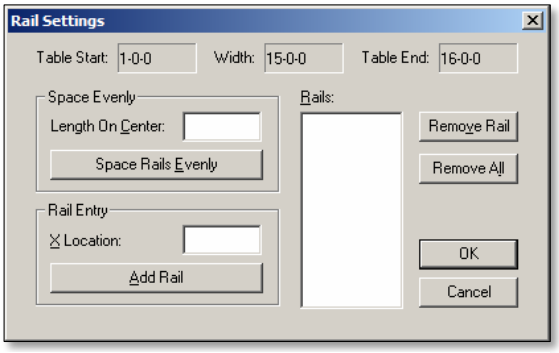


Figure 56: The *Rail Settings* dialog box.

Geometry Presets

Geometry Presets are used to establish default values for truss shapes and configurations.

GENERAL TAB

The *General* tab of *Geometry Presets* is used to define parameters for truss heels and overhangs.

Heels

Heel Height – The *Heel Height* field defines the vertical dimension, measured from the top of the top chord through the bottom of the bottom chord, on either end of the truss.

Plate Height – The *Plate Height* field specifies the height of the wall on which a truss will sit. The value entered here will also populate the *Plate Height* field in the *Oddball Startup* dialog box.

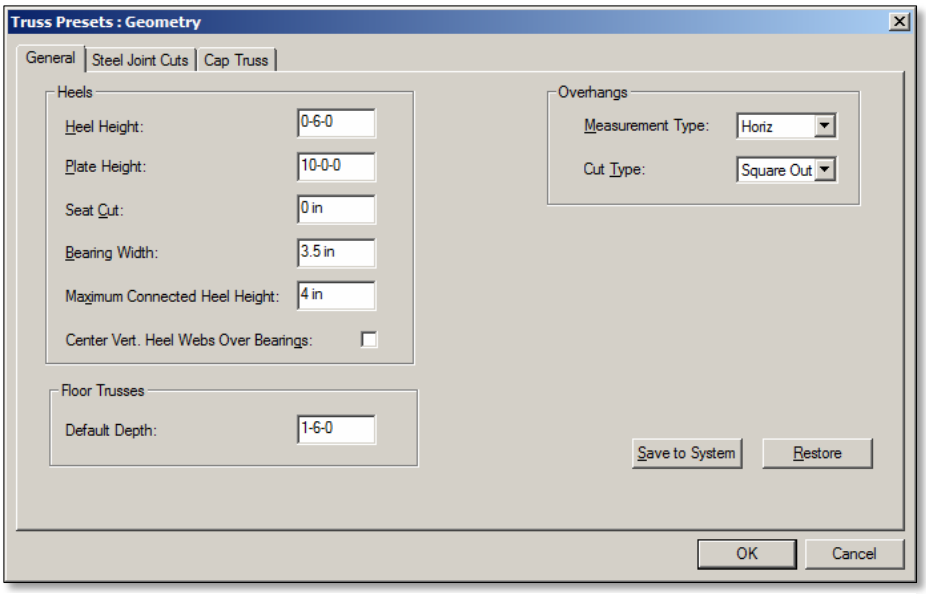
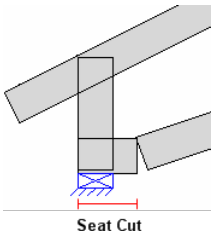


Figure 57: The *General* tab in *Geometry Presets*.

Seat Cut – Used primarily for scissor trusses, this field specifies dimensions for a *Seat Cut*; a horizontal section of truss, at the end of a sloping bottom chord, which provides a level surface for the truss to rest on a bearing. (See the figure at right.)

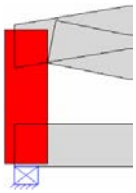


Bearing Width – The *Bearing Width* field defines the default thickness of the wall or structure on which a truss will sit.

Maximum Connected Heel Height – This measurement dictates whether or not a truss has a connected heel. (Connected heels do not have diagonal webs placed at their ends.) Any heel that is below the *Maximum Connected Heel Height* will be drawn as a connected heel. Any heel that is greater than this value will include a connecting (vertical) heel web, as well as a diagonal web.

Center Vert. Heel Webs Over Bearings – When this checkbox is activated, vertical-heel webs are centered over their supporting bearings.

WARNING! When the *Center Vert. Heel Webs Over Bearings* checkbox is activated and you have a vertical-heel web that is substantially wider than the bearing on which it sits, centering the web over the bearing may force the web to extend beyond the natural profile of the truss. (See the figure at right.)



Overhangs

Measurement Type – The *Measurement Type* drop-down list specifies how the length of the overhang will be measured. The list of potential values includes:

- *Vertical* – The dimension/length of the overhang is calculated vertically, from the specified top of the heel down.
- *Horizontal* – The dimension/length of the overhang is calculated horizontally from the specified reference point.
- *Rake* – The dimension/length of the overhang is calculated along the angle of the truss member from which the overhang extends.

Cut Type – The *Cut Type* drop-down list defines the style of cut to be made at the end of truss overhangs. The list of potential values includes: *Plumb*, *Square In*, *Square Out*, and *Horizontal*. (See Figure 58 below.)

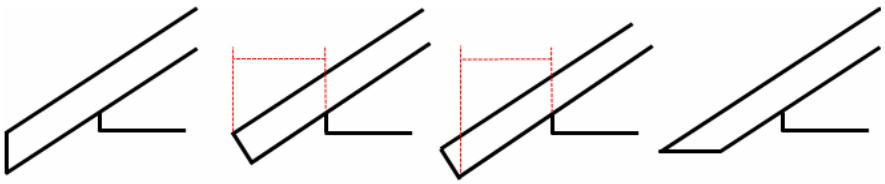


Figure 58: Plumb Cut Square In Square Out Horizontal Cut

NOTE! The difference between "*Square In*" and "*Square Out*" is one of dimension. That is to say, though the cuts themselves are identical, the actual length of each overhang will differ, with a "*Square In*" overhang being slightly shorter than a "*Square Out*" overhang of the same specified dimension.

Floor Trusses

Default Depth – This field defines the standard depth for floor trusses that are created manually.

Command Buttons

The command buttons at the bottom of the *General* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

STEEL JOINT CUTS TAB

The *Steel Joint Cuts* tab allows users to differentiate joint-cut criteria for all truss segments, based on whether a truss is a standard or a tube truss. Cuts for standard trusses are further differentiated based upon whether the truss is *Structural* or *Non-Structural*.

Pitch Break Cuts

There are four potential cut types for pitch breaks on standard trusses: *Open*, *Lapped*, *Vertical*, and *Miter*. Before going into detail about these cuts types, we will turn to defining the truss segments to which these cuts may be applied.

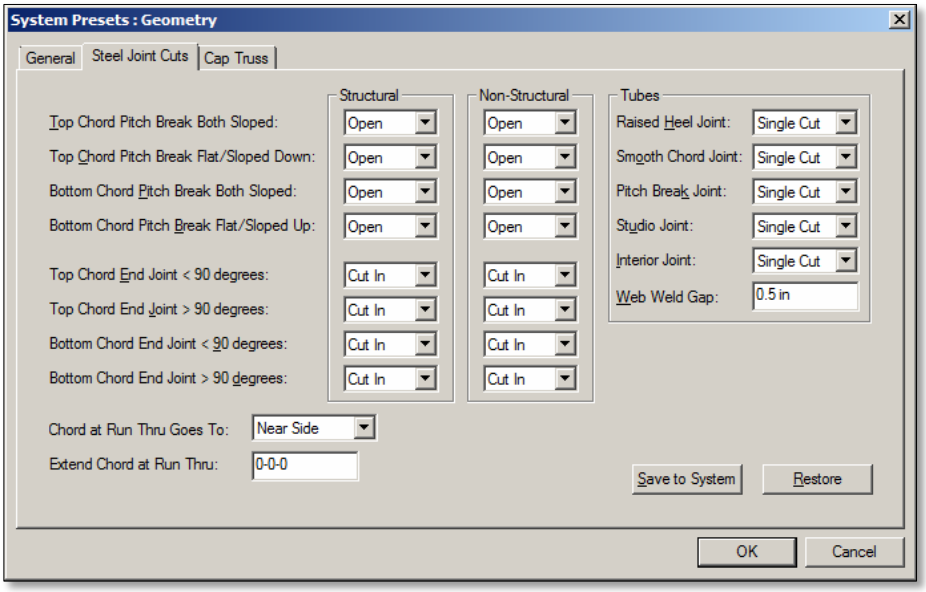


Figure 59: The *Steel Joint Cuts* tab in *Geometry Presets*.

Top Chord Pitch Break Both Sloped – A top chord joint where both of the intersecting members are sloped. (See Figure A below.)

Top Chord Pitch Break Flat/Sloped Down – A top chord joint where a flat portion of top chord intersects with a sloped section of top chord. (See Figure B below.)

Bottom Chord Pitch Break Both Sloped – A bottom chord joint where both of the intersecting members are sloped. (See Figure C below.)

Bottom Chord Pitch Break Flat/Sloped Up – A bottom chord joint where a flat portion of bottom chord intersects with a sloped section of bottom chord. (See Figure D below.)

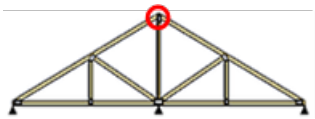


Figure A

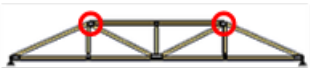


Figure B

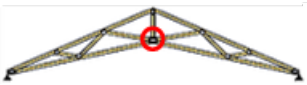


Figure C


Figure D

As mentioned previously, there are four different cut types that can be specified for joints at pitch breaks. (See Figure 60 on the following page):

- *Open* – The ends of *Open* cut truss members touch at a single point.
- *Lapped* – The ends of *Lapped* cut truss members overlie one another.
- *Vertical* – The ends of *Vertical* cut truss members connect on a vertical plane. (That is, materials are cut at the angles needed to form a vertical connection.)
- *Miter* – The ends of *Miter* cut truss members are joined at complimentary angles that allow the two pieces to dovetail together at the joint.

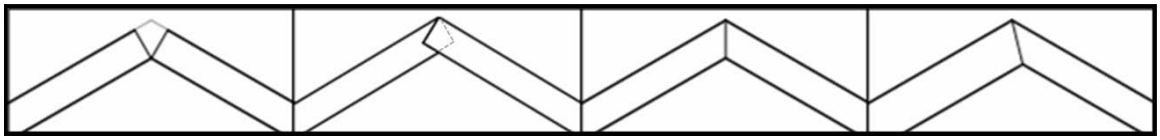


Figure 60: Open Lapped Vertical Miter

End Joint Cuts

There are three potential cut types for end joints on standard trusses: *Cut In*, *Cut Out*, and *Plumb Cut*. Before going into detail about these cuts types, we will turn to defining the truss segments to which these cuts can be applied.

Top Chord End Joint < 90 degrees – An end joint, usually at a heel, where the top chord members intersect at less than 90 degrees.

Top Chord End Joint > 90 degrees – An end joint, usually at a heel, where the top chord members intersect at an angle greater than 90 degrees.

Bottom Chord End Joint < 90 degrees – An end joint where the bottom chord intersects the heel at less than 90 degrees.

Bottom Chord End Joint > 90 degrees – An end joint where the bottom chord intersects the heel at an angle greater than 90 degrees.

As mentioned previously, there are three different cut types that can be specified for *End Joints*. (See Figure 61):

- *Cut In* – A *Cut In* joint connection does not allow a chord to extend beyond the vertical plane of its heel. The chord is cut at 90 degrees.
- *Cut Out* – This joint connection allows a chord to extend beyond the vertical plane of its heel. The chord is cut at 90 degrees.

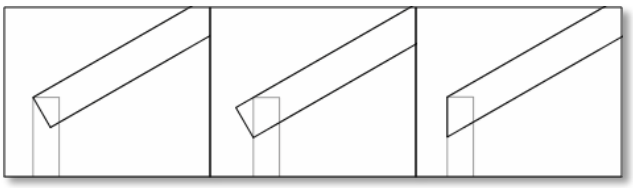


Figure 61: Cut In Cut Out Plumb Cut

- *Plumb Cut* – With a *Plumb Cut* joint connection, the chord forms a flush connection with its heel member. The chord is cut at the angle necessary to achieve this connection.

Chord at Run Thru Goes To – This drop-down list defines whether or not a chord will extend beyond its anchoring vertical run through.

- *Near Side* – If this option is selected, the chord is trimmed flush with the vertical web to which it is anchored and does not extend beyond it.

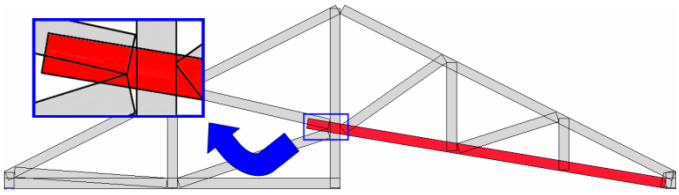


Figure 62: The bottom chord of this studio truss extends to the *Far Side* of its anchoring king post.

- *Far Side* – If this option is selected, the chord extends beyond the vertical web (run through) to which it is anchored. (See Figure 62.)

Extend Chord at Run Thru – This field is used to define specifically how far the chord extends beyond its anchoring vertical web. It can be used in conjunction with either the *Near Side* or the *Far Side* options presented above.

Tubes

This section of the *Steel Joint Cuts* tab is used to specify the cut types and weld gaps applied to tube materials. There are three potential cut types that can be applied to tube joints: *Single Cut*, *Double Cut*, and *Square Cut*. Before going into detail about these cuts types, we will turn to defining the truss segments to which these cuts can be applied.

- **Raised Heel Joint** – A joint where the heel is elevated such that the top and bottom chords of the truss do not actually touch one another.
- **Smooth Chord Joint** – Any joint that is not at a pitch break or the end of a truss.
- **Pitch Break Joint** – A joint between intersecting chord members where the slope of both members is of equal or varying pitch.
- **Studio Joint** – A joint where a chord intersects the vertical web of a studio truss. (See Figure 62 on the preceding page.)
- **Interior Joint** – A joint where a web on the top part of an attic truss gets a collar tie (a horizontal web).

As mentioned previously, there are three different cut types that can be applied to tube joints. (See the figures below):

- **Single Cut** – Tubes are cut once, at varying degrees, and do not overlap one another at joints.
- **Double Cut** – Tubes are cut twice, allowing webs to connect fully at the joint.
- **Square Cut** – Tubes are cut at 90 degrees, providing minimal contact at the joint.

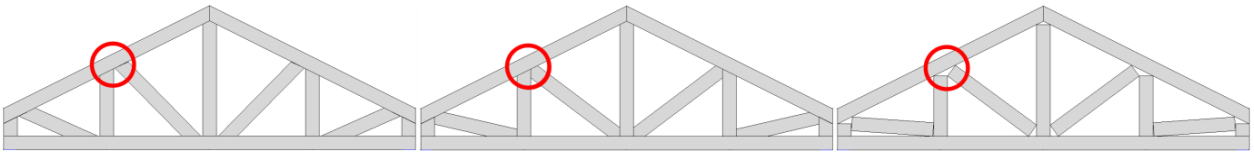


Figure 63: Single Cut Double Cut Square Cut

- **Web Weld Gap** –The *Web Weld Gap* field is used to define the space required between tubes in order to accommodate a weld.

Command Buttons

The command buttons at the bottom of the *Steel Joint Cuts* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button, clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

CAP TRUSS TAB

The *Cap Truss* tab is used to define the default settings for stubbing and capping trusses.

Create Cap With Stub Top – When this checkbox is activated, GS Truss allows for the creation of trusses that are too tall to be manufactured and delivered as a single unit. That is, the topmost section of truss can be created as a separate entity (a "cap"), which is joined to the main body of the truss on site. (See Figure 65 below.)

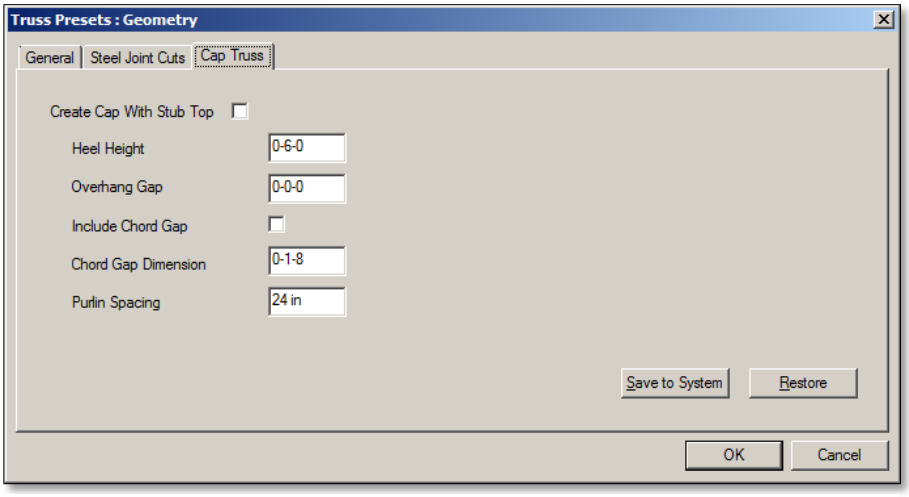


Figure 64: The *Cap Truss* tab in *Geometry Presets*.

Heel Height – The *Heel Height* field is used to define the default dimension of heels for all cap trusses. (See Figure 65.)

Overhang Gap – The *Overhang Gap* field defines the space between the ends of the cap's overhangs and the pitch break of the base. (See Figure 65.)

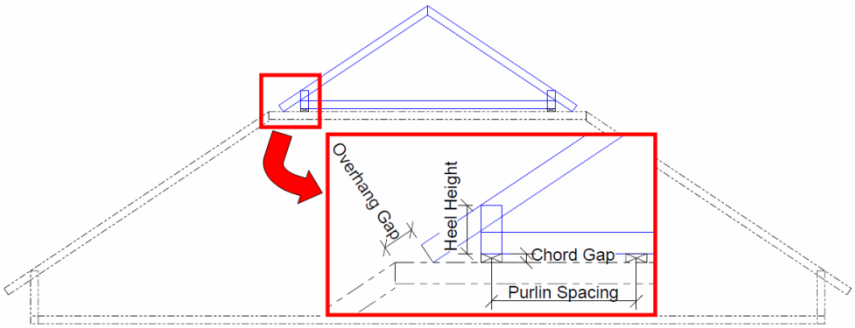


Figure 65: A base truss with a cap truss on top.

Include Chord Gap – When this checkbox is activated, a gap is created between the base truss and its cap. (See Figure 65.)

Chord Gap Dimension – This field defines the measurement of the space between a base truss and its cap. (See Figure 65.)

Purlin Spacing – The *Purlin Spacing* field defines the default distance between bracing mechanisms connecting neighboring trusses on the top chord and the bottom chord. (See Figure 65.)

Command Buttons

The command buttons at the bottom of the *Cap Truss* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

Engineering/Design Presets

Engineering/Design Presets delineate default design and loading standards, as well as material limits and deflection criteria.

DESIGN TAB

The *Design* tab is used to define engineering fundamentals, such as the building code to be implemented, bumping rules for chords, and web crippling.

Building Code – The *Building Code* drop-down list is used to select the primary building code to be applied to truss designs. The list of potential values includes:

FBC – 2010
FBC – 2007
FBC – 2004
IBC – 2012
IBC – 2009
IBC – 2006
IBC – 2003
IBC – 2000
IRC – 2012
IRC – 2009
IRC – 2006
IRC – 2003
IRC – 2000

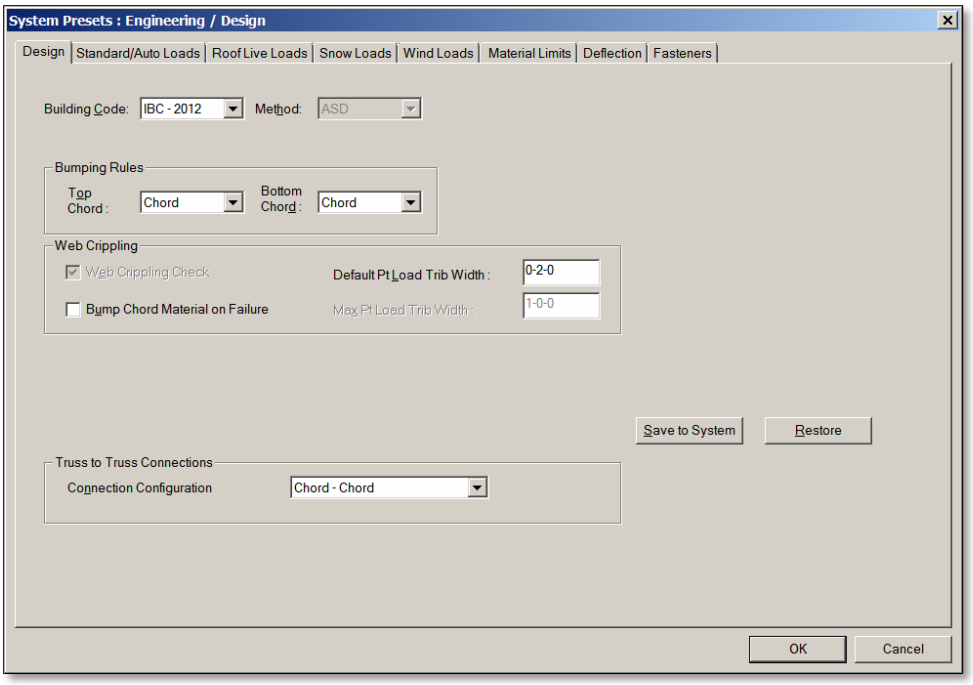


Figure 66: The *Design* tab in *Engineering/Design Presets*.

Method – The *Method* drop-down list is used to select the preferred design methodology. Currently, *Allowable Strength Design* (*ASD*) is the only methodology available in GS Truss.

Bumping Rules

The *Bumping Rules* section of the *Design* tab is used to define the rules for upgrading materials automatically to satisfy design requirements.

Top Chord – The *Top Chord* drop-down list provides three options for bumping top-chord materials:

- *Chord* – The entire chord will be bumped as a single unit.
- *Segment* – Bumping will be implemented, as required, for individual segments of a chord.
- *Piece* – Material bumping will be applied at the level of individual truss pieces.

Bottom Chord – The *Bottom Chord* drop-down list provides three options for bumping bottom-chord materials:

- *Chord* – The entire chord will be bumped as a single unit.
- *Segment* – Bumping will be implemented, as required, for individual segments of a chord.
- *Piece* – Material bumping will be applied at the level of individual truss pieces.

Web Crippling

The *Web Crippling* section of the *Design* tab is used to define parameters for the automated review and revision of the structural integrity of webs.

Web Crippling Check – When this checkbox is activated, GS Truss executes web-crippling checks on all trusses with point loads. (Note: This checkbox is only enabled for those working in GS Truss with engineer credentials.)

Bump Chord Material on Failure – When this checkbox is activated, GS Truss automatically bumps chord materials that fail the web-crippling check.

Default Pt Load Trib Width – This field defines the *Tributary Width* to be used as the default value for the application of point loads.

Max Point Load Trib Width – This field defines the maximum *Tributary Width* to be used for the application of point loads.

Truss-to-Truss Connections

Connection Configuration – The value selected from this drop-down list is used to define the default connections between carried trusses and girders. The list of potential values includes:

- *Chord - Chord*
- *Web - Web Flange*
- *Web - Web Face*

Command Buttons

The command buttons at the bottom of the *Design* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button, clicking on either the *Restore* or *Cancel* buttons will not reinstate previous settings.

STANDARD/AUTO LOADS TAB

The *Standard/Auto Loads* tab is used to define default values for live and dead loads, as well as the spacing of purlins for top and bottom chords.

Roof Standard Loads

Standard Loads are applied to all trusses created in GS Truss. Default values for live and dead loads are to be entered as per code.

Top Chord Live – This figure represents weight that is produced by the use and occupancy of a building, as it applies to the top chords of trusses.

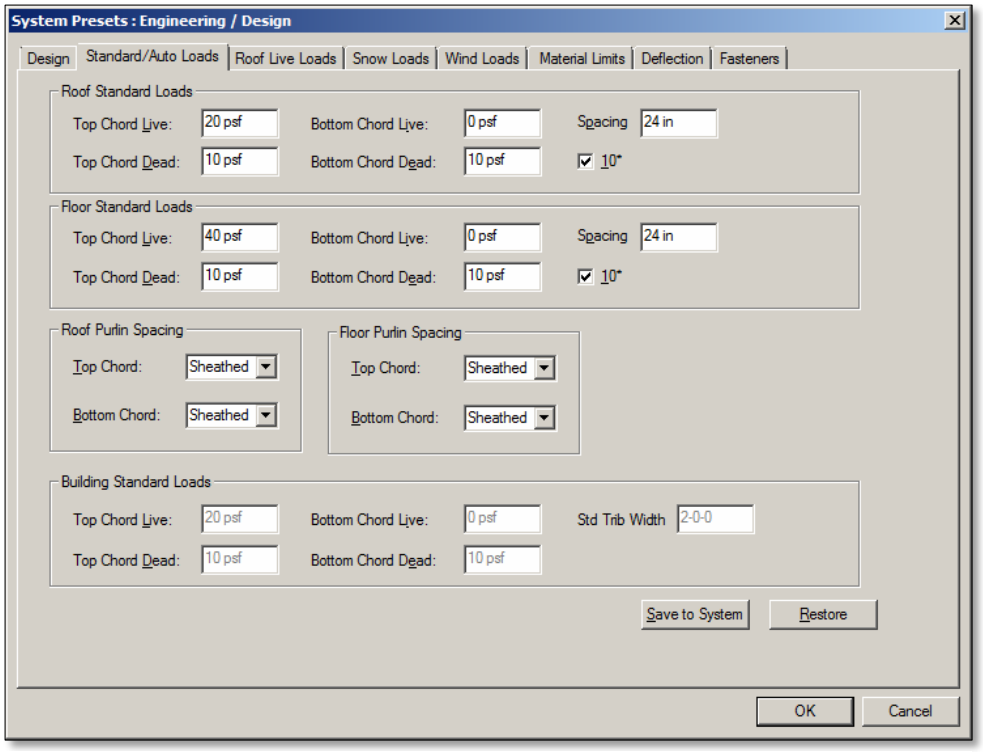


Figure 67: The *Standard/Auto Loads* tab in *Engineering/Design Presets*.

Top Chord Dead – This figure represents weight that is permanent, unmoving, and consistent across the top chord of a truss.

Bottom Chord Live – This figure represents weight that is produced by the use and occupancy of a building, as it applies to the bottom chord of trusses.

Bottom Chord Dead – This figure represents weight that is permanent, unmoving, and consistent across the bottom chord of a truss.

Spacing – This field is used to define the default distance between trusses.

10* – When this checkbox is activated, GS Truss adds a new, non-concurrent, live load case that applies 10 pounds per square foot to the bottom chord of trusses.

Floor Standard Loads

Top Chord Live – This figure represents weight that is produced by the use and occupancy of a building, as it applies to the top chords of trusses.

Top Chord Dead – This figure represents weight that is permanent, unmoving, and consistent across the top chord of a truss.

Bottom Chord Live – This figure represents weight that is produced by the use and occupancy of a building, as it applies to the bottom chord of trusses.

Bottom Chord Dead – This figure represents weight that is permanent, unmoving, and consistent across the bottom chord of a truss.

Spacing – This field is used to define the default distance between trusses.

10* – When this checkbox is activated, GS Truss adds a new, non-concurrent, live load case that applies 10 pounds per square foot to the bottom chord of trusses.

Roof Purlin Spacing

Top Chord – The *Top Chord* field is used to specify the distance between horizontal bracing components that connect neighboring trusses on their top chords. Users may elect to type in a dimension for the on-center spacing of purlins, or they may select one of the following two options from the drop-down list:

- *Sheathed* – Rather than using purlins, bracing is provided solely by the layer of sheathing materials applied to the top chord.
- *Sparse* – With *Sparse* bracing, purlins are placed within 6" of each panel point.

Bottom Chord – The *Bottom Chord* field is used to specify the distance between horizontal bracing components that connect neighboring trusses on their bottom chords. Users may elect to type in a dimension for the on-center spacing of purlins, or they may select one of the following two options from the drop-down list:

- *Sheathed* – Rather than using purlins, bracing is provided solely by the layer of sheathing materials applied to the bottom chord.
- *Sparse* – With *Sparse* bracing, purlins are placed within 6" of each panel point.

Building Standard Loads

The fields of the *Building Standard Loads* section of the *Standard/Auto Loads* tab are populated with values pulled from the most recent GS Plan ITR file to be opened within GS Truss. The values entered into these fields cannot be edited directly by the user.

Top Chord Live – This figure represents weight that is produced by the use and occupancy of a building, as it applies to the top chords of trusses.

Top Chord Dead – This figure represents weight that is permanent, unmoving, and consistent across the top chord of a truss.

Bottom Chord Live – This figure represents weight that is produced by the use and occupancy of a building, as it applies to the bottom chord of trusses.

Bottom Chord Dead – This figure represents weight that is permanent, unmoving, and consistent across the bottom chord of trusses.

Std Trib Width – The *Standard Tributary Width* field holds the default value for that area of a roof where a load acts on the truss immediately below it. *Tributary Width* includes the width of the given truss, plus half the distance to the adjoining trusses on either side of it. (See Figure 68 at right.)

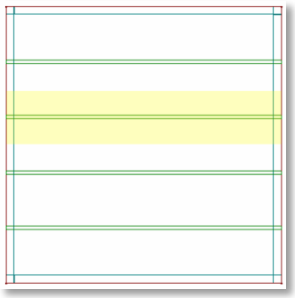


Figure 68: Tributary width shown here in yellow.

Command Buttons

The command buttons at the bottom of the *Standard/Auto Loads* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

ROOF LIVE LOADS TAB

This tab is used to define the *Building Code* to be provisioned for *Roof Live Loads*, as well as the default values for the *Slope* and *Supported Area* to which those loads will be applied.

Apply automated roof live load adjustments – When this checkbox is activated, roof live loads are adjusted automatically in accord with the other settings on this tab.

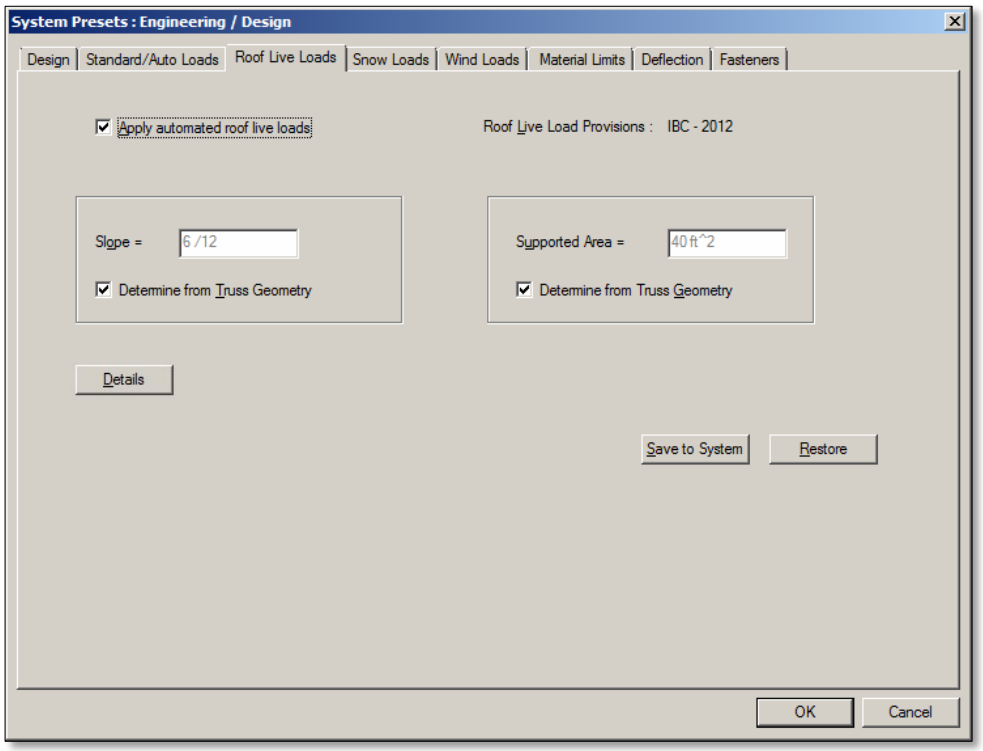


Figure 69: The *Roof Live Loads* tab in *Engineering/Design Presets*.

Roof Live Load Provisions – This read-only field displays the building code currently being used to calculate roof live loads. The value for this field is defined using the *Building Code* drop-down list found on the *Design* tab.

Slope – This field is used to manually enter the roof slope used for roof-live-load-adjustment calculations. Alternatively, users may activate the *Determine from Truss Geometry* checkbox to have GS Truss calculate the roof slope automatically.

- **Determine from Truss Geometry** – If this checkbox is activated, the *Slope* field is grayed out and cannot be edited. GS Truss will calculate the roof slope based on the existing truss geometry. If this checkbox is not activated, the user must manually enter a value in the *Slope* field.

Supported Area – This field is used to manually enter the *Supported Area* used for roof-live-load-adjustment calculations. (The *Supported Area* is equal to the tributary width multiplied by the total span of trusses.) Alternatively, users may activate the *Determine from Truss Geometry* checkbox to have GS Truss calculate the *Supported Area* automatically.

- **Determine from Truss Geometry** – If this checkbox is activated, the *Supported Area* field is grayed out and cannot be edited manually. GS Truss will calculate the *Supported Area* based upon the length of the truss and the defined spacing between trusses. If this checkbox is not activated, the user must manually enter a value in the *Supported Area* field.

Command Buttons

Details – Clicking on the *Details* command button opens a log window like the one pictured at right. This window displays the actual formulas used by GS Truss to adjust roof-live-load calculations. The user must have a truss file open in order for this command button to be enabled and available.

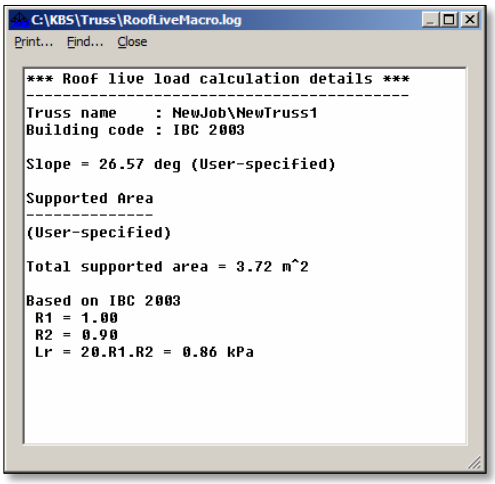


Figure 70: *Roof Live Load Calculation Details Log*.

Save to System – To save your changes to the *Roof Live Load* settings permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

SNOW LOADS TAB

The *Snow Loads* tab is used to define the building code to be provisioned for snow loads, as well as such things as building, terrain, and exposure categories, thermal conditions, ventilation, and roof-surface types.

Apply Snow Loads – When this checkbox is activated, snow loads will be applied to your trusses.

Snow Load Provisions – The *Snow Load Provisions* drop-down list is used to define the version of ASCE7 to be referenced for snow loads. The potential values are:

- *ASCE7-02*
- *ASCE7-05*
- *ASCE7-10*

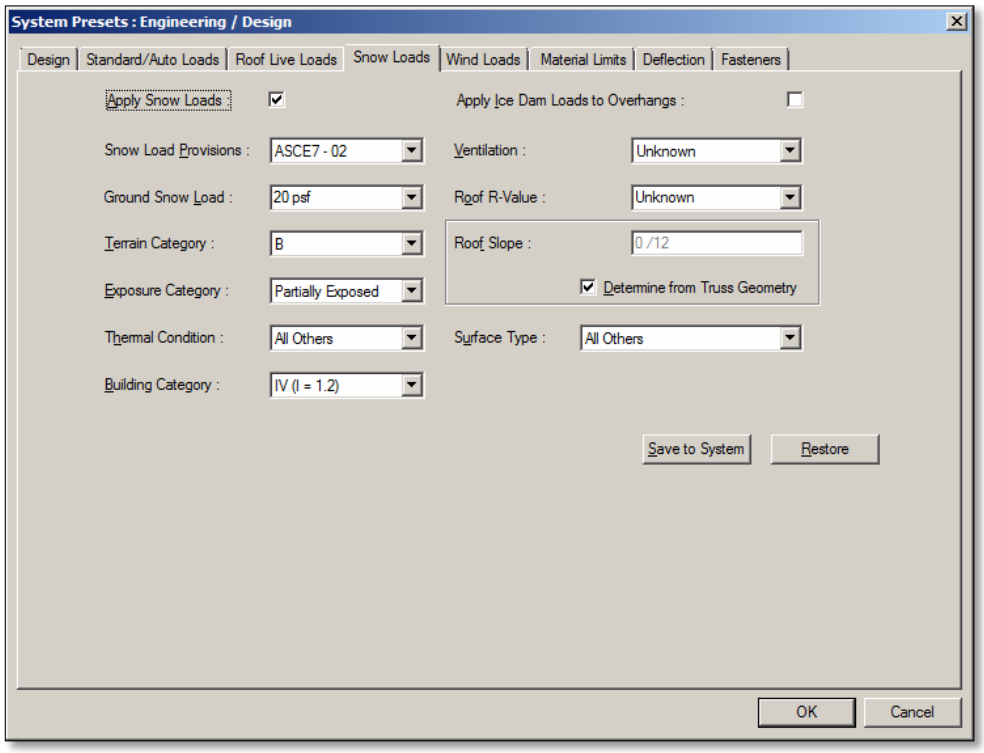


Figure 71: The *Snow Loads* tab in *Engineering/Design Presets*.

Note that changes to the value listed here are mirrored in the *Wind Load Provisions* field on the *Wind Loads* tab.

Ground Snow Load – This field is used to define the default value for the collective weight of snow fallen to the ground. Users may select a value from 0 psf to 100 psf in the drop-down list, or type in a value of their own choosing.

Terrain Category – The *Terrain Category* drop-down list defines the topography of the area in which construction is to take place. There are three potential values:

- *B* – Farmland with boundary hedges, occasional small farm structures, houses, or trees.
- *C* – Suburban or industrial areas, or permanent forest.
- *D* – Urban areas in which at least 15% of the terrain is covered by buildings with mean heights above 15 meters.

Exposure Category – The *Exposure Category* drop-down list defines the degree to which a building or structure is exposed to elemental forces such as wind, rain, and snow. The three potential values are:

- *Fully Exposed* – A building or structure that is entirely subjected to elemental forces.
- *Partially Exposed* – A building that is partly subjected to, and partly sheltered from, elemental forces.
- *Sheltered* – A building that is entirely protected from elemental forces.

Thermal Condition – The *Thermal Condition* drop-down list defines the predominant temperature conditions for a roof. There are four potential values:

- *Cold ventilated roof* – A structure in which the thermal resistance (R-value) between the ventilated space and the heated space exceeds 25° F x *h* x ft^2/Btu (4.4 K x m^2/W).
- *Unheated* – Includes both unheated structures and structures intentionally kept below freezing.
- *Greenhouses* – A continuously heated greenhouse with a roof having a thermal resistance (R-value) less than 2.0° F x *h* x ft^2/Btu (0.4 K x m^2/W).
- *All Others* – All with structures with roofs that do not meet the criteria of any of the categories listed above.

Building Category – The *Building Category* drop-down list is used to define the anticipated human-population density of a structure. Values include:

- *I (I = 0.8)* – *Category I* is the classification used for buildings with little to no human occupancy. If there is human occupancy, it is only for a very short time; mainly just long enough to store things or to tend to livestock.
- *II (I = 1.0)* – *Category II* is the most commonly used *Building Category*. It includes most residential buildings, hotels, restaurants, public buildings, and all other dwellings not classified in *Category I*.
- III (I = 1.1) – *Category III* is intended for buildings that represent a substantial hazard to human life in the event of failure. This category includes buildings where more than 300 people congregate, day care facilities, schools, jails and detention facilities, power generating stations, and other public utility facilities not included in *Category IV*.
- IV (I = 1.2) – *Category IV* represents essential facilities. These buildings include: hospitals; fire, rescue, ambulance, and police stations; designated earthquake, hurricane, and other emergency shelters; and buildings containing extremely hazardous materials.

Note that changes to the value listed here are mirrored in the *Building Category* field on the *Wind Loads* tab.

Apply Ice Dam Loads to Overhangs – When this checkbox is activated, GS Truss applies additional loads to overhangs.

Ventilation – The ventilation drop-down list defines the default air-circulation mechanism for a roof. Values include:

- *Ventilated*
- *Unventilated*
- *Unknown*

Roof R-Value – The *Roof R-Value* drop-down list defines a roof's measure of thermal resistance. Under uniform conditions, this is the ratio of the temperature difference across an insulator and the heat flux. There are numerous values from which to choose.

Roof Slope – The *Roof Slope* field is used to enter the default roof slope manually. Alternatively, users may activate the *Determine from Truss Geometry* checkbox to have GS Truss calculate the roof slope automatically.

- **Determine from Truss Geometry** – If this checkbox is activated, the *Roof Slope* field is grayed out and cannot be edited. GS Truss will calculate the roof slope based on the existing truss geometry. If this checkbox is not activated, the user must manually enter a value in the *Roof Slope* field.

[Other]

Surface Type – The *Surface Type* drop-down list has two potential values:

- *Unobstructed slippery surface* – The standard, common roof surface.
- *All Others* – A non-standard roof surface. (For example, a roof with parapet walls.)

Command Buttons

The command buttons at the bottom of the *Snow Loads* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button, clicking on either the *Restore* or *Cancel* buttons will not reinstate previous settings.

WIND LOADS TAB

GS Truss adds automated wind loads to each truss, based on the values entered on the *Wind Loads* tab. Each wind-load case is calculated in accordance with ASCE7 building codes. In all, seven load cases are calculated. *Wind Loads* are applied to the entire truss clockwise, from the left to the right bearing.

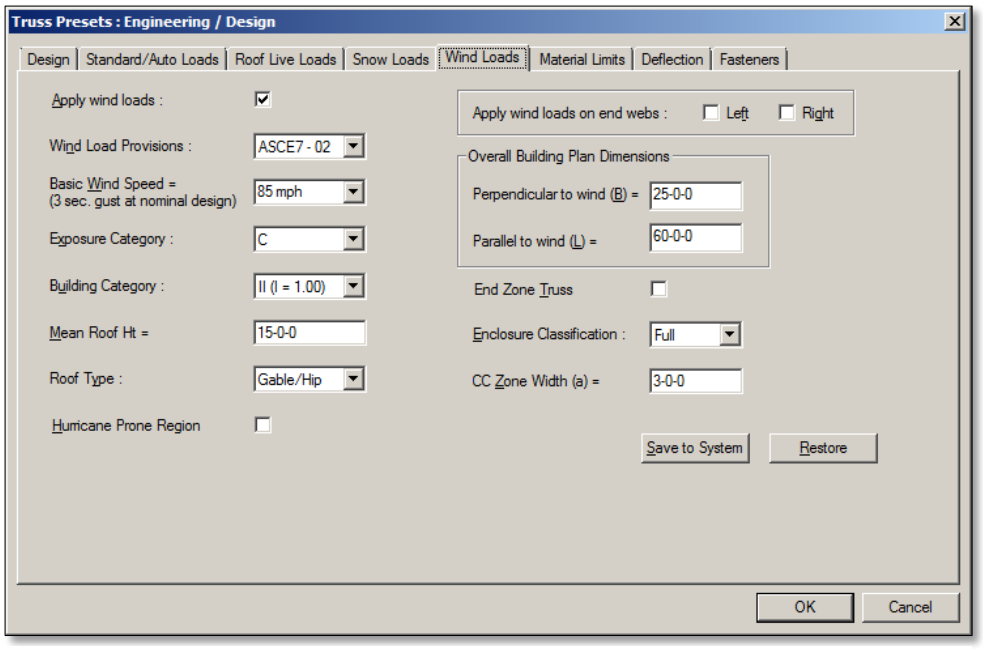


Figure 72: The *Wind Loads* tab in *Engineering/Design Presets*.

Apply Wind Loads – When this checkbox is activated, wind loads are applied to trusses.

Wind Load Provisions: The *Wind Load Provisions* drop-down list is used to define the version of ASCE7 to be referenced for wind loads. The potential values are:

- *ASCE7 – 02*
- *ASCE7 – 05*
- *ASCE7 – 10*

Note that changes to the value listed here are mirrored in the *Snow Load Provisions* field on the *Snow Loads* tab.

Basic Wind Speed – The *Basic Wind Speed* drop-down list is used to define the default wind speed. Listed values range from 85 mph to 200 mph (in five mile-per-hour increments), or users may elect to type in a value of their own choosing.

Exposure Category: The *Exposure Category* drop-down list defines the degree to which a building or structure is exposed to elemental forces. The three potential values are:

- *B* – Urban and suburban areas, wooded areas, or other terrain with numerous, closely spaced obstructions, having the size of single-family dwellings or larger.
- *C* – Open terrain with scattered obstructions, including surface undulations or other irregularities, having heights generally less than 30 feet and extending more than 1,500 feet from the building site in any quadrant. This category includes flat open country, grasslands, and shorelines in hurricane prone regions.
- *D* – Flat, unobstructed areas exposed to wind flowing over open water (excluding shorelines in hurricane prone regions) for a distance of at least one mile. This exposure applies only to those buildings and other structures exposed to the wind coming from over the water. Exposure D extends inland from the shoreline a distance of 1500 feet, or 10 times the height of the building or structure, whichever is greater.

Building Category – The *Building Category* drop-down list is used to define the anticipated human-population density for a structure. Values include:

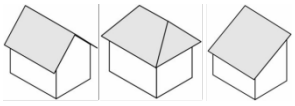
- *I – Category I* is the classification used for buildings with little to no human occupancy. If there is human occupancy, it is only for a very short time; mainly just long enough to store things or to tend to livestock.
- *II – Category II* is the most commonly used *Building Category*. It includes most residential buildings, hotels, restaurants, public buildings, and all other dwellings not classified in *Category I*.
- *III – Category III* is intended for buildings that represent a substantial hazard to human life in the event of failure. This category includes buildings where more than 300 people congregate, day care facilities, schools, jails and detention facilities, power generating stations, and other public utility facilities not included in *Category IV*.
- *IV – Category IV* represents essential facilities. These buildings include: hospitals; fire, rescue, ambulance, and police stations; designated earthquake, hurricane, and other emergency shelters; and buildings containing extremely hazardous materials.

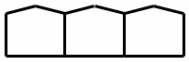
Note that changes to the value listed here are mirrored in the *Building Category* field on the *Snow Loads* tab.

Mean Roof Ht – This field is used to define the value for the average height of a building's roof.

Roof Type – The *Roof Type* drop-down list defines the default roof profile. There are three potential values**:**

- *Gable/Hip* – A standard gable and/or hip-end roof.
- *Mono-Slope* – A roof with a single, sloping plane.
- *Multi-Span* – A roof, generally with a modest pitch, that extends over multiple adjoining structures.





Multi-span.

Hurricane Prone Region – When this checkbox is activated, GS Truss increases wind loads for certain building categories and locations. In addition, GS Truss adds hurricane notation to all truss drawings.

Apply Wind Loads on End Webs – If the end webs of your trusses are tall and placed on the exterior side of a building, the *Left* and *Right* checkboxes presented here should be activated. This will apply additional wind loads to test their strength.

Overall Building Plan Dimensions

Perpendicular to wind (B) – The dimension of a structure that runs perpendicular to the normal wind direction. (See Figure 73 at right.)

Parallel to wind (L) – The dimension of a structure that runs parallel to the normal wind direction. (See Figure 73 at right.)

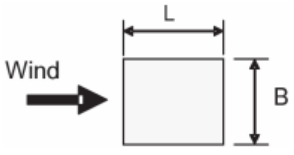


Figure 73: Dimensions *Perpendicular (B)* and *Parallel (L)* to wind.

[Other]

End Zone Truss – When this checkbox is activated, GS Truss applies additional wind pressures to trusses within the *End Zone* of a roof. (See Figure 74 at right.)

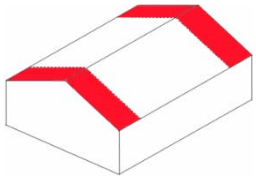


Figure 74: End Zone Trusses

Enclosure Classification – The *Enclosure Classification* drop-down list is used to identify the internal pressures on a structure, as a function of the magnitude and location of openings around the building envelope that allow air to flow through the building. The three potential values are:

- *Full* – All structures which do not qualify under the definitions of either *Open* or *Partial* enclosure.
- *Partial* – A structure in which the total area of openings in walls receiving positive external pressure: 1) exceeds the total area of openings in the remaining building envelope by more than 10%, and 2) exceeds the lesser of $4ft^2$ or 1% of the area of those walls.
- *Open* – A structure in which each wall is at least 80% open.

CC Zone Width (a) – The *Components and Cladding Zone Width* is an un-editable field, the value of which is calculated based on the ASCE7 description of the relevant components and cladding. GS Truss calculates this value using the *Mean Roof Height* and the *Overall Building Plan Dimensions*.

Command Buttons

The command buttons at the bottom of the *Wind Loads* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

MATERIAL LIMITS TAB

The *Material Limits* tab is used to define restrictions on the use of open shapes and 22-gauge steel, as well as bumping rules for when overhang limits have been exceeded.

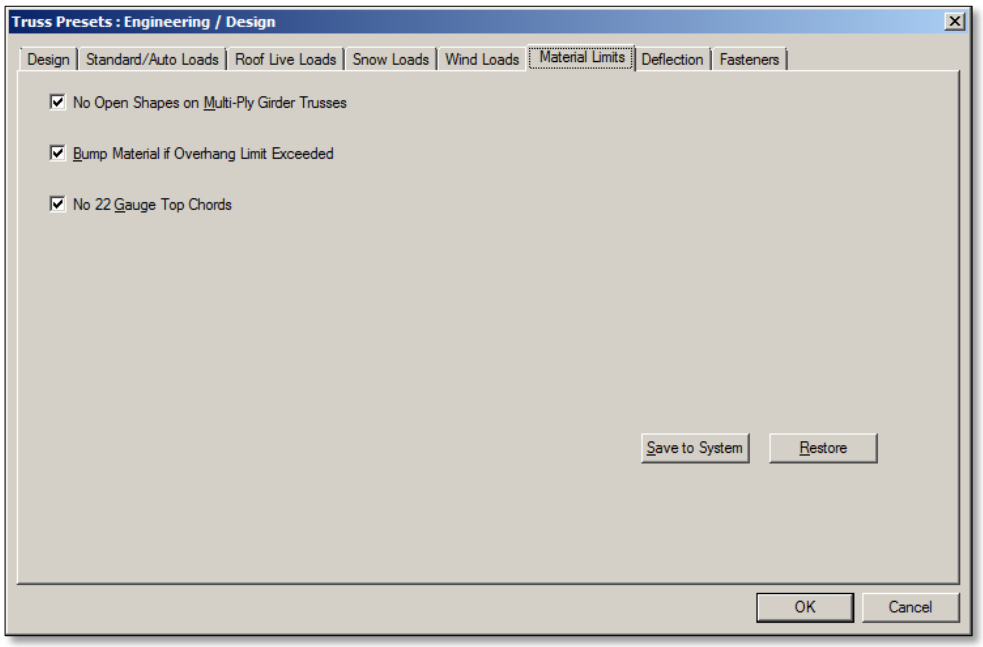


Figure 75: The *Material Limits* tab in *Engineering/Design Presets*.

No Open Shapes on Multi-Ply Girder Trusses – When this checkbox is activated, GS Truss prohibits the use of open-shaped webs and chords in the design of multi-ply girder trusses.

Bump Material if Overhang Limit Exceeded – The overhang limit for each material is defined in the *Material Database*. If this checkbox is activated, when this limit is exceeded, GS Truss bumps the material.

No 22 Gauge Top Chords – When this checkbox is activated, GS Truss prohibits the use of 22-gauge steel in the construction of top chords.

Command Buttons

The command buttons at the bottom of the *Material Limits* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

DEFLECTION TAB

The *Deflection* tab defines the measures used for deflection load testing. In order to pass the analysis/design process, deflection values must be less than the calculated values listed on this tab. Acceptable calculated values can be represented by the formula D < L/x where D = Deflection, L = the length of the specified truss member, and x = a value supplied by a specific building code.

Deflection Criteria

ROOF

Live Load – The building-code-supplied deflection limit for roof live loads.

Total Load – The building-code-supplied deflection limit for total roof loads.

Cantilever – The building-code-supplied deflection limit for roof cantilevers.

Overhang – The building-code-supplied deflection limit for roof overhangs.

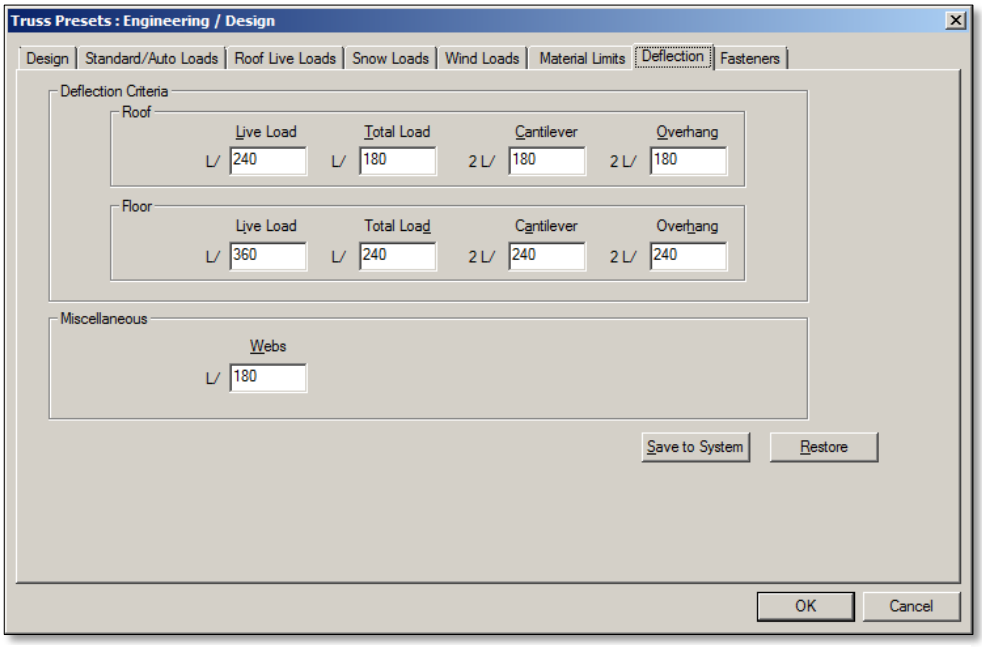


Figure 76: The *Deflection* tab in *Engineering/Design Presets*.

FLOOR

Live Load – The building-code-supplied deflection limit for floor live loads.

Total Load – The building-code-supplied deflection limit for total floor loads.

Cantilever – The building-code-supplied deflection limit for floor cantilevers.

Overhang – The building-code-supplied deflection limit for floor overhangs.

Miscellaneous

Webs – The building-code-supplied deflection limit for webs.

Command Buttons

The command buttons at the bottom of the *Deflection* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

FASTENERS TAB

The *Fasteners* tab is used to specify the minimum number of fasteners to be used for various member types, as well as the maximum number of screws to be used in a line perpendicular to the member axis.

Standard Fasteners – The *Standard Fasteners* drop-down provides a list of all fasteners in the *Material Database*. The fastener selected here will be used as the default in the design of your trusses.

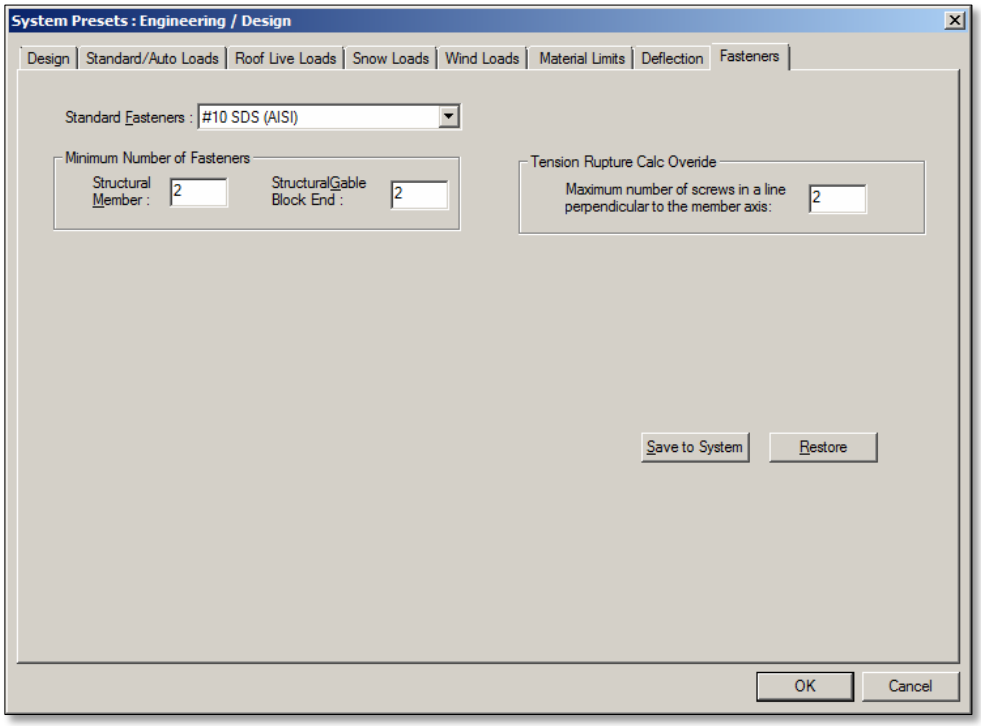


Figure 77: The *Fasteners* tab in *Engineering/Design Presets*.

Minimum Number of Fasteners

Structural Member – This field defines the minimum number of fasteners to be used on the structural members of a truss.

Structural Gable Block End – This field specifies the minimum number of fasteners to be used on each end of the vertical blocks that are inserted at the ends of a gable truss.

Tension Rupture Calc Override

Maximum number of screws in a line perpendicular to the member axis – Placing numerous screw holes in a straight line along a truss member can substantially weaken that member. To avoid this problem, this field defines the maximum number of screws that can be used in a straight line on any given member.

Command Buttons

The command buttons at the bottom of the *Fasteners* tab allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

Roof Auto Web Presets

When creating a roof truss, selecting *Presets → Auto Web* from the GS Truss menu bar opens the *Auto Web* dialog box pictured below. This dialog box is used to control the automated layout of webbing on roof trusses.

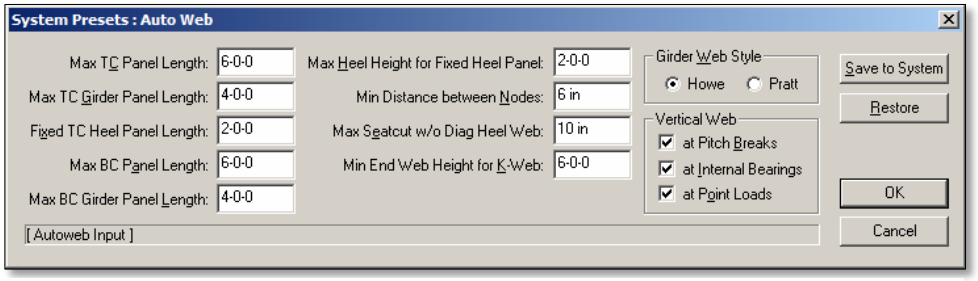


Figure 78: The *Roof Auto Web Presets* dialog box.

Max TC Panel Length – This field defines the maximum length for a top chord panel.

Max TC Girder Panel Length – This field defines the maximum length for a top chord panel on a girder truss.

Fixed TC Heel Panel Length – This field establishes a fixed length for a top chord heel panel.

Max BC Panel Length – This field defines the maximum length for a bottom chord panel.

Max BC Girder Panel Length – This field defines the maximum length for a bottom chord panel on a girder truss.

Max Heel Height for Fixed Heel Panel – When the *Maximum Heel Height* value entered here is exceeded, then the *Fixed Top Chord Heel Panel Length* is ignored and GS Truss uses the *Maximum Top Chord Panel Length* instead.

Min Distance between Nodes – Used to avoid any overlapping members, this field defines the minimum distance between nodes.

Max Seatcut w/o Diag Heel Web – When the value entered here for the maximum allowable length of a *Seatcut* is exceeded, GS Truss adds diagonal-heel webs to the truss.

Min End Web Height for K-Web – When the height of an end-web exceeds the value entered here, GS Truss inserts a K-web into the truss.

GIRDER WEB STYLE

The *Girder Web Style* radio buttons define the default webbing pattern to be used for roof trusses. The two potential values are *Howe* and *Pratt*:

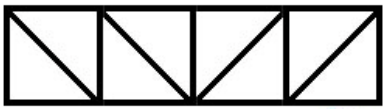
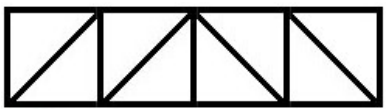


Figure 79: *Howe* webbing



Pratt webbing

VERTICAL WEB

At Pitch Breaks – When this checkbox is activated, GS Truss automatically inserts a vertical web at all pitch breaks.

At Internal Bearings – When this checkbox is activated, vertical webs are automatically inserted over all internal bearings.

At Point Loads – When this checkbox is activated, vertical webs are added to all areas of the truss supporting point loads.

WARNING! If bearings or panel points are added to a truss after the *Auto Web* function has run, then you will need to re-run *Auto Web* in order to have GS Truss add vertical webs over the newly created bearing locations and/or panel points.

COMMAND BUTTONS

The command buttons at the bottom of the *Roof Auto Web* dialog box allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

Floor Auto Web Presets

When creating a floor truss, selecting *Presets* → *Auto Web* from the GS Truss menu bar opens the *System PCT Autoweb Presets* dialog box pictured below. This dialog box is used to control the automated layout of webbing on floor trusses.

Standard Panel Length – This field defines the default length for typical floor-truss panels.

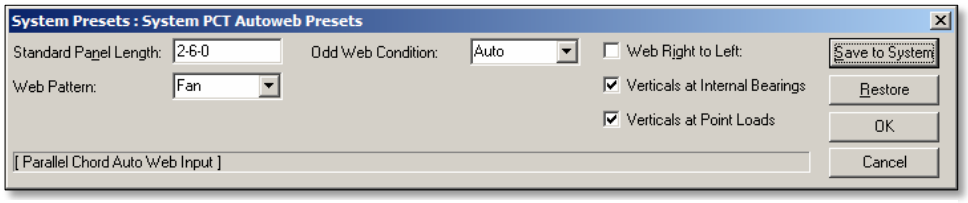


Figure 80: The *Floor Auto Web Presets* dialog box.

Web Pattern – The *Web Pattern* drop-down list defines the default configuration of webs within floor trusses. The three potential values are *Warren*, *Fan*, and *Howe*:

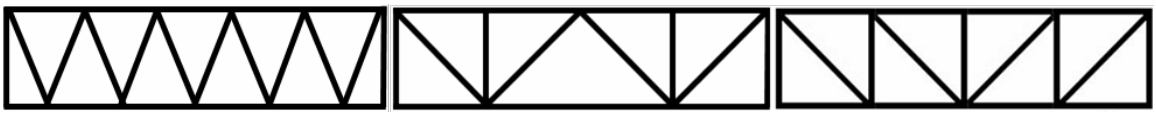


Figure 81: *Warren* *Fan* *Howe*

Odd Web Condition – The *Odd Web Condition* drop-down list establishes the protocol to be used by GS Truss when standard webbing techniques would result in an odd or uneven distribution of web lengths. There are two potential values:

- *Auto* – When the *Auto* option is selected, GS Truss will add a single odd web to the truss, if doing so does not result in either: A) a web with an angle that is too steep to be structurally sound, or B) a panel that is too short to accommodate its webbing.
- *Even* – When the *Even* option is selected, GS Truss adds or subtracts space between webs, evenly across the entire length of the truss.

Web Right to Left – When this checkbox is activated, GS Truss webs trusses from right to left, rather than from left to right.

Verticals at Internal Bearings – When this checkbox is activated, vertical webs are placed over all internal bearings supporting the truss.

Verticals at Point Loads – When this checkbox is activated, GS Truss adds vertical webs to all areas of the truss supporting point loads.

NOTE! If bearings or panel points are added to a truss after the *Auto Web* function has run, then you will need to re-run *Auto Web* in order to have GS Truss add vertical webs over the newly created bearing locations and/or panel points.

COMMAND BUTTONS

The command buttons at the bottom of the *Floor Auto Web* dialog box allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

Gable Web Presets

Gable Web Presets are used to control the automated layout of blocks on gable trusses.

BLOCKING

Direction – The *Direction* drop-down list defines the orientation of blocking within a truss. The three potential values are:

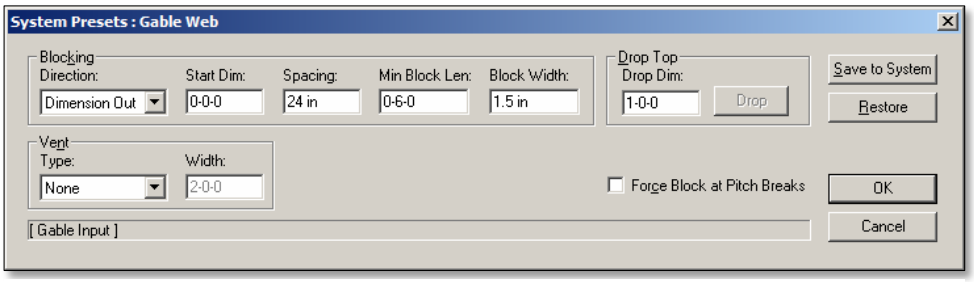


Figure 82: The *Gable Web Presets* dialog box.

- *Ends In* – Blocking starts at each end of the truss and meets in the middle.
- *Center Out* – Blocking begins at the center of the truss and works out toward the ends.
- *Dimension Out* – Blocking begins at a set point and works out toward the ends of the truss.

Start Dim – The *Start Dimension* field identifies the location where blocking is to begin. This field is only active if *Dimension Out* is selected as the *Blocking Direction*.

Spacing – The *Spacing* field is used to define the distance between the center lines of vertical webs.

Min Block Len – The *Minimum Block Length* field defines the minimum allowable length of vertical web blocks.

Block Width – This field defines the width of the blocks to be used within a truss.

DROP TOP

If the gable is to have a drop top (to allow for outlookers), then a *Drop Dimension* can be defined.

Drop Dim – The *Drop Dimension* field is used to define the distance that the top of the gable is to be lowered, measured perpendicular to the slope.

Drop – When clicked, the *Drop* command button implements the value specified in the adjoining *Drop Dimension* field.

VENT

Type – This drop-down list defines the type of vent to be accommodated by a gable truss. The two potential values are *None* and *Rectangular*.

Width – The *Width* field is used to define the horizontal dimension of a vent to be included in the gable. (Note: This field is only enabled when *Rectangular* has been specified as the value in the *Type* field described above.)

[OTHER]

Force Block at Pitch Breaks – When this checkbox is activated, GS Truss forces the insertion of a vertical web at all pitch breaks.

COMMAND BUTTONS

The command buttons at the bottom of the *Gable Web* dialog box allow users to save preset changes permanently or temporarily, or to discard changes altogether.

Save to System – To save your changes permanently (as the new system defaults), click on the *Save to System* button.

Restore – To discard your changes and return to the previously defined default settings, click on the *Restore* button.

OK – To save your changes temporarily, without overwriting the previously defined defaults, click on the *OK* button. This will apply your preset changes to the active truss file. When you are done with your temporary changes, click on the *Restore* button to reinstate the previously defined default settings.

Cancel – To discard your changes altogether, without affecting the settings for either new or existing truss files, click on the *Cancel* button.

WARNING! When you make changes to presets, once you click on the *Save to System* button clicking on either the *Restore* or *Cancel* buttons will not reinstate the previous settings.

WORKING WITH FILES IN GS TRUSS

Understanding File Types & Functions

There are just two file types that are native to GS Truss:

- **KTC** – Files with the KTC extension contain truss-to-truss connection (TTC) information that defines the specific relationship between carried trusses and their carrying trusses. The contents of KTC files can be edited directly within the GS Truss interface. GS Truss uses the following icon to represent KTC files in the *Projects* window:
- **KTS** – GS Truss generates files with a KTS extension whenever an imported or newly created truss is saved. KTS files contain all of the information required for truss outputs and production. GS Truss uses the following icon to represent KTS files in the *Projects* window:

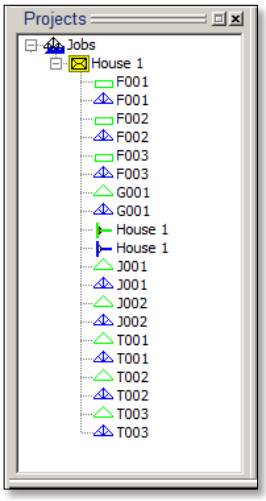


Figure 83: Truss files displayed in the *Projects* window.

In addition to its own native file types, GS Truss is able to import the three truss file types that can be created in GS Plan:

- **LDG** – A GS Plan truss-to-truss connection (TTC) file. GS Truss uses the following icon to represent LDG files in the *Projects* window:
- **ITR** – A GS Plan roof truss file. GS Truss uses the following icon to represent ITR files in the *Projects* window:
- **ITF** – A GS Plan floor truss file. GS Truss uses the following icon to represent ITF files in the *Projects* window:

Opening Existing Files

There are five different ways to open existing truss files in GS Truss, regardless of whether they were originally created in GS Truss or GS Plan:

1. Begin by clicking on the *Open* icon on the *Main* toolbar. Follow the instructions listed under "*Using the 'Open' Dialog Box*" on page 71.
2. From the *File* menu, select *File* → *Open*, as pictured in the figure at right. Follow the instructions listed under "*Using the 'Open' Dialog Box*" on page 71.
3. Click on a recently accessed file from the *File* menu, as pictured in Figure 84 at right.
4. In the *Projects* window, double-click on the file you wish to open.
5. In the *Projects* window, right click on the file you want, and select *Open* from the context menu.

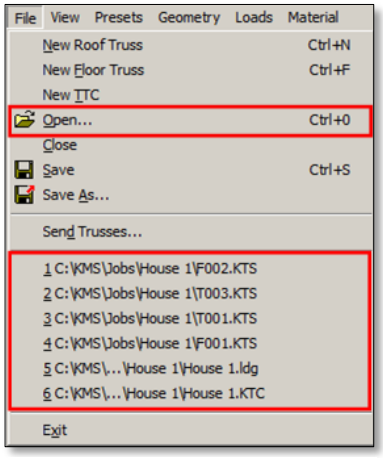


Figure 84: The *Open* command and recently opened files available on the *File* menu.

Using the 'Open' Dialog Box

Opening files using either method 1 or 2 listed on the previous page will pull up the GS Truss *Open* dialog box pictured in Figure 85. As can be seen in Figure 85, the GS Truss *Open* dialog box has a number of components:

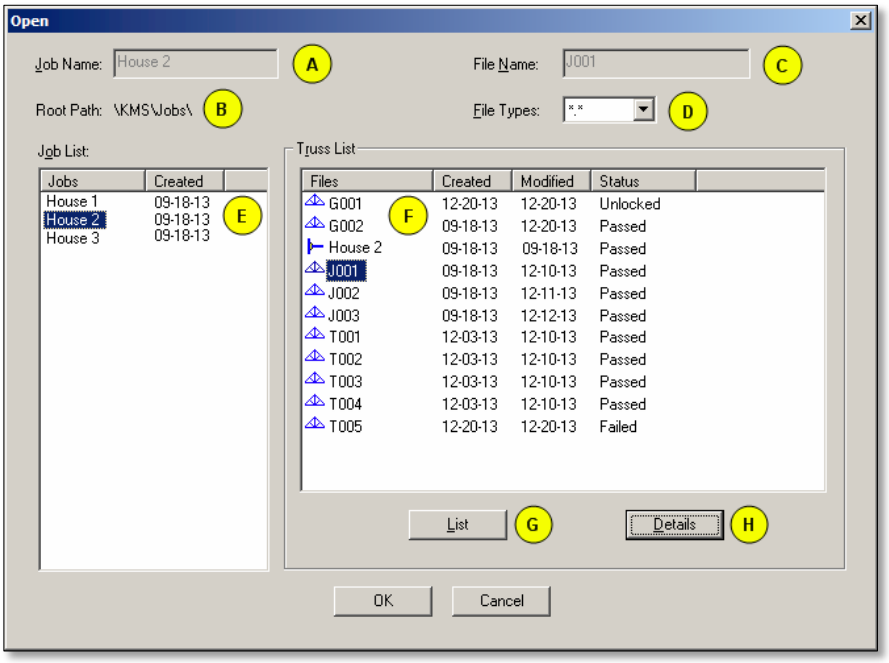


Figure 85: The GS Truss *Open* dialog box allows users to select a file to open.

A. **Job Name** – The name of the job currently selected in the *Job List* section of the *Open* dialog box.

B. **Root Path** – The full path to the directory in which job folders and truss files are stored.

C. **File Name** – The name of the file currently selected in the *Truss List* section of the *Open* dialog box.

D. **File Types** – A drop-down list of truss-related file types that are searchable within the interface. The potential values include: **.kts*, **.itr*/**.ltf*, *.ttc, **.ldg*, and **.**. (This last value is used to search all file types.) For more information about these file types, see the section on the preceding page entitled "*Understanding File Types & Functions*."

E. **Job List** – A list of existing GS Truss jobs that can be searched for truss files. The *Job List* is automatically populated with the names of user-created subfolders within the *Jobs* directory.[2]

F. **Truss List** – Displays a list of all truss and truss-connection files stored within the currently selected job. To open a file you can either double click on the file name within the *Truss List*, or click once on the file to select it and then click on the *OK* button.

> **NOTE!** GS Truss does not currently support the selection of multiple files from within the *Open* dialog box.

G. **List button** – When this button is clicked, the *Truss List* only displays the name of truss-related files; file creation and modification dates, and file-status fields are all hidden from view.

H. **Details button** – When this button is clicked, in addition to the file name, the *Truss List* displays the creation date, last-modified date, and current status information (*Passed*, *Failed*, or *Unlocked*) of truss files.

[2] Users may specify a different directory to store job folders and truss files, via *System Presets*.

Now that we have introduced the *Open* dialog box, it is perhaps somewhat ironic to say that you are not likely to use it very often. That is because, generally speaking, the quickest and easiest way to open files in GS Truss is simply to double-click on them from within the *Projects* window.

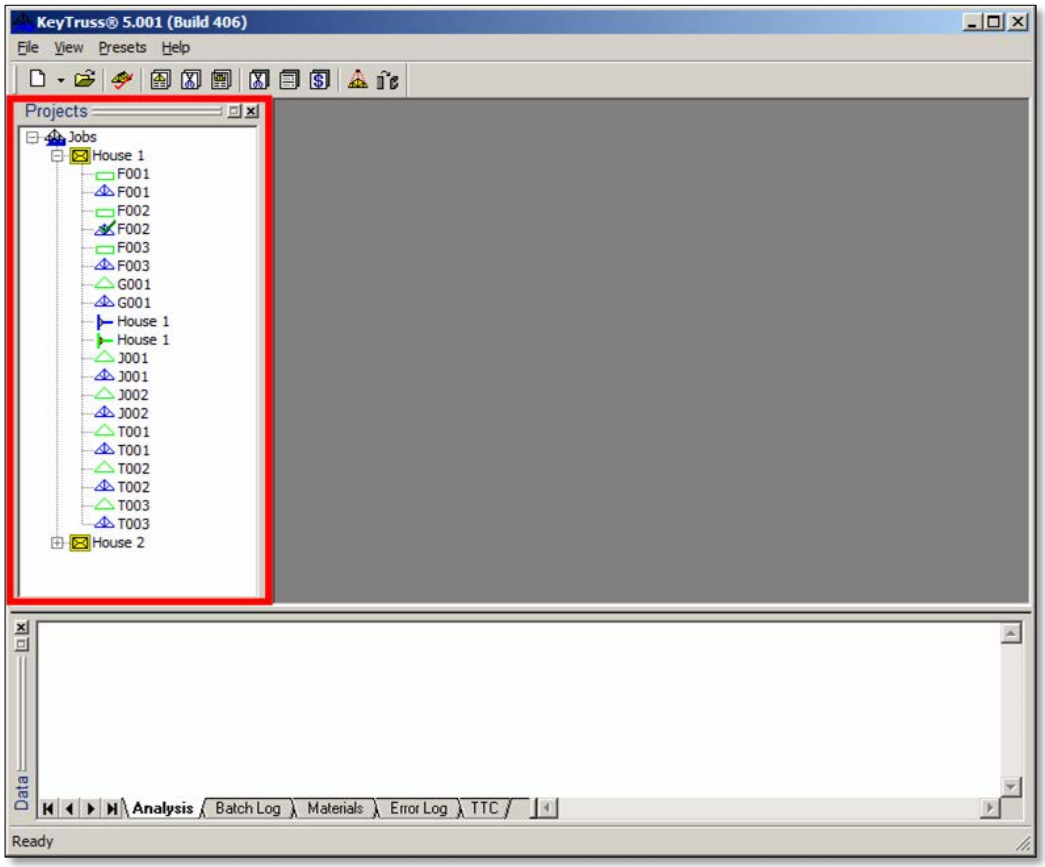


Figure 86: The easiest way to open truss files is to double-click on them from within the *Projects* window.

Working with GS Plan Files

When GS Truss is used to open truss files created in GS Plan, GS Truss automatically creates an equivalent file type in its own native format. GS Truss KTC files are created to replace GS Plan LDG files. GS Truss KTS files are created to replace GS Plan ITR and ITF files. Put in other words, users cannot work directly with GS Plan files in GS Truss. The only function GS Plan files serve within GS Truss is to provide the foundation information required for GS Truss to generate its own KTS and KTC file equivalents. The original GS Plan files are unchanged and unharmed during this process.

TIP! GS Plan's ITR and ITF files provide GS Truss with truss-profile information, along with some bearing and loading data. Webbing, bracing, and other internal design functions are added by GS Truss automatically, once the profile has been imported.

There are basically two ways to generate GS Truss versions of your GS Plan truss files; one truss at a time, or collectively, as a batch. GS Plan floor (ITF) and roof (ITR) truss files can be converted one file at a time by double-clicking on them in the *Projects* window.

To create GS Truss files as a batch, double click on a GS Plan LDG file. GS Truss will step through the process of creating trusses, one at a time, until the entire batch has been processed. The specific process GS Truss will execute to create these truss files will depend upon the user's preset settings. (For more information about presets, refer to the section within this document entitled "*Working with GS Truss Presets*.")

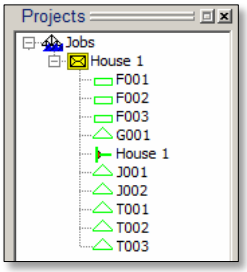


Figure 87: Double click on GS Plan files to create GS Truss equivalents.

If there are issues with one or more ITR/ITF files being converted to KTS format, users will receive an error message like the one pictured at right. Identified issues must be resolved before a GS Truss file can be generated.

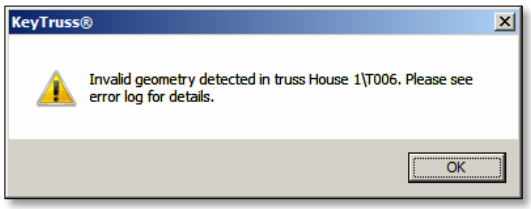


Figure 88: Resolve errors to complete the conversion process.

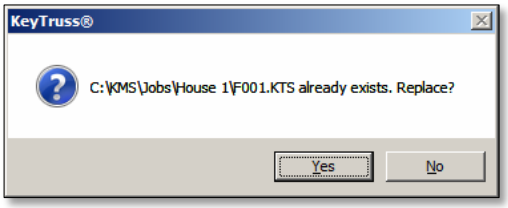


Figure 89: Choose whether not to replace the existing file.

If you double click on a GS Plan ITR or ITF file for which a GS Truss equivalent has already been generated, a message box like the one pictured in Figure 89 will open.

If you double click on a GS Plan LDG file that has already been imported, a message box like the one pictured in Figure 90 will open. Clicking on the *Yes* button will continue the import process, and the previously imported version of your GS Truss files will be overwritten.

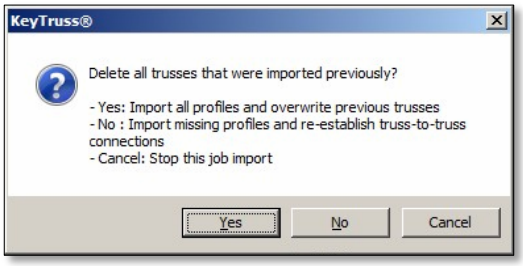


Figure 90: Choose whether not to delete previously imported files.

Making GS Plan Files Visible

If you can see GS Truss KTC and KTS files in the *Projects* window, and you want, but are unable, to view their GS Plan counterparts, you will need to change one of the settings in your GS Truss presets. To begin, go to the GS Truss menu bar and select *Presets → System*. On the *Runtime* tab of the *System Presets* dialog box, click in the checkbox entitled *Show IT* file even if the KT* file is present*. (See Figure 91.) Once this checkbox has been activated, you will be able to view all GS Plan truss file types from within the *Projects* window, even after GS Truss has created equivalent files in its own, native format.

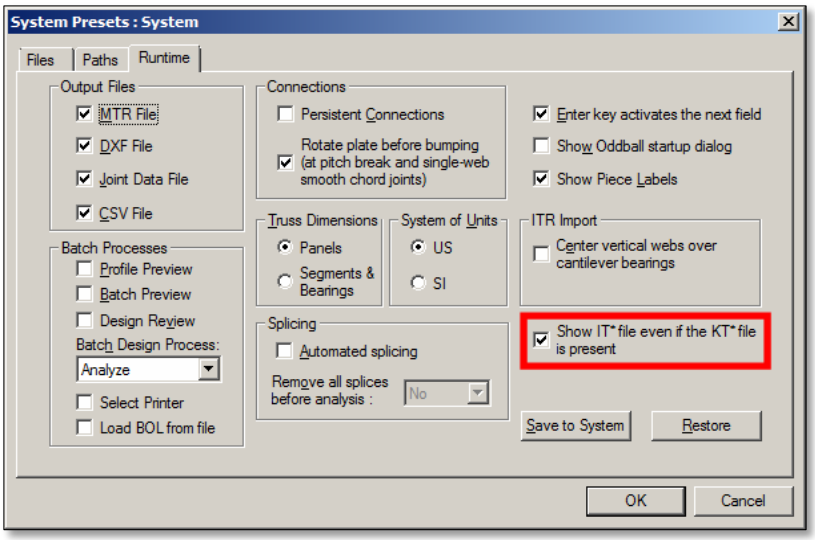


Figure 91: Click in this highlighted checkbox to make GS Plan files visible in the GS Truss *Projects* window, even after importing has completed.

Identifying File Properties

You may wish to view details about a given truss file, beyond those provided in the *Projects* window or the *Open* dialog box. To view a file's property details, right-click on the file in the *Projects* window and select *Properties* from the context menu. A *Properties* window like the one pictured at right will open. Here is a brief description of the information provided:

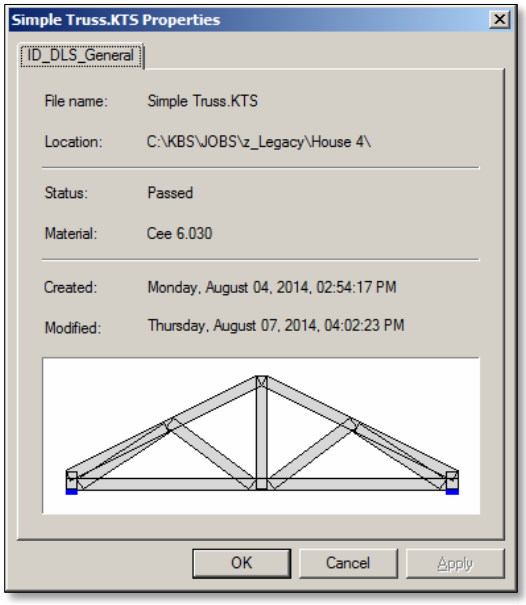


Figure 92: Truss file properties.

File name – The name of the file associated with your truss. Notice that the file name includes the file's three-letter extension, identifying the type of file that it is.

Location – The full directory path to where the truss file is stored.

Status – The current status of the truss. Potential values include: *Passed*, *Failed*, and *Unlocked*. The *Status* of KTC files is listed as *Unknown*.

Material – The name of the *Material Database* used to construct the truss. For KTC files, the *Material* is listed as *Unknown*.

Created – A date-time stamp that shows when the file was created.

Modified – A date-time stamp that shows when the file was last modified.

[Diagram] – A diagram of the given truss, when applicable. For truss-to-truss-connection (TTC) files, this section is blank.

Deleting Truss Files

To delete a GS Truss or GS Plan truss file from the *Projects* window, right-click on the file and select *Delete* from the context menu. Here are a few tips to remember:

- If you delete a KTC or KTS file that has been generated by importing its GS Plan file equivalent, the KTC/KTS file will be sent to the *Windows Recycle Bin* and its equivalent *ITR*/*ITF* file will be reopened in the *Projects* window to take its place.
- If a user attempts to delete a file from the *Projects* window while the file is open, an error message like the one pictured at right will open. Click on the *OK* button and then close the file before attempting to delete it once again.

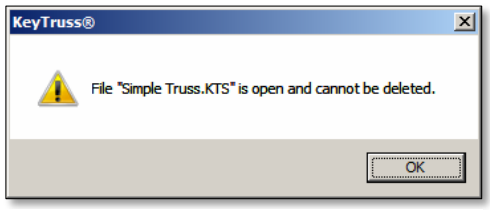


Figure 93: Open files cannot be deleted.

CREATING A TRUSS FROM SCRATCH

TIP! Before creating new trusses, be sure to define your GS Truss presets. For information, refer to the section within this document entitled "*Working with GS Truss Presets.*"

Creating a New Roof Truss

Within GS Truss, there are four different ways to begin creating a new roof truss:

1. Click directly on the *New* icon on the *Main* toolbar.
2. Click on the drop-down arrow next to the *New* icon on the *Main* toolbar and select *New Roof Truss*. (See Figure 94 at right.)
3. Click on *File* on the menu bar and select *New Roof Truss*.
4. Press *Ctrl+N* on your keyboard.

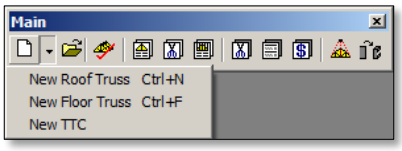


Figure 94: The *New* icon drop-down list.

Regardless of the method used, GS Truss opens a blank design field in the *Main Screen*, along with the *Job* bar pictured in Figure 96 on the following page. To continue with the design of your new roof truss, skip to the section on the following page entitled "*The GS Truss Job Bar*."

Creating a New Floor Truss

As with roof trusses, there are several ways a user can go about creating a new floor truss:

1. Click on the *New* icon drop-down arrow on the *Main* toolbar and select *New Floor Truss*.
2. Click on *File* on the menu bar and select *New Floor Truss*.
3. Press *Ctrl+F* on your keyboard.

As soon as you have executed one of these procedures, a *New Floor Truss* dialog box (like the one pictured at right) will appear on your screen. Enter a *Span* for the new truss. The *Depth* field is automatically populated with the *Floor Trusses Default Depth* value entered in your *Geometry Presets*. If you wish to specify a different depth for your floor truss, this is the time and place to do so. If you want your new floor truss to be webbed automatically, make sure the *Autoweb* checkbox is enabled.

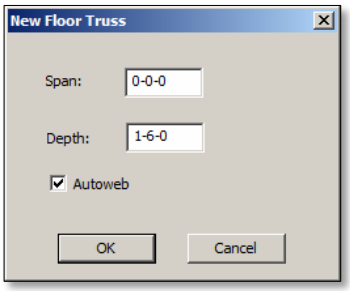


Figure 95: The *New Floor Truss* dialog box.

Once you have completed entering values into the *New Floor Truss* dialog box, click on the *OK* button. GS Truss opens a draft version of your truss in the *Main Screen*, along with a *Job* bar like the one pictured in Figure 96 on the following page. The next step is to complete the fields in the *Job* bar.

The GS Truss Job Bar

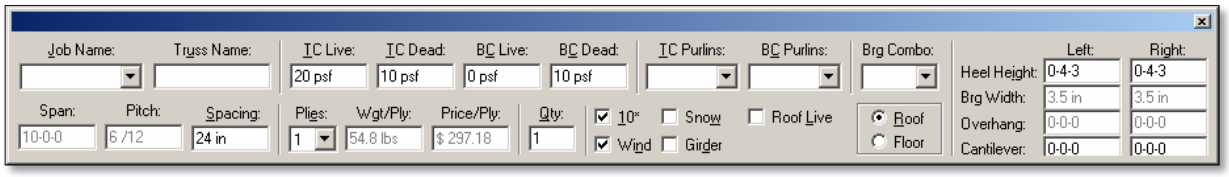


Figure 96: The *Job* bar opens when you elect to create a new roof or floor truss.

The *Job* bar is used for the input and display of general information about your truss. The information in the *Job* bar has a direct impact on analysis/design and output processes, so it is important to make sure this data is accurate.

Notice that a number of the fields are blank when the *Job* bar is first opened. Other fields are already populated with data entered in the user's GS Truss presets. Data that appears in black font can be edited within the *Job* bar. Data in light gray font can only be edited from within the GS Truss presets and/or the *Oddball* and *Library* windows. Following is a brief description of the fields in the *Job* bar and the data they contain:

Job Name – The unique name assigned to a collection of one or more trusses, and used to organize trusses into logical groups. The *Job Name* can be newly created, or carried over from the GS Plan application. Keymark suggests that jobs be named for the structure, location, or client with which the job's trusses will be associated. Enter a new *Job Name*, or select the name of an existing job from the *Job Name* drop-down list.

Truss Name – Enter a name for the new truss. Each truss name must be unique within a given job. It is suggested that the name given to each truss represent its type and/or its placement within the structure. If a new truss file has not yet been named when the analysis/design process is initiated, the user will be prompted to enter a name for the truss at that time.

TIP! Users can copy an existing truss by opening the truss file and typing in a new name for the truss in the *Job* bar.

Span – The total length of the truss as measured along the bottom chord. For new floor trusses, the *Span* field is populated with data entered into the *Span* field of the *New Floor Truss* dialog box. For new roof trusses, the initial value is "0-0-0." *Span* data cannot be edited directly within the *Job* bar, but can be edited using either the *Library* or *Oddball* tools.

Pitch –The overall slope of the top chord. The *Pitch* field is initially populated with placeholder data that cannot be edited directly within the *Job* bar. Users can edit data for this field using either the *Library* or *Oddball* tools.

Spacing – The distance between trusses. Initially, data in the *Spacing* field is populated using *Engineering/Design Presets* information. *Spacing* data can be edited directly within the *Job* bar. Any changes made to the data in this field will take precedence over the user's *Engineering/Design Presets*.

TC Live – The pounds per square foot (psf) or kilopascals (kPa) to be applied to the top chord as a live (temporary) load during the analysis process. Initial values for the *TC Live* field are defined on the *Standard/Auto Loads* tab in *Engineering/Design Presets*. **Note:** This value cannot be edited directly in the *Job* bar if the *Roof Live* checkbox is enabled on the *Job* bar, or if the *Apply Automated Roof Live Loads* checkbox is enabled on the *Roof Live Loads* tab of *Engineering/Design Presets*.

TC Dead – The pounds per square foot (psf) or kilopascals (kPa) to be applied to the top chord as a dead (permanent) load during the analysis process. Initial values for the *TC Dead* field are defined on the *Standard/Auto Loads* tab in *Engineering/Design Presets*. Data in this field can be edited directly within the *Job* bar.

BC Live – The pounds per square foot (psf) or kilopascals (kPa) to be applied to the bottom chord as a live (temporary) load during the analysis process. Initial values for the *BC Live* field are defined on the *Standard/Auto Loads* tab in *Engineering/Design Presets*. Data in this field can be edited directly within the *Job* bar.

BC Dead – The pounds per square foot (psf) or kilopascals (kPa) to be applied to the bottom chord as a dead (permanent) load during the analysis process. Initial values for the *BC Dead* field are defined on the *Standard/Auto Loads* tab in *Engineering/Design Presets*. Data in this field can be edited directly within the *Job* bar.

TC Purlins – The type of bracing that is to be used for the top chord of the truss. There are three options. Users can select either *Sheathed* or *Sparse* from the drop-down list, or they may elect to type in inches for the on-center spacing of purlins. Default values for the *TC Purlins* field are defined on the *Standard/Auto Loads* tab in *Engineering/Design Presets*. Data in this field can be edited directly within the *Job* bar.

BC Purlins – The type of bracing that is to be used for the bottom chord of the truss. There are three options. Users can select either *Sheathed* or *Sparse* from the drop-down list, or they may elect to type in inches for the on-center spacing of purlins. Default values for the *BC Purlins* field are defined on the *Standard/Auto Loads* tab in *Engineering/Design Presets*. Data in this field can be edited directly within the *Job* bar.

Brg Combo – The *Bearing Combo* drop-down list is used to select one of any number of bearing combinations defined using the *Bearings* tool. If the user has not defined any custom *Bearing Combinations*, then the *Brg Combo* drop-down list defaults to "1" and there will be no other entries available in the list.

Plies – The number of trusses to be joined together as a single unit. Values range from one to four.

Wgt/Ply – The total calculated weight of a single ply for the given truss. Values for the *Weight per Ply* field are defined in *Material Priority Tables* and cannot be modified directly within the *Job* bar.

Price/Ply – The total calculated price charged, per ply, for the given truss. Values for the *Price per Ply* field are defined in *Pricing Presets* and cannot be modified directly within the *Job* bar.

Qty – The number of trusses that are to be manufactured to the specification of the current, active truss.

10* – When this checkbox is enabled, GS Truss adds 10 pounds per square foot to the *Bottom Chord Live Load* during the analysis process. Whether or not this checkbox is enabled when the *Job* bar is first opened is contingent upon *Engineering/Design Presets* under the *Standard/Auto Loads* tab.

Wind – When this checkbox is enabled, GS Truss adds wind *loads* defined in the user's *Engineering/Design Presets* during the analysis/design process.

Snow – When this checkbox is enabled, GS Truss adds snow loads defined in the user's *Engineering/Design Presets* during the analysis/design process.

Girder – When enabled, this checkbox indicates that the truss is a girder and GS Truss adjusts the analysis accordingly.

Roof Live – When this checkbox is enabled, GS Truss adds calculated *Roof Live* loads during the analysis/design process, based on the parameters defined in the user's *Engineering/Design Presets*.

Roof/Floor – Designates the active file as either a roof truss or a floor truss.

LEFT/RIGHT

Heel Height – The length from the top of the top chord through the bottom of the bottom chord on both ends of a truss. Initially, this field is populated with data from the *General* tab of *Geometry Presets*. Any changes made to the data in this field will take precedence over the user's presets.

Brg Width – The girth of the structure supporting the truss. Values for *Bearing Width* are initially populated using the *Bearing Width* settings on the *General* tab of *Geometry Presets*. The *Brg Width* field is used for reference only and values cannot be modified directly in the *Job* bar.

Overhang – The length that the top chord is to extend beyond the bottom chord. Overhang data cannot be edited directly within the *Job* bar, but can be edited using either the *Library* or *Oddball* tools.

Cantilever – The dimensions of the projecting structure that extends beyond the face of its carrying wall. Data in this field can be edited directly within the *Job* bar.

Creating a Truss in Library Mode

After filling out the fields in the *Job* bar, the quickest and easiest way to create a new truss is to click on the *Library* icon on the *Geometry* toolbar. This will open a blank design window and the *Library Input* bar pictured in Figure 97 below.

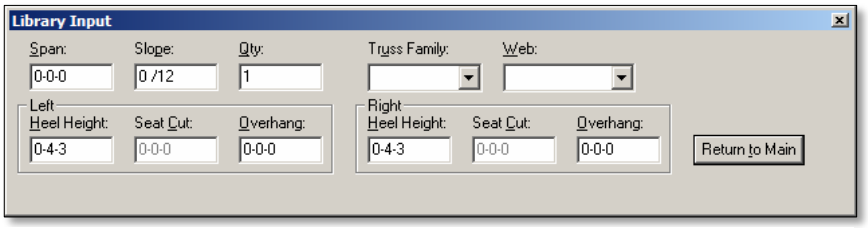


Figure 97: The *Library Input* bar provides for quick and easy truss creation.

Like the *Job* bar, notice that some fields in the *Library Input* bar are pre-populated with presets data while other fields remain blank. Complete the fields in the *Library Input* bar as follows:

Span – Enter the total length for the bottom chord of the truss, from bearing to bearing.

Slope – Enter the pitch for the top chord of the truss.

Qty – Enter the number of trusses that are to be manufactured to the specification of the current, active truss.

Truss Family – Click on the drop-down arrow and select the *Truss Family* that best matches the profile of the truss to be created. As pictured at right, there are 24 options listed in the *Truss Family* drop-down list. Depending on the *Truss Family* selected, additional fields may appear on the *Library Input* bar for you to complete. See the section entitled "*Truss Family Values*" on page 80 for a list of the additional fields associated with specific truss families.

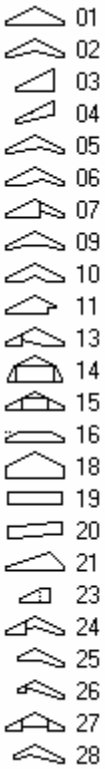


Figure 98: Truss Families.

Web – The webbing options available in the *Web* drop-down list depend upon the *Truss Family* selected in the previous field. Entering the number "99" into this field will *Auto Web* your truss. Entering "00" will result in no webbing added to the truss.

LEFT/RIGHT

Heel Height – Enter the measurement from the top of the top chord through the bottom of the bottom chord on both ends of the truss.

Seat Cut – Enter the dimension for the *Seat Cut* to be placed at the bottom of the truss. This field is grayed out (inapplicable) unless the bottom chord is sloped and, therefore, requires a *Seat Cut*.

Overhang – Enter the length of the top-chord *Overhang* the truss is to include, if any.

As data is entered into the fields in the *Library Input* bar, the profile of the truss being created will appear in the design window. Notice that the bottom chord of the truss is represented with a green line, while the lines representing the top chord and webbing are in blue and red respectively.

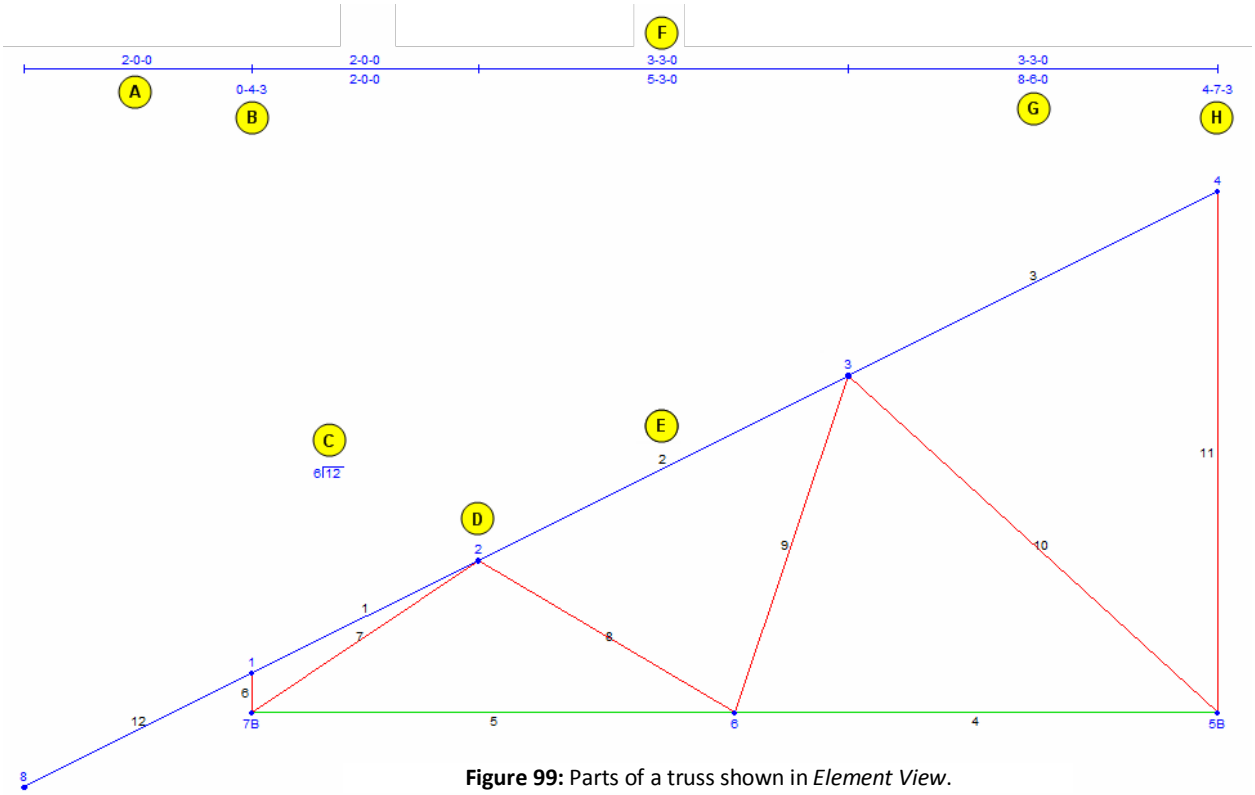


Figure 99: Parts of a truss shown in *Element View*.

In addition to lines representing the truss, the design screen includes a host of different numbers as pictured in Figure 99 above and explained as follows:

A – Overhang Length
B – Heel Height
C – Slope
D – Point Number (blue font)
E – Member Number (black font)
F – Dimension from Point 2 to Point 3
G – Cumulative horizontal dimension from Point 1 to Point 4
H – Overall height of the truss

Return to Main – Once you have completed your truss design in *Library* mode, click on the *Return to Main* button to navigate back to the main GS Truss window.

Note: If a user attempts to return to the main GS Truss screen with incorrect or inappropriate values entered into one or more fields in the *Library Input* bar, he will receive an error message like the one pictured here. These issues must be resolved before the user can save his work and return to the main screen.

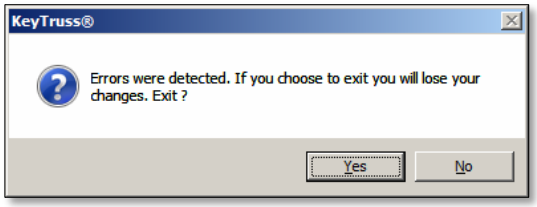


Figure 100: *Input* bar values must be valid to exit *Library Mode*.

Truss Family Values

As mentioned earlier, selection of some truss families in *Library Mode* pulls up additional fields that require user input. Below is a list of truss families, and the additional input required (if any) for each:

NO.	TRUSS NAME	SHAPE	ADDITIONAL FIELDS
01	Common		N/A
02	Scissor		Bottom Chord Slope
03	Mono		N/A
04	Mono Scissor		Bottom Chord Slope
05	Dual Pitch Scissor		Left Bottom Chord Slope; Right Bottom Chord Slope
06	Type 1 Cathedral		Vault Slope; Horizontal Offset
07	Type 1 Studio		Vault Slope; Horizontal Offset
09	Tray		Bottom Chord Slope; Horizontal Offset
10	Type 2 Cathedral		Vault Slope; Horizontal Offset; Width
11	Porch		Horizontal Offset; Porch Height
13	Type 2 Studio		Vault Slope; Horizontal Offset; Width
14	Gambrel		Upper Top Chord Slope; Horizontal Offset
15	Attic		Horizontal Offset; Width; Height
16	Flat Top		Horizontal Offset
18	Raised Heel		N/A
19	Box		N/A
20	Parallel Chord		N/A
21	Non-Symmetric		Right Top Chord Slope
23	Half Hip		Horizontal Offset
24	Partial Scissor		Bottom Chord Slope; Horizontal Offset
25	Dog Leg		Bottom Chord Slope; Right Plate Drop
26	Studio Dog Leg		Bottom Chord Slope; Right Plate Drop; Horizontal Offset
27	Coffered		Horizontal Offset; Width; Vertical Slope
28	Scissor Dog Leg		Left Bottom Chord Slope; Peak Offset; Bottom Offset

Creating or Modifying a Truss in Oddball Mode

Given its wide selection of truss profiles and webbing options, it is generally recommended that users design as much of a truss as possible using *Library Mode*. *Oddball Mode* can then be used to adjust the truss geometry to the desired specifications. That said, however, it is entirely possible to create a truss from start to finish using *Oddball Mode* alone. *Oddball Mode* provides a wide array of tools for designing non-standard and complex trusses, piece by piece.

There are two different ways to open *Oddball Mode*:

- Go to the *Geometry* toolbar and click on the *Oddball* icon.
- On the menu bar, select *File* → *Geometry* → *Oddball.*

Depending on your *System Presets*, and where you are in the truss-design process, *Oddball Mode* will open in one of two different ways:

- *If* your *System Presets* are setup appropriately and *if* you have a blank (new) truss design window open, starting *Oddball* opens up the *Oddball Startup* dialog, pictured at right.

- *If* you have not enabled the *Oddball Startup* dialog in *System Presets*, or if you are working with an existing truss, the *Oddball Startup* dialog process is bypassed and you are launched into full-blown *Oddball Mode*.

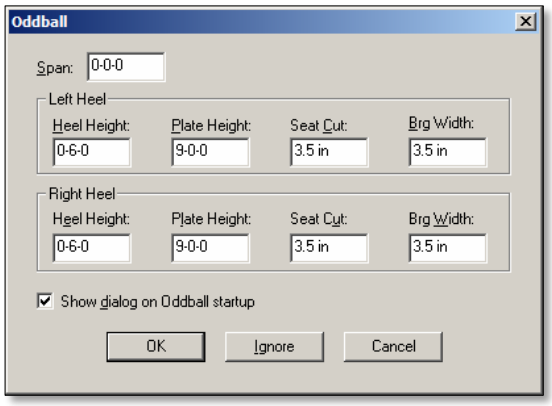


Figure 101: The *Oddball Startup* dialog box.

TIP! To enable the *Oddball Startup* dialog box, go to the menu bar and select *File* → *Presets* → *System* → *Runtime tab*, and click in the *Show Oddball startup dialog* checkbox.

With the exception of the *Span* field, all fields in the *Oddball Startup* dialog box are pre-populated with user values entered in the *Presets* → *Geometry* → *General tab*. (See Figure 102 on the following page.) Change values in the *Oddball Startup* dialog box as needed to meet the requirements of the truss you wish to create. When you are done, click on the *OK* button at the bottom of the dialog to proceed to the main *Oddball* window.

NOTE! You cannot reopen the *Oddball Startup* dialog box once you have exited it.

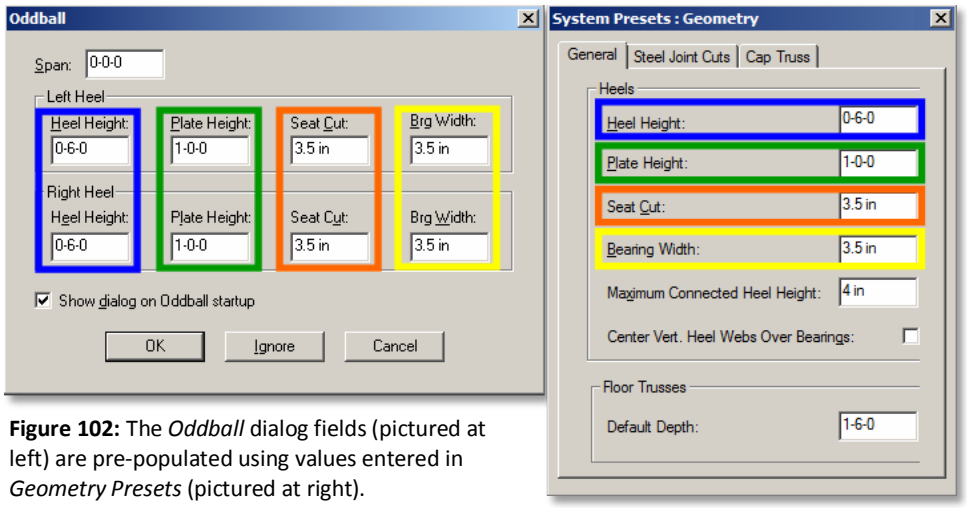


Figure 102: The *Oddball* dialog fields (pictured at left) are pre-populated using values entered in *Geometry Presets* (pictured at right).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

The *Oddball* toolbar contains 25 different icons, which are identified below. Their use is described in detail in the section immediately following. From left to right, the *Oddball* toolbar icons are as follows:

1. Return to Main
2. Undo
3. Redo
4. Point to Point
5. Point to XY
6. Horizontal Slope
7. Vertical Slope
8. Intersect Member
9. Slope Intersect
10. Overhang Member
11. Off Member Point
12. On Member Point
13. Increment/Decrement
14. Divide Points
15. Divide Member/Chord
16. Reverse Web
17. Shift Point
18. Shift Slope
19. Delete Point
20. Delete Member
21. Clear Webs
22. Clear All
23. Quick Web
24. Auto Divide
25. Auto Quick Web

When using *Oddball* tools, there are a variety of ways to enter data into the fields associated with each tool. Some fields provide up- and down-arrow buttons users can click on until the desired value appears. Other fields provide a drop-down list from which users can select the desired value or type in the number associated with that value. If a field is used to reference a point number or member number, users can simply click on the desired point or member in the design screen, and that number will automatically be entered into the field. Last but not least, users can elect to type the desired value into each field.

NOTE! Reference point numbers and member numbers will change throughout the design process, as points and members are added to, and deleted from, your drawing.

POINT TO POINT

Oddball's *Point to Point* tool is used to add new chords and webs between existing points on a truss.

Point 1 – Enter the starting point for the new truss member.

Point 2 – Enter the end point for the new truss member.

Member Type – Enter the type of truss member to be created. The three potential values are: *Top Chord*, *Bottom Chord*, and *Web*.

# of Panels – Enter the number of panel points the new member is to contain. Panel points will be distributed evenly across the length of the newly created truss member.

POINT TO XY

The *Point to XY* tool is used to create a panel point and to add a new chord or web between the new point and an existing *Reference Point*.

Point # – Enter the point where the new truss member is to begin.

Ref Point – Enter the number of the panel point from which the dimension measurement is to begin.

X Dimension – Enter the horizontal length the new truss member is to extend beyond the specified *Reference Point*. Enter a positive number to draw the truss member to the right of the defined *Reference Point*. Enter a negative number to draw the truss member to the left of the *Reference Point*.

Y Dimension – Enter the vertical length the new truss member is to extend beyond the specified *Reference Point*. Enter a positive number to draw the truss member above the *Reference Point*. Enter a negative number to draw the truss member below the *Reference Point*.

Member Type – Enter the type of member to be created. The three potential values are: *Top Chord*, *Bottom Chord*, and *Web*.

# of Panels – Enter the number of panel points the new member is to contain. Panel points will be distributed evenly across the length of the newly created truss member.

HORIZONTAL SLOPE

The *Horizontal Slope* tool is used to create a new truss member at a defined slope. The new member starts at the point entered into the *Point #* field, and it extends beyond the *Reference Point* by the length entered into the *Dimension* field.

For example, take the bottom chord pictured in Figure 103 below, which has a span of 10 feet. As can be seen by the information entered at the top of Figure 103, a new *Top Chord* will be created at a 6/12 slope, starting at Point #3. The *Dimension* is set to 5', so **the new *Top Chord* will extend 5' beyond whatever value is entered as the *Reference Point***. Therefore, if Point 3 is used as the *Reference Point*, the resulting *Top Chord* will be 5' in length, as pictured in Figure 104. If, instead, Point 4 is used as the *Reference Point*, the resulting *Top Chord* is 15' in length, as pictured in Figure 105.

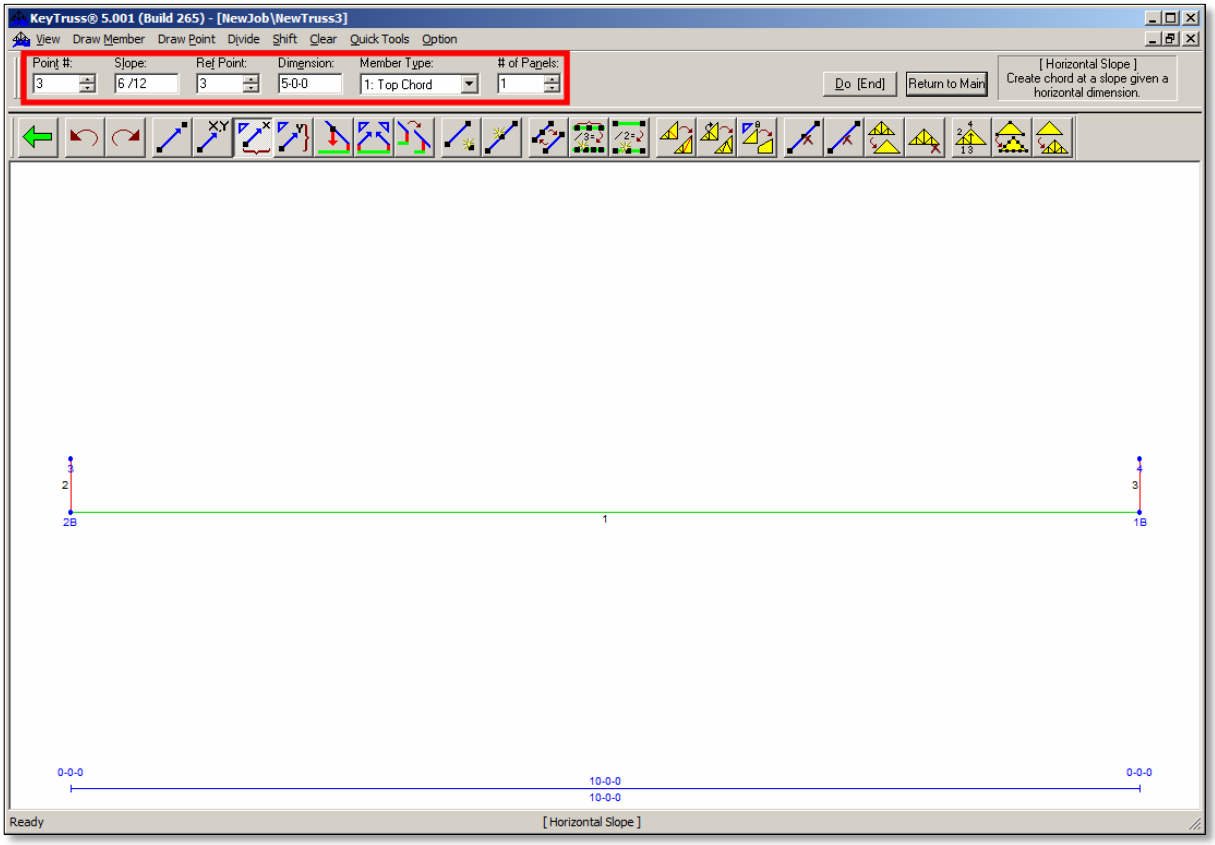


Figure 103: This truss is being created with a *Bottom Chord* that has a 10 foot span.

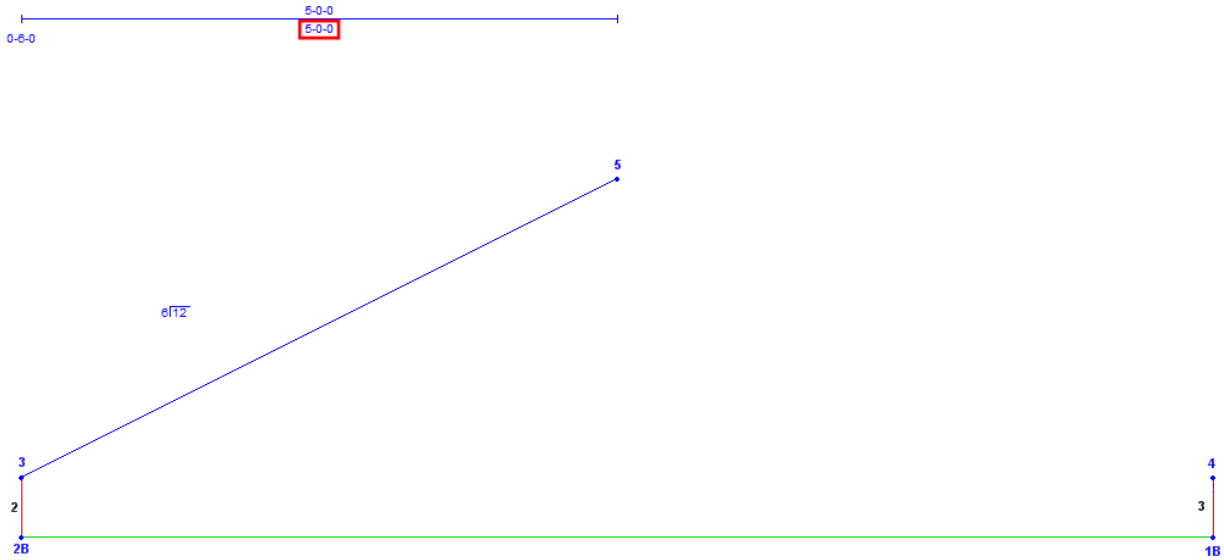


Figure 104: Drawn from Point 3 with Point 3 as the *Reference Point*, the resulting Top Chord is 5 feet in length.

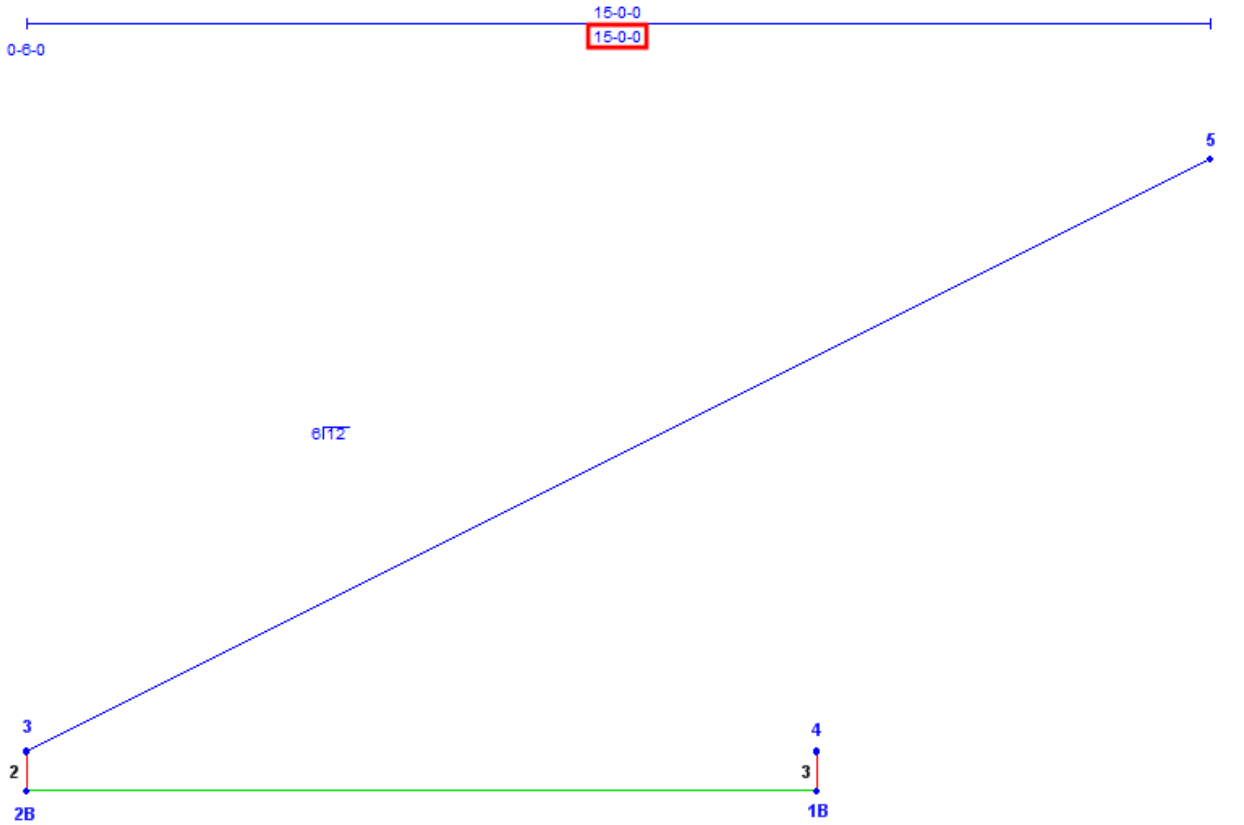


Figure 105: Drawn from Point 3 with Point 4 as the *Reference Point*, the resulting Top Chord is 15 feet in length.

Point # – Enter the starting point from which the new member is to be drawn.

Slope – Enter the desired pitch for the new truss member. For a 45° slope, enter a value of 12/12. For a 90° (vertical) pitch, enter a value of 999/12.

Ref Point – Enter the number of the panel point from which the new truss member will extend by the distance entered into the *Dimension* field.

Dimension – Enter the length that the new truss member is to extend horizontally beyond the specified *Reference Point*. Enter a positive number to draw the truss member to the right of the defined *Reference Point*. Enter a negative number to draw the truss member to the left of the *Reference Point*.

Member Type – Select the type of truss member to be created. The three potential values are: *Top Chord*, *Bottom Chord*, and *Web*.

# of Panels – Enter the number of panel points the new member is to contain. Panel points will be distributed evenly across the length of the newly created truss member.

VERTICAL SLOPE

Like the *Horizontal Slope* tool, Oddball's *Vertical Slope* tool is used to create new truss members at a defined slope. The length of the new member is calculated by setting a point at the intersection of the specified vertical dimension and the specified slope. For example, if a dimension of 1-0-0 is entered along with a slope of 6/12, the system will start one foot vertically above the *Reference Point* and then move across to meet the slope. It will then draw the member from the starting point to the calculated intersection.

Point # – Enter the point from which the new member is to start.

Slope – Enter the desired pitch for the new truss member. For a 45° slope, enter a value of 12/12. For a 90° (vertical) pitch, enter a value of 999/12.

Ref Point – Enter the point from which the vertical dimension will be measured.

Dimension – Enter the length that the new truss member is to extend vertically beyond the specified *Reference Point*. Enter a positive number to draw the truss member above the defined *Reference Point*. Enter a negative number to draw the truss member below the *Reference Point*.

Member Type – Enter the type of truss member to be created. The three potential values are: *Top Chord*, *Bottom Chord*, and *Web*.

# of Panels – Enter the number of panel points the new member is to contain. Panel points will be distributed evenly across the length of the newly created truss member.

INTERSECT MEMBER

Oddball's *Intersect Member* tool is used to create a new truss member, at a slope designated by the user that will intersect an existing truss member.

Point # – Enter the point from which the new member is to start.

Mbr # – Enter the number of the existing member that is to be intersected by the new truss member.

Slope – Enter the pitch at which the new truss member is to intersect the existing member. For a 45° slope, enter a value of 12/12. For a 90° (vertical) pitch, enter a value of 999/12.

Member Type – Enter the member type to be created. The three potential values are: *Top Chord*, *Bottom Chord*, and *Web*.

# of Panels – Enter the number of panels the new member is to contain. Panel points will be distributed evenly across the length of the newly created truss member.

WARNING! If you enter *Slope*, *Point #*, and/or *Member #* that will result in a failure of the new member to intersect the targeted existing truss member, GS Truss will generate an error message like the one pictured at right.

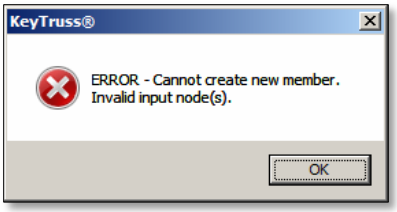
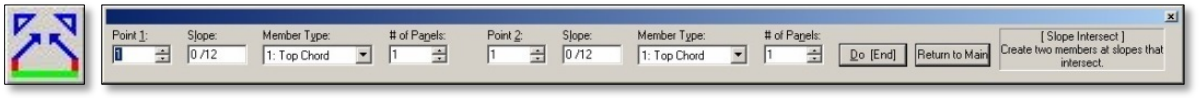


Figure 106: Failure to intersect error.

SLOPE INTERSECT



The *Slope Intersect* tool is used to create two new sloped-truss members that intersect one another.

Point 1 – Enter the panel point from which the first new member is to start.

Slope – Enter the desired pitch for the first new truss member. For a 45° slope, enter a value of 12/12. For a 90° (vertical) pitch, enter a value of 999/12.

Member Type – Enter the *Member Type* to be used for the first new truss member. The three potential values are: *Top Chord*, *Bottom Chord*, and *Web*.

# of Panels – Enter the number of panels the first new member is to contain.

Point 2 – Enter the panel point from which the second new member is to start.

Slope – Enter the desired pitch for the second new truss member. For a 45° slope, enter a value of 12/12. For a 90° (vertical) pitch, enter a value of 999/12.

Member Type –Enter the member type to be used for the second new truss member. The three potential values are: *Top Chord*, *Bottom Chord*, and *Web*.

# of Panels – Enter the number of panels the second new member is to contain. Panel points will be distributed evenly across the length of the newly created truss member.

WARNING! For the two slopes to intersect, one slope must be entered as a positive value and the other as negative. If either positive or negative values are entered for both, the error message pictured at right will appear.

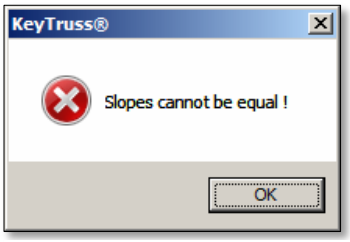


Figure 107: A slope-intersect error.

OVERHANG MEMBER

The *Overhang Member* tool is used to add overhangs to a truss.

Point # – Enter the panel point where the overhang is to begin.

Member # – Enter the number of the truss member which the overhang will extend.

Dimension – Enter the distance that the overhang is to span. Enter a positive number to draw the overhang to the right of the defined *Point #*. Enter a negative number to draw the overhang to the left of the *Point #*.

Measurement Type – Enter the orientation of the measurement. Values include:

- *Vertical* – The dimension/length of the overhang is calculated vertically from the specified *Reference Point*.
- *Horizontal* – The dimension/length of the overhang is calculated horizontally from the specified *Reference Point*.
- *Rake* – The dimension/length of the overhang is calculated along the angle of the host truss member from which the overhang extends.

Cut Type – Enter the type of cut to be applied to the overhanging member. Values include:

- *Plumb* – Creates a straight vertical cut at the end of the overhang.
- *Square In* – Creates a square cut where the length of the overhang is measured from the *Point #* to the top outside corner at the end of the overhang.
- *Square Out* – Creates a square cut where the length of the overhang is measured from the *Point #* to the bottom inside corner at the end of the overhang.

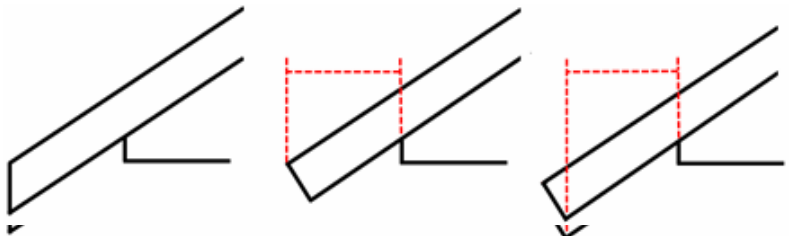


Figure 108: Plumb Cut Square In Square Out

NOTE! Even if the length entered into the *Dimension* field remains the same, the actual length of an overhang will vary based upon the *Slope* of the truss member and the *Measurement Type* selected. For example, given a slope of 6/12, if 1' is used as the overhang *Dimension*, the actual length of the overhang will vary by *Measurement Type* as follows:

- *Horizontal* – 1' overhang
- *Vertical* – 2' overhang
- *Rake* – 10 ¾" overhang

OFF MEMBER POINT

The *Off Member Point* tool is used to create a new point based on XY coordinates that are not located on an existing truss member.

Ref Point – Enter the *Reference Point* that is to serve as the starting location for the dimension measurements.

X Dimension – Enter the horizontal dimension. Use a positive number if the new point is to fall to the right of the specified *Reference Point*. Use a negative number if the new point is to fall to the left of the *Reference Point*.

Y Dimension – Enter the vertical dimension. Use a positive number if the new point is to fall above the specified *Reference Point*. Use a negative number if the new point is to fall below the *Reference Point*.

ON MEMBER POINT

The *On Member Point* tool is used to create a new point on an existing truss member. This tool is commonly used to specify points for web connections, or to specify points for bearings or loads.

Member # – Enter the number of the truss member to which the new point is to be added.

Ref Point – Enter the *Reference Point* from which the dimension is to be measured.

Direction – Enter the direction of measurement, from the *Reference Point* to the new point being added. Values include:

- *Horizontal* – The *Dimension* is calculated horizontally from the *Reference Point*.
- *Vertical* – The *Dimension* is calculated vertically from the *Reference Point*.
- *Rake* – The *Dimension* is calculated at the angle of the host truss member.
- *Percent* – The *Dimension* is calculated as a percentage of the remaining span from the *Reference Point*.

Dimension – Enter the distance from the *Reference Point* that the new point is to be located. Enter a positive number to draw the new point to the right of the defined *Reference Point*. Enter a negative number to draw the new point to the left of the *Reference Point*.

INCREMENT/DECREMENT

The *Increment/Decrement* tool is used to increase or decrease the number of members on a chord segment.

Increment – Select *Increment* to increase the number of members for the selected truss segment. All panel points, both new and pre-existing, will be distributed evenly across the specified member.

Decrement – Select *Decrement* to decrease the number of members for the selected truss segment. All remaining panel points will be distributed evenly across the specified member.

Member # – Enter the number of the truss member for which the number of members is to be increased or decreased.

DIVIDE POINTS

The *Divide Points* tool is used to create equal divisions between two points on a single segment of truss.

Start Pt – Enter the truss point that is to serve as the first reference location for dividing points.

End Pt – Enter the truss point that is to serve as the second and final reference location for dividing points.

# of Panels – Enter the number of panel points into which the piece is to be split. Panel points will be distributed evenly between the designated *Start Point* and *End Point*.

DIVIDE MEMBER/CHORD

The *Divide Member/Chord* tool is used to split the specified chord or member into equal lengths, based on the number of divisions requested.

Member Type:

- *Chord* – Specifies that a chord is to be divided into equal parts.
- *Panel* – Specifies that a truss panel is to be divided into equal parts.

Member # – Identifies the number of the specific chord or panel that is to be divided.

# of Panels – Enter the number of panels the newly divided member is to contain. Panel points will be distributed evenly along the designated member.

REVERSE WEB

Oddball's *Reverse Web* tool is used to reverse the direction of a diagonal web. If a web runs diagonally from the top of a truss to the bottom, then the web will be reversed and run from the bottom of the truss to the top. (See Figure 109.)

Member # – Enter the identification number of the diagonal web to be reversed. Alternatively, users may simply click on the target member to initiate the *Reverse Web* function.

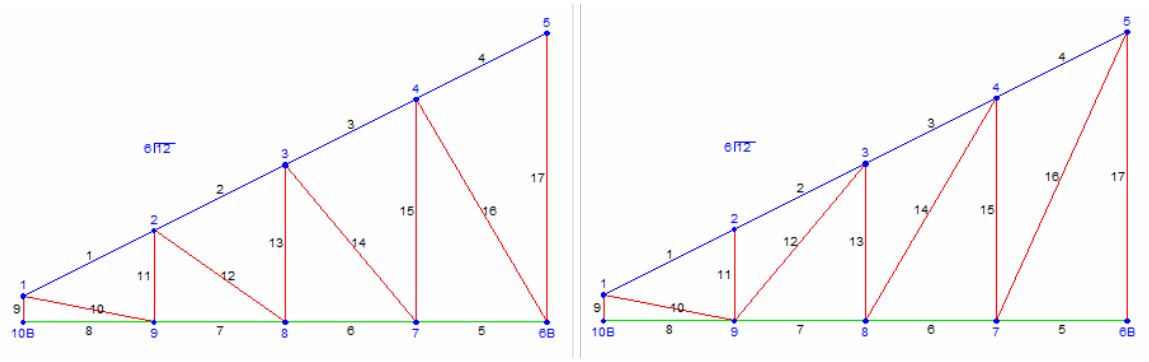


Figure 109: The *Reverse Web* tool has been used to alter the direction of webs 12, 14, and 16 of this truss.

SHIFT POINT

The *Shift Point* tool is used to move a panel point from one location on a member to another location on that same member.

Point # – Enter the number assigned to the truss point to be moved.

Member # – Enter the number of the truss member to which the point is to be moved.

Ref Point – Enter the panel point number which is to serve as the starting location for the dimension measurement.

Dimension – Enter the distance the specified *Point #* is to be moved in relation to the *Reference Point*. Enter a positive number to move the point to the right of the defined *Reference Point*. Enter a negative number to move the point to the left of the *Reference Point*.

Direction – Enter the plane along which the *Dimension* is to be measured. Potential values include:

- *Horizontal* – The *Dimension* is calculated horizontally from the *Reference Point*.
- *Vertical* – The *Dimension* is calculated vertically from the *Reference Point*.
- *Rake* – The *Dimension* is calculated at the angle of the host truss member.

SHIFT SLOPE

The *Shift Slope* tool is used to modify the defined slope of a truss member.

Member # – Enter the specific truss member for which the slope is to be altered.

Hold Point – Enter the point number that is to remain constant (not move) when the slope is redrawn.

Slope – Enter the new pitch specification to be applied to the selected truss member. For a 45° slope, enter a value of 12/12. For a 90° (vertical) pitch, enter a value of 999/12.

Hold – Enter the dimension of the truss that is to remain unaltered. Potential values include:

- *Horizontal Dim* – The length of the truss member targeted for slope change – and the length of its opposing member – will remain unchanged.
- *Vertical Dim* – The overall height of the truss will remain unaltered.
- *Opposite Slope* – The slope of the opposing truss member will remain the same, even when the slope of the target truss member is changed. The span of the target truss and the opposing truss will change as needed to accommodate the newly defined slope of the target truss.

For examples of how these three different *Hold* dimensions affect a truss, see Figures 111-114 on the following two pages of this document.

WARNING! Entering invalid or unworkable data into the *Hold Point* and/or *Slope* fields will generate one or more error messages like the ones pictured below.

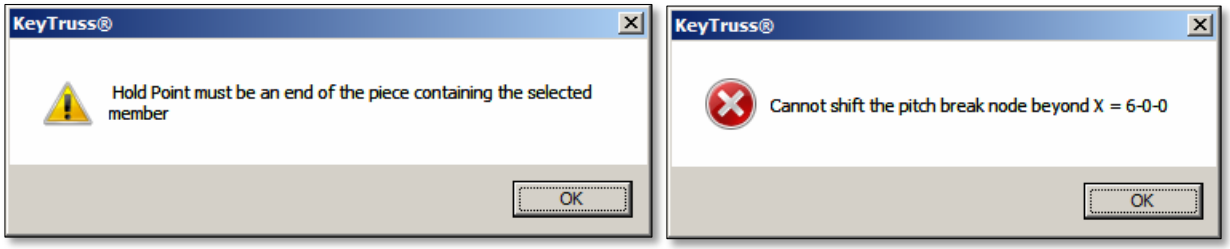


Figure 110: Error messages generated by unworkable *Hold Point* and *Slope* entries.

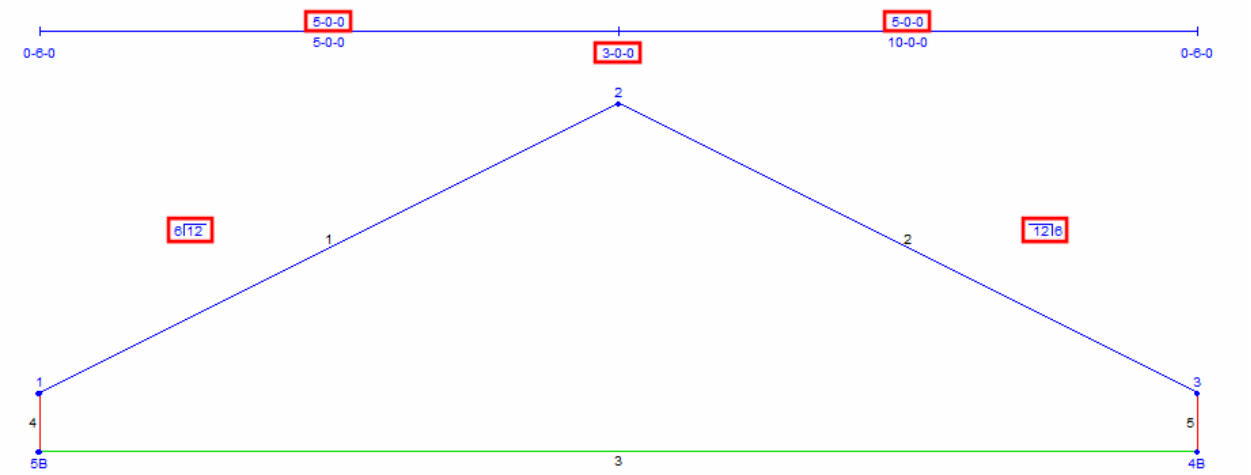


Figure 111: Prior to use of the *Shift Slope* tool, this common truss has an overall height of 3'. The top chord members are both 5' in length and have a slope of 6/12.

Figure 112: With a new slope of 12/12 defined for member 1 *AND* the **Vertical Dimension** held constant, the revised truss remains 3' in height, but length of and truss members 1 and 2 changes, as does the slope of truss member 2.

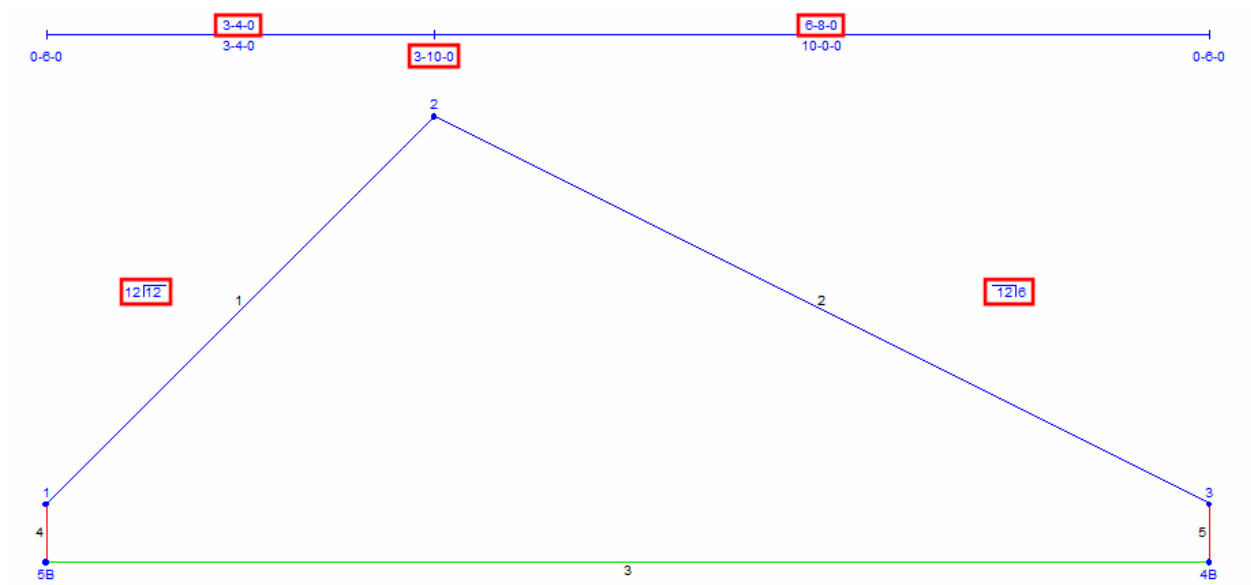


Figure 113: With a new slope of 12/12 defined for member 1 *AND* the **Opposite Slope** held constant, the revised truss is now 10" taller in overall height and the length of both members 1 and 2 have changed.

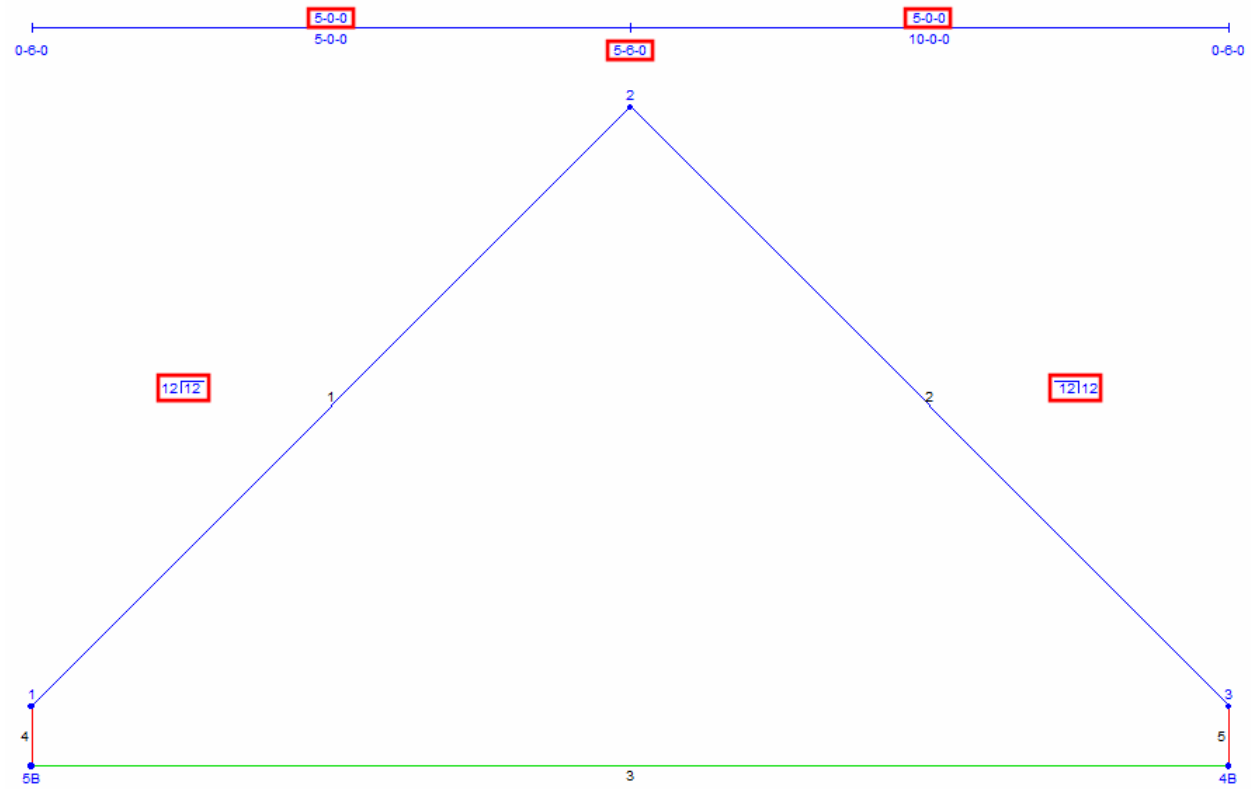


Figure 114: With a new slope of 12/12 defined for member 1 *AND* the **Horizontal Dimension** held constant, the span of truss members 1 and 2 has not changed, however, the overall height of the revised truss is now 2' 6" greater than the original, and the slope of truss member 2 has changed to 12/12 as well.

DELETE POINT

The *Delete Point* tool is used to erase one or more points from a truss, one point at a time. Note that points that are connected to joints cannot be deleted until the connected member is deleted.

Node # – Enter the number of the point that is to be deleted, or simply click on the point within the design screen.

DELETE MEMBER

The *Delete Member* tool is used to erase chords and/or webs from a truss, one member at a time.

Member # – Enter the number of the truss member to be deleted, or simply click on the member within the design screen.

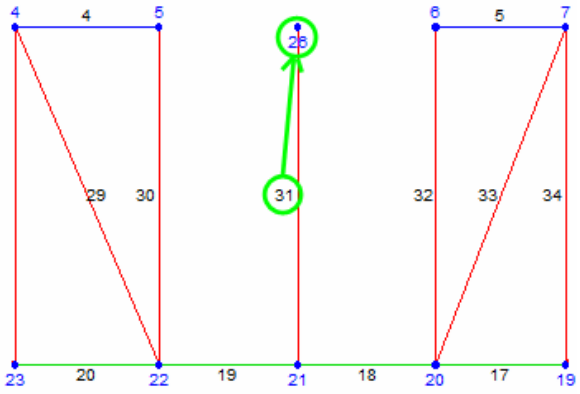


Figure 115: A deleted member may result in an unsupported panel point.

NOTE! If you delete a truss member that has a "free-standing" panel point, such as member 31 in Figure 115 at left, a message box like the one pictured below will open.

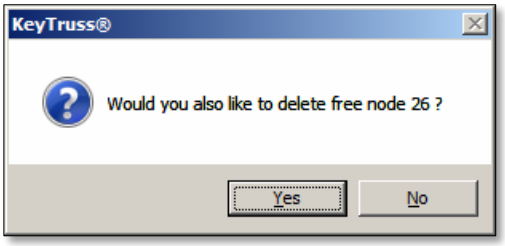


Figure 116: Choose whether or not to delete the free node.

CLEAR WEBS

Oddball's *Clear Webs* tool removes all webs from the active truss. When a user clicks on the *Clear Webs* icon, the warning message pictured at right will open. To proceed with erasing all webs, click the *OK* button. To abandon the operation and leave webbing intact, click *Cancel*.

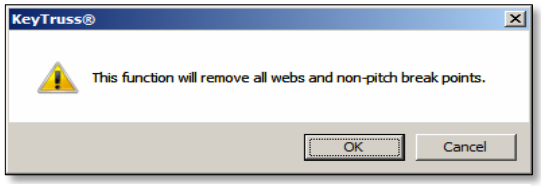


Figure 117: Confirm or cancel deletion of all webs.

CLEAR ALL

As its name implies, the *Clear All* tool deletes the entire active truss. All chords, webs, panels, points, and pieces will be erased. When a user clicks on the *Clear All* icon, the warning message pictured at right will open. To proceed with erasing the entire truss, click the *OK* button. To abandon the operation and leave the truss as is, click *Cancel*.

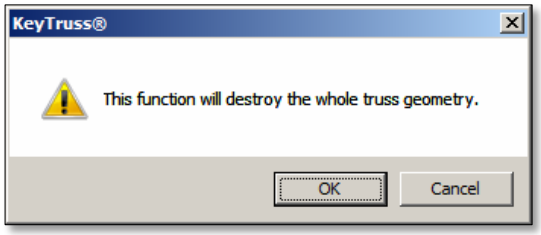


Figure 118: Be sure you really want to delete your entire truss before clicking on the *OK* button here.

QUICK WEB

The *Quick Web* tool is used to insert webs into a truss manually, one web at a time. Users need only specify the panel points where each new web is to start and end.

Start Pt – Enter the number of the panel point where the new web is to begin.

End Pt – Enter the number of the panel point where the new web is to end.

Instead of typing values into the *Start Pt* and *End Pt* fields, users may elect to click on the target panel points with the left mouse button to select them. This feature is particularly useful when creating multiple webs on a truss. When finished, clicking anywhere on the design screen with the right mouse button deactivates this drawing feature.

AUTO DIVIDE

The *Auto Divide* tool re-divides all existing chords based upon the user's *Auto Web Presets*. When a user clicks on the *Auto Divide* icon, additional panel points are added to the truss immediately, without any further input from the user. The *Auto Web Presets* that control the *Auto Divide* function include:

- *Min Distance between Nodes*
- *Vertical Web* (at *Pitch Breaks*, and/or *Internal Bearings*, and/or *Point Loads*)

AUTO QUICK WEB

The *Auto Quick Web* tool automatically webs a truss using the existing panel points.

GS TRUSS BATCH PROCESSES

The Batch Menu

The batch function is used to perform a single action against multiple truss files simultaneously. There are two basic types of actions that can be performed. The first is to run a collection of truss files through the analysis/design process. The second is to generate output for a collection of truss files. As can be seen in the Figure 119 at right, the list of potential *Batch Process* outputs includes: *Plotting*, *Cutting*, *Jig Settings*, *Full Scale Joint Details*, *Consolidated Cut List*, *Material List*, *Billing*, *Laser Jig Files*, *Roll Former Files*, and *Production Output*. Four of these ten different output types (*Material Lists*, *Billing Documents*, *Roll Former Files*, and *Production Output*) can only be generated as part of a batch process. The remaining six output types (*Plotting*, *Cutting*, *Jig Settings*, *Full Scale Joint Details*, *Consolidated Cut List*, and *Laser Jig Files*) can be generated for a single truss file as well as for a batch. These six outputs are covered in detail in the section of this document entitled "*GS Truss Outputs*." Within this section, they will only be discussed peripherally, in terms of how they pertain to batch processing.

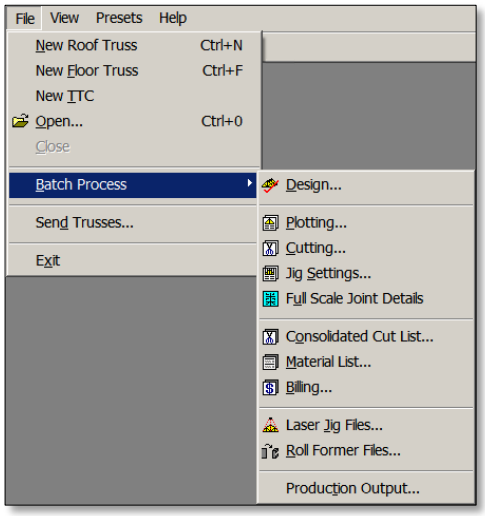


Figure 119: *Batch Process* menu options.

NOTE! None of the options under the *File* → *Batch Process* menu are available if there are any truss files open on the GS Truss *Main Screen*.

It is worth noting that many of the parameters that control the execution of batch functions are defined within *System Presets*. We will briefly explore these batch-related preset settings before turning to an examination of the various batch functions themselves.

Batch-Related System Presets

The *Runtime* tab within *System Presets* contains six different settings that impact how batch processes are executed. (See Figure 120.)

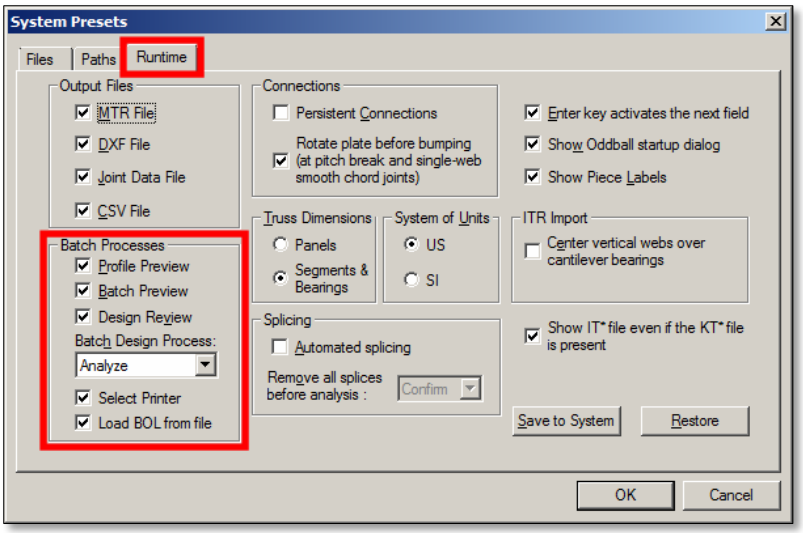


Figure 120: Batch-related *System Presets*.

Profile Preview – When the *Profile Preview* checkbox is activated, and a batch analysis/design process is executed, GS Truss displays the profile of each truss, one truss at a time, in a separate window. Note that the *Profile Preview* function applies exclusively to the batch importation and conversion of GS Plan roof truss (ITR) and floor truss (ITF) files. For additional information about the *Profile Preview* function, please refer to pages 25-26 of this document.

Batch Preview – When the *Batch Preview* checkbox is activated, GS Truss loads the profile of each truss on the *Main Screen*, one truss at a time, pausing for user input prior to executing the analysis/ design process. This gives the user an opportunity to fine-tune each truss prior to initiating analysis or design. For additional information about the *Batch Preview* function, please refer to page 26 of this document.

Design Review – Similar to the *Batch Preview* option, when the *Design Review* checkbox is activated, GS Truss loads the first truss profile in a batch and displays it on the *Main Screen*. Unlike *Batch Preview* however, the analysis/design process for the truss is executed immediately. After one file has been processed the application pauses, giving the user time to review details about the analysis/design results before proceeding to the next file. For additional information about the *Design Review* function, please refer to page 26 of this document.

Batch Design Process – The *Batch Design Process* drop-down list provides two options:

- *Analyze* – When the *Analyze* option is selected, GS Truss evaluates the viability of trusses based upon the calculation of applied loads and internal member forces, using only the first material listed in the *Material Priority Table*. No materials are substituted for trusses that fail the *Analyze* process.
- *Design* – When the *Design* option is selected, trusses are subjected to the same testing scenarios involved in the *Analyze* process. The only difference is that, when there is a failure, truss materials are bumped through the *Material Priority Table (MPT)* until a viable material is found or all materials in the MPT have been tried and failed.

Select Printer – When the *Select Printer* checkbox is activated, any batch process that involves printing outputs opens a *Print* dialog box, rather than automatically printing to the computer's default printer. This allows the user to change the target printer and printer properties, as well as the number of copies to be printed.

Load BOL from file – When this checkbox is activated, GS Truss loads customer name and address information (gleaned from GS Plan LAY files) into the GS Truss *Batch Billing Screen*. Having this information entered automatically helps expedite the process of generating quotes, invoices, and bills of lading.

The Batch Selection Dialog Box

Selecting any of the functions on the *Batch Process* menu will launch a *Batch Selection* dialog box like the one shown in Figure 121. The *Batch Selection* dialog is used to create, save, and load collections of truss files as a batch. What follows is a quick overview of the various parts of this dialog box.

1. **Project Tree** – The *Project Tree* displays a list of GS Truss jobs and the truss-related files that are associated with those jobs. Users can open and browse jobs to view their associated truss files by clicking on the plus sign to the left of the job name. Note that the specific contents that are displayed within the *Project Tree* will depend upon the user's selection of radio buttons under the *File Types* section of this dialog box.

   Users can select multiple truss files at one time from within the *Project Tree*. There are two ways to select multiple files:

   - **Shift** – The *Shift* key is used to select multiple truss files that are listed consecutively under a single job. To select multiple consecutive listings, simply click on the first truss to select it, then hold down the *Shift* key and click on the last truss in the group to be added to the batch. The first and last trusses become highlighted, as well as all the trusses in between them.
   - **Ctrl** – The *Control* key is used to select multiple truss files that are not listed consecutively in the *Project Tree*. These can be non-consecutive listings under a single job, or they can be listings from different jobs. To select multiple, non-consecutive listings, hold down the *Control* key while clicking on the files to be added to your batch.

   Once the desired trusses have been selected in the *Project Tree*, click on the *Add* button to insert the files into the *Selected Trusses* list on the right-hand side of the *Batch Selection* dialog. The name of each selected truss in the *Project Tree* will change from black to gray font to indicate that the trusses have been added to the batch.

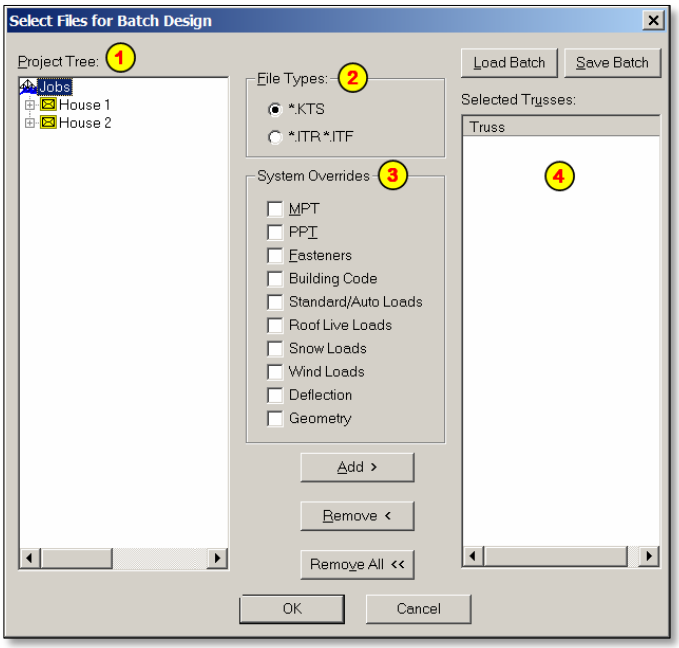


Figure 121: The numbers presented here in the *Batch Selection* dialog box correspond with their descriptions.

2. **File Types** – The *File Type* radio buttons are used to specify the type(s) of files that will be displayed within the *Project Tree*. The options include:

   - ***.KTS** – When the *KTS* radio button is selected, only truss files in the native GS Truss format (KTS) will be visible and selectable from within the *Project Tree*.
   - ***.ITR *.ITF** – When the *ITR/ITF* radio button is selected, only GS Plan roof and floor truss files that have been imported into GS Truss will be visible and selectable from within the *Project Tree* of the *Batch Selection* dialog box.

3. **System Overrides**

   - **MPT** – When this checkbox is activated, GS Truss will overwrite truss-specific *Material Priority Table* files (MPTs) with the values in the default *System MPT* file. For more information about MPT files, refer to the section within this document entitled "*Working with Materials & Material Priority Tables*."
   - **PPT** – When the *Plate Priority Table* (PPT) checkbox is activated, GS Truss will overwrite truss-specific PPT files with the values in the default *System PPT* file. For more information about PPT files, refer to the section within this document entitled "*Working with Plate Priority Tables*."
   - **Fasteners** – When the *Fasteners* checkbox is activated, GS Truss overrides the fasteners used on each truss in the batch with the fastener values specified on the *Fasteners* tab of the user's *Engineering/Design Presets*.
   - **Building Code** – When this checkbox is activated, GS Truss will overwrite any truss-specific *Building Code* with the *Building Code* value selected on the *Design* tab of the user's *Engineering/Design Presets*.
   - **Standard/Auto Loads** – When this checkbox is activated, GS Truss will overwrite any truss-specific *Standard/Auto Loads* with the load values defined on the *Standard/Auto Loads* tab of the user's *Engineering/Design Presets*.
   - **Roof Live Loads** – When this checkbox is activated, GS Truss will overwrite any truss-specific *Roof Live Loads* with the load values defined on the *Roof Live Loads* tab of the user's *Engineering/Design Presets*.
   - **Snow Loads** – When this checkbox is activated, GS Truss will overwrite any truss-specific *Snow Loads* with the load values defined on the *Snow Loads* tab of the user's *Engineering/Design Presets*.
   - **Wind Loads** – When this checkbox is activated, GS Truss will overwrite any truss-specific *Wind Loads* with the load values defined on the *Wind Loads* tab of the user's *Engineering/Design Presets*.
   - **Deflection** – When this checkbox is activated, GS Truss will overwrite any truss-specific *Deflection* values with the values defined on the *Deflection* tab of the user's *Engineering/Design Presets*.
   - **Geometry** – When this checkbox is activated, GS Truss will overwrite truss-specific *Geometry* values (such as *Heel Height*, *Seat Cut*, etc.) with the values defined in the user's *Geometry Presets*.

4. **Selected Trusses** – The *Selected Trusses* pane displays all the truss files that have been added to a batch by the user.

COMMAND BUTTONS

Add – Clicking on the *Add* command button adds the trusses currently selected in the *Project Tree* to the *Selected Trusses* pane of the *Batch Selection* dialog box.

Remove – Clicking on the *Remove* command button deletes the currently selected truss(es) from the *Selected Trusses* pane of the *Batch Selection* dialog box.

Remove All – Clicking on the *Remove All* command button deletes all trusses from the *Selected Trusses* pane of the *Batch Selection* dialog box.

Load Batch – Clicking on the *Load Batch* command button opens the *Batch Options* pane in the *Batch Selection* dialog box. (See Figure 122 at right.) To load an existing batch of files, click on batch name within this pane to select it, and then click on the *Load* button below. The individual truss files contained within the batch will appear under the *Selected Trusses* pane.

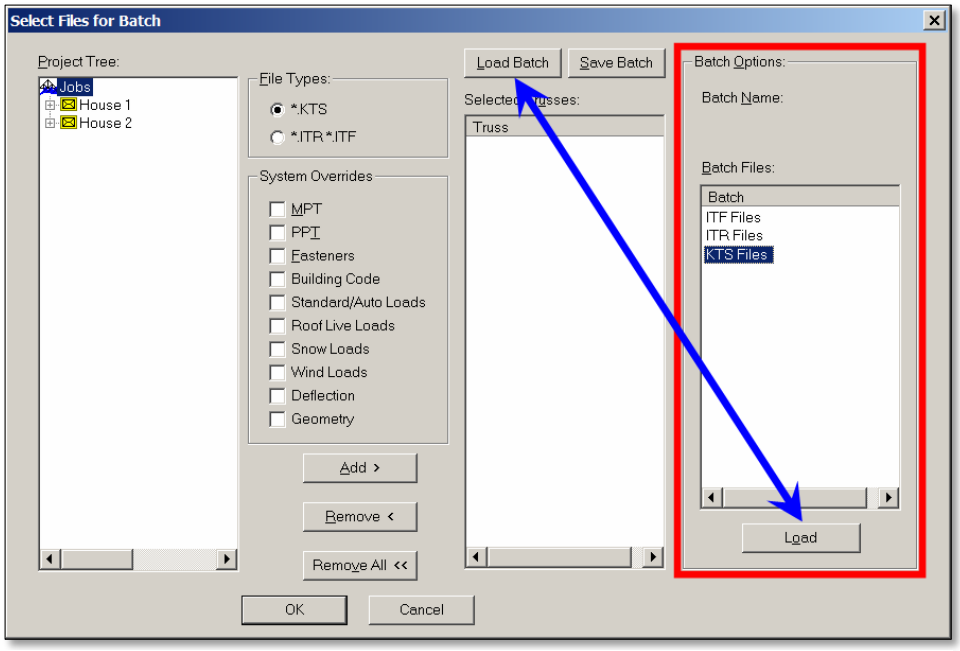


Figure 122: The *Batch Options* pane opens when a user clicks on the *Load Batch button.*

Save Batch – If you have selected a group of files from the *Project Tree* that you wish to save as a batch, click on the *Save Batch* command button. This will open the *Batch Options* pane in the *Batch Selection* dialog box, as pictured at right. Type in a unique name for your new batch in the *Batch Name* field and then click on the *Save* button below. Your new batch file will now appear in the *Batch Files* list.

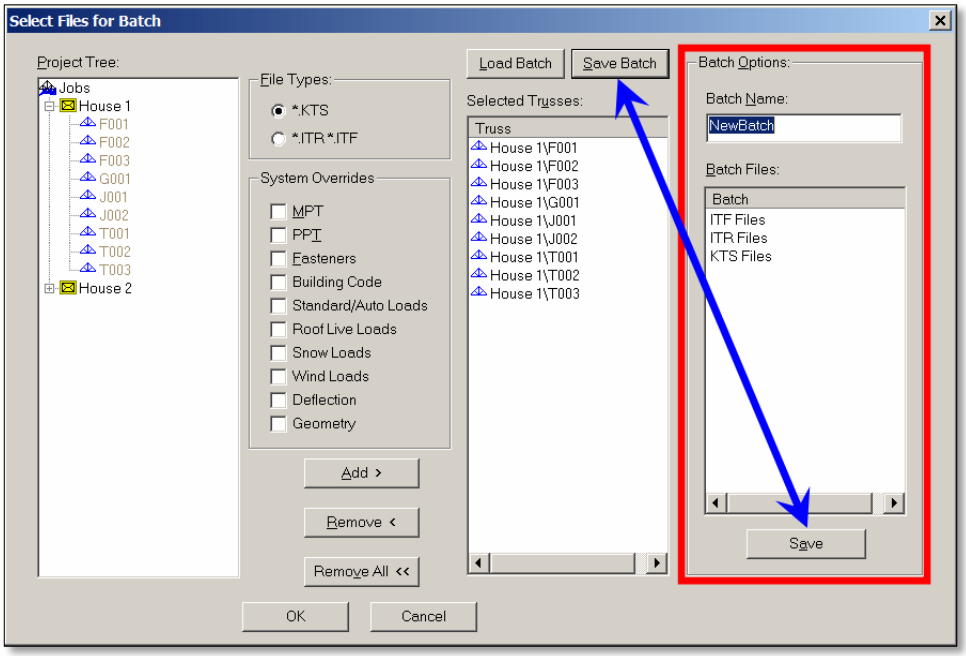


Figure 123: The *Batch Options* pane opens when a user clicks on the *Save Batch button.*

NOTE! When a collection of truss files is saved as a batch, GS Truss saves the batch (with a *KBS* extension) in a subfolder named *Batch* under the *Jobs* folder. Once created, a batch file cannot be deleted directly from within the *Batch Files* pane of the *Batch Selection* dialog box. Instead, the file must be deleted from within this *Batch* subfolder.

OK – Clicking on the *OK* command button closes the *Batch Selection* dialog box and kicks-off execution of the selected batch process.

Cancel – Clicking on the *Cancel* command button closes the *Batch Selection* dialog box without executing the selected batch process.

Batch-Only Output Processes

As mentioned at the beginning of this document, three of the eight output processes that can be executed for a batch cannot be executed for individual truss files. These include *Material Lists*, *Billing Documents*, and *Roll Former Files*. We will now turn to an examination of these three "batch-only" functions.

MATERIAL LISTS

The *Material List* batch function is used to print a *Consolidated Material List*. Each *Consolidated Material List* contains aggregated information for all trusses in a batch, and includes: the name of the required materials, the number of pieces to be produced for each material type, and the total length, price, and weight of each material. To create a *Material List* for a batch, complete the following steps:

1. From within GS Truss, go to the menu bar and select *File* → *Batch Process* → *Material List*.
2. The *Batch Selection* dialog box will open. From within this dialog box, create or select a batch of truss files to be included in your *Consolidated Material List* and then click on the *OK* button.
3. GS Truss will open your *Consolidated Material List* report in *Print Preview* mode. When you are done reviewing the preview of your report, click on the *Print* button at the top of the *Print Preview* window.
4. A *Print* dialog box will open. Select the printer to which you wish to print, and the desired number of copies. When you are ready, click on the *OK* button to send your job to the printer and close the *Print* dialog box.

BILLING

The *Billing* batch function is used to generate *Quote*, *Invoice*, and *Bill of Lading* documents. To create a billing document, complete the following steps:

1. Go to the menu bar in GS Truss and select *File* → *Batch Process* → *Billing*. This will open a *Billing* dialog box like the one pictured at right.
2. From within the *Billing* dialog box, click on the *New* button. The *Batch Selection* dialog box will open.
3. From within the *Batch Selection* dialog box, select the files to be batched for your billing operation, and then click on the *OK* button at the bottom of the dialog.

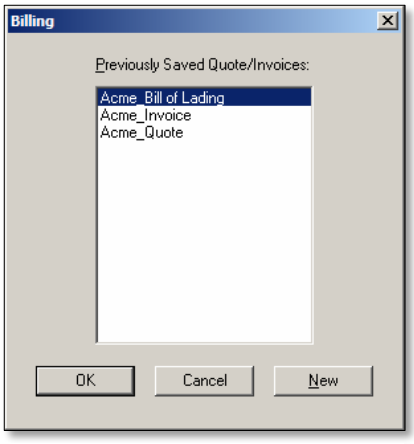


Figure 124: The *Billing* dialog box.

4. The *Quote/Invoice/Bill of Lading* dialog box, like the one in Figure 125 below, will open. Enter data into the fields of this dialog box as appropriate. Be sure to select the radio button for the type of document you wish to produce. Note that pricing information is entered into this dialog box automatically by GS Truss, based on the user's *Pricing Presets*.

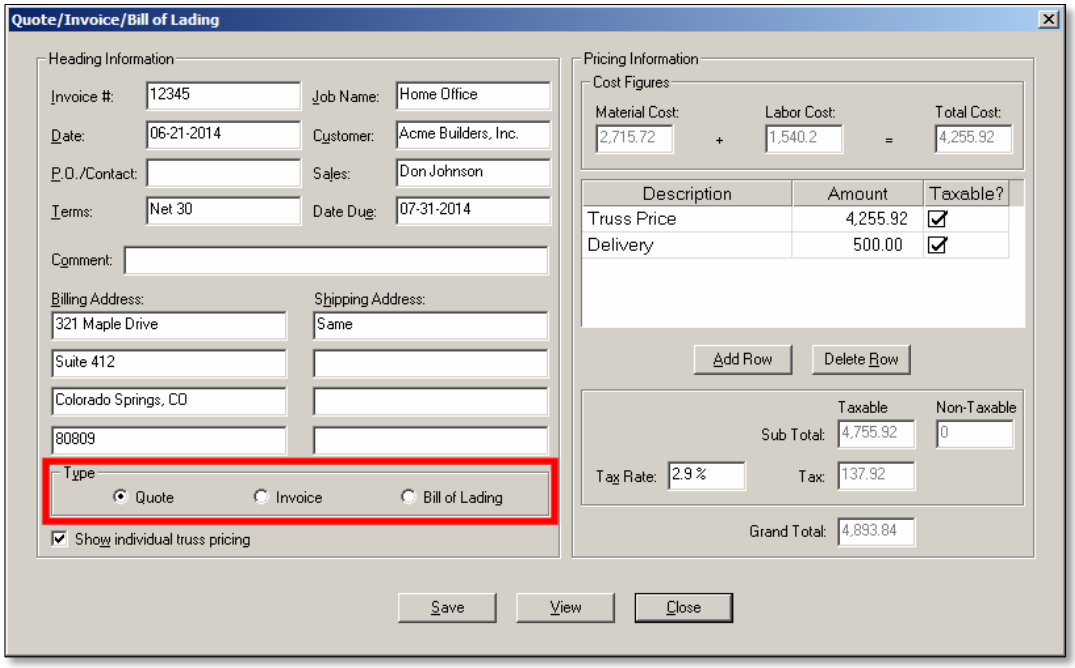


Figure 125: The *Quote/Invoice/Bill of Lading* dialog box.

When all fields within the *Quote/Invoice/Bill of Lading* dialog box have been completed to your satisfaction, click on one of the three command buttons at the bottom of the dialog:

Save – Clicking on the *Save* command button will open a dialog box like the one shown at right. Type in a name for your new document in the field provided and click on the *OK* button. Your file will be saved to a subfolder named *Quotes*, under the GS Truss *Jobs* folder.

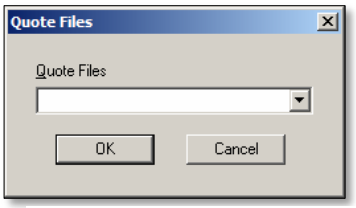


Figure 126: Save your billing document using this dialog box.

View – Clicking on the *View* command button will open your new document in *Print Preview*. From here, you can review the contents of your document and, if satisfied, proceed with printing by clicking on the *Print* button.

Close – Clicking on the *Close* command button closes the *Quote/Invoice/Bill of Lading* dialog box (without saving the new document) and returns the user to the main window in GS Truss.

ROLL FORMER FILES

GS Truss can produce roll former files with all of the specifications required for the manufacture of your trusses. To create roll former files for a batch of trusses, complete the following steps:

1. From the menu bar within GS Truss, select *File → Batch Process → Roll Former Files*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files to be included in your roll former output, and then click on the *OK* button at the bottom of the dialog.
3. GS Truss will open a Windows *Save As* dialog box to initiate the process of saving two new roll former files. These two files contain all the information required by a roll former to fabricate the pieces for your batch of trusses. The default names for these files are *GSSdata.txt* and *GSShead.txt*, however, users are free to name these files as they see fit. From within the *Save As* dialog box, users can also select the location at which these files are to be saved. If any of the truss pieces are too small to be fabricated by the roll former, GS Truss will open a message box like the one pictured at right. Note that this process is only available when GSS has been selected as the value in the *Roll Former Style* field of *Cutting / Plotting Presets*.

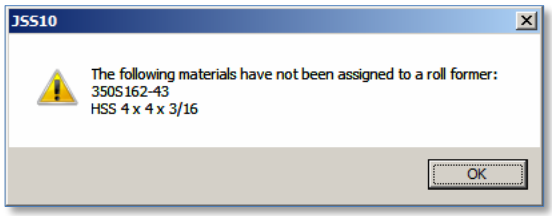


Figure 127: Small pieces are not included in roll-former outputs.

PRODUCTION OUTPUT

Production Output is a batch function that generates detailed logistics information to be used in component manufacturing, assembly, and shipping. To generate Production Output files, perform the following actions:

1. From the menu bar within GS Truss, select *File → Batch Process → Roll Former Files*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files to be included in your Production Output files, and then click on the *OK* button at the bottom of the dialog box.
3. GS Truss will open a Windows *Save As* dialog box to initiate the process of saving your *Production Output* files. By default, the Production Output process will generate two files; *ProductioDataTR.csv* and *ProductioDataTR.jsn*. Once again, by default, these files will be saved to the following location: *[Drive Root]:\[GS Plan Directory]\JOBS\[Job Name]\Production*.

Content of the ProductionDataTR.csv File

The ProductioDataTR.csv file contains the following columns of information:

Truck # – The truck onto which an assembled truss or wall component is to be loaded for shipping. This data is entered into the CSV file manually.

Stack – The stack of components to which an assembled truss or wall is to be placed in preparation for shipping.

Stack Total – The total weight of the steel (both GSS-manufactured and purchased) to be used in the fabrication of a given stack of components.

[Component] Name – The alpha-numeric code assigned to a given truss or wall component.

Cart – The staging-area cart onto which the roll-formed pieces of the given truss or wall component are to be stored for later assembly.

Arm – The specific section of the assigned staging-area cart where roll-formed pieces of a given truss or wall component are to be stored for later assembly.

Make – The weight of the steel that will be roll formed by a GSS machine to make a given truss or wall component.

Buy – The weight of the steel that cannot be roll formed by a GSS machine and that must, therefore, be purchased from a third-party manufacturer in order to make a given truss or wall component.

Total – The total combined weight of steel, both GSS-rolled and purchased from a third party, required to manufacture a given truss or wall component.

Length – The total length of an assembled truss or wall component.

Height – The total height of an assembled truss or wall component.

Sq Ft – The total square feet of an assembled truss or wall component.

LB/NLB – This column indicates whether a given truss or wall component is designated as load bearing or non-load bearing.

Width – The depth of an assembled truss or wall component

 # Openings – The number of openings existing ion a given wall component.

 # Plies – The number of plies used in the manufacture of a given truss or wall component.

 # Plates – The total number of plates required to assemble a given truss or wall component.

 # Screws – The total number of screws required to assemble a given truss or wall component.

 # Clips – The total number of clips required to assemble and install a given truss.

Estimated Labor Hours to Assemble – The projected number of hours required to fabricate a given truss or wall component.

LF to Roll – The total number of linear feet of steel used in the manufacture of a given truss or wall component.

Estimated Hours to Roll - Minutes – The projected amount of time it will take for a roll former to manufacture the pieces for a given truss or wall component.

Material Types – A listing of the material codes required for manufacturing of all of the trusses and/or wall components in the given job.

Total LF – The total linear feet of steel required to manufacture all of the trusses and/or wall components in the given job.

Total LBS – The total pounds of steel required to manufacture all of the trusses and/or wall components in the given job.

Changeover Time – The estimated total time required for changing-out rolls of steel on GSS roll formers for the given job.

Plates – A listing of the plate materials required for manufacturing of all of the trusses and/or wall components in the given job.

Total # – The total number of plates required to fabricate all the trusses in a given job.

Total LBS – The weight of the steel plates required to fabricate all the trusses in a given job.

Content of the ProductionDataTR.jsn File

This feature is still under development, and will be documented in the next release of GS Truss.

Other Batch Processes

As mentioned at the beginning of this document, six of the nine processes that can be executed for a batch can also be executed for individual truss files. We will now turn to a brief, summary explanation of these six functions.

DESIGN

The *Design* batch function is used to run a collection of truss files through the analysis process or the design process. Whether design is executed, or an analysis is performed instead, depends upon the user's *Batch Design Process* settings within *System Presets*. (See Figure 120 on page 97 of this document.) To perform either an analysis or a design process, complete the following steps:

1. From the menu bar within GS Truss, select *File* → *Batch Process* → *Design*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files to be included in the analysis/design process, and then click on the *OK* button at the bottom of the dialog.
3. From here, the specific manner in which GS Truss presents and processes your truss files is contingent upon the *Batch Processes* you have defined on the *Runtime* tab of your *System Presets*. (See the section titled "*Batch Related System Presets*" on page 97 of this document.)
4. When the system pauses between files for user input, the user can proceed to the next file in the batch in one of two ways. The first is to press the *End* key on the keyboard. The second is to click on the *Next* icon on the *Batch* toolbar. (See the figure at right.) Note that the *Batch* toolbar also includes an icon for going back to the *Previous* file in the batch, and an icon to *Quit* the batch process altogether. There are no keyboard equivalents for these two functions.

5. When all files in the batch have completed the analysis/design process, the *Batch Log* tab of the data pane will display the message "*Batching Complete*." (See the Figure 128 at right.)

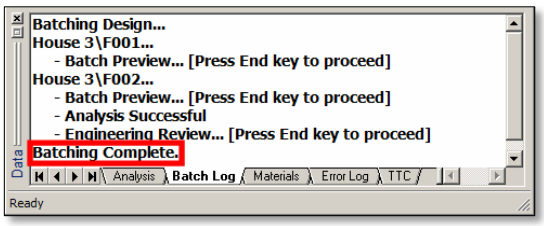


Figure 128: Batch log message that the batching process has completed.

PLOTTING

The *Plotting* batch function prints a separate *Plot Drawing* for each truss in a batch. The specific content of these *Plot Drawings* is governed by the values defined within the *Plotting* tab of the user's *Cutting/Plotting Presets*. Note that each truss within the batch needs to have successfully completed the analysis/design process for plot data to be available. To create *Plot Drawings* for a batch of trusses, complete the following steps:

1. From the menu bar within GS Truss, select *File* → *Batch Process* → *Plotting*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files for which you wish to create *Plot Drawings* and then click on the *OK* button at the bottom of the dialog.
3. If you have the *Select Printer* checkbox enabled on the *Runtime* tab of your *System Presets*, GS Truss will open a *Print* dialog box, allowing you to select the target printer and number of copies you would like to print. If this checkbox is not enabled, GS Truss will send the *Plot Drawings* directly to your computer's default printer.

For additional information about *Plot Drawings*, please refer to page 161 of this document.

CUTTING

The *Cutting* batch option prints a separate *Cut List* report for each truss in a batch. The specific content of these *Cut Lists* is governed by the values defined on the *Cutting* tab of the user's *Cutting/Plotting Presets*. Note that each truss in the batch must have successfully completed the analysis/design process for cutting data to be available. To create *Cut List* reports for a batch of trusses, complete the following steps:

1. From the menu bar within GS Truss, select *File* → *Batch Process* → *Cutting*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files for which you wish to create *Cut List* reports, and then click on the *OK* button at the bottom of the dialog.
3. If you have the *Select Printer* checkbox enabled on the *Runtime* tab of your *System Presets*, GS Truss will open a *Print* dialog box, allowing you to select the target printer and number of copies you would like to print. If this checkbox is not enabled, GS Truss will send the *Cut List* reports directly to your computer's default printer.

For additional information about *Cut Lists*, please refer to page 160 of this document.

JIG SETTINGS

The *Jig Settings* batch function prints a separate *Jig Settings* report for each truss in a batch. The specific content of these *Jig Setting* reports is governed by the values defined in the user's *Jig Setting Presets*. Note that each truss in the batch must have successfully completed the analysis/design process for *Jig Settings* data to be available. To create *Jig Setting* reports for a batch of trusses, complete the following steps:

1. From the menu bar within GS Truss, select *File* → *Batch Process* → *Jig Settings*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files for which you wish to create *Jig Setting* reports, and then click on the *OK* button at the bottom of the dialog.
3. If you have the *Select Printer* checkbox enabled on the *Runtime* tab of your *System Presets*, GS Truss will open a *Print* dialog box, allowing you to select the target printer and number of copies you would like to print. If this checkbox is not enabled, this step is skipped.
4. Next, GS Truss will open a *Jig Table Offsets* dialog box like the one pictured at right. This dialog box is used to enter horizontal ("X") and vertical ("Y") offsets for placement of the truss on a jig table. Enter the desired "X" and "Y" offsets in their respective fields. To apply these offsets to the entire batch, click in the *Apply offsets to all trusses in batch* checkbox. If this checkbox is not activated, the *Jig Table Offsets* dialog box will remain open and GS Truss will pause after processing each file, awaiting the user's entry of "X/Y" data for the next file in the batch.

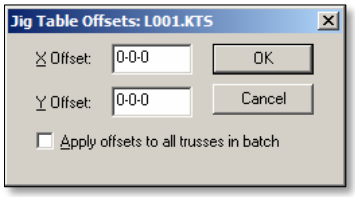


Figure 129: The *Jig Table Offsets* dialog box.

5. Click on the *OK* button to send your files to the printer and close the *Jig Table Offsets* dialog box.

For additional information about *Jig Setting Reports*, please refer to page 166 of this document.

FULL SCALE JOINT DETAILS

The *Full Scale Joint Details* batch function prints a report containing a life-sized diagram of every joint on every truss in a batch. (One diagram per page.) Note that each truss in the batch must have successfully completed the analysis/design process for joint-details data to be available. To create a *Full Scale Joint Details* report for a batch of trusses, complete the following steps:

1. From the menu bar within GS Truss, select *File* → *Batch Process* → *Full Scale Joint Details*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files for which you wish to create a report, then click on the *OK* button at the bottom of the dialog.
3. If you have the *Select Printer* checkbox enabled on the *Runtime* tab of your *System Presets*, GS Truss will open a *Print* dialog box, allowing you to select the target printer and number of copies you would like to print. If this checkbox is not enabled, GS Truss will send the *Full Scale Joint Details* report directly to your computer's default printer.

For additional information about *Full Scale Joint Detail Reports*, please refer to page 164 of this document.

CONSOLIDATED CUT LISTS

Like the *Cutting* option, the *Consolidated Cut List* batch function prints a *Cut List* report. The difference between these two options is that the *Consolidated Cut List* function prints a single, combined and abbreviated report, while the *Cutting* function prints a separate and complete report for each truss in a batch. The specific content of the *Consolidated Cut List* report is governed by the values defined on the *Cutting* tab of the user's *Cutting/Plotting Presets*. Note that each truss in a batch needs to have successfully completed the analysis/design process for *Consolidated Cut List* data to be available. To create a *Consolidated Cut List* report for a batch of trusses, complete the following steps:

1. From the menu bar within GS Truss, select *File* → *Batch Process* → *Consolidated Cut List*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files for which you wish to create a *Consolidated Cut List* report, and then click on the *OK* button at the bottom of the dialog.
3. If you have the *Select Printer* checkbox enabled on the *Runtime* tab of your *System Presets*, GS Truss will open a *Print* dialog box, allowing you to select the target printer and number of copies you would like to print. If this checkbox is not enabled, this step is skipped.
4. In the final step, GS Truss opens your new *Consolidated Cut List* report in a *Print Preview* window. If the report meets with your approval, click on the *Print* command button to send the report to your printer and close the *Print Preview* window. If the report does not meet with your approval, simply close the *Print Preview* window and the entire process will be terminated.

For more information about *Consolidated Cut List* reports, please refer to the section within this document entitled "*GS Truss Outputs*."

LASER JIG FILES

The *Laser Jig Files* batch function creates a single *Laser Jig File* for all trusses in a batch. This file can then be imported into a *Laser Jig* machine to aid in the assembly of the trusses. Note that each truss in the batch must have successfully completed the analysis/design process for *Laser Jig* data to be available. To create *Laser Jig Files* for a batch of trusses, complete the following steps:

1. From the menu bar within GS Truss, select *File* → *Batch Process* → *Laser Jig Files*. This will open the *Batch Selection* dialog box.
2. From within the *Batch Selection* dialog box, select the files you wish to include in the *Laser Jig* output, and then click on the *OK* button at the bottom of the dialog.
3. GS Truss will create a single *Laser Jig File* with a "tps" extension. *Laser Jig Files* are stored under the GS Truss *Jobs* folder for the particular job with which the trusses in the batch are associated.

For more information about *Laser Jig Files*, please refer to the section within this document entitled "*GS Truss Outputs*."

USING AUTO WEB & QUICK AUTO WEB

Auto Web

As its name implies, the *Auto Web* function is used to web trusses automatically. There are two ways to initiate *Auto Web*:

1. Go to the GS Truss menu bar and click on *Geometry* → *Auto Web*.
2. On the GS Truss *Geometry* toolbar, click on the *Auto Web* icon.

Performing either of these actions will open the *Auto Web* window like the one pictured at right. This window contains fields for defining *Auto Web* parameters, as well as a diagram of the active truss in *Element View*. Notice that the fields presented in the *Auto Web* window, and their associated values, are identical to those defined in the user's *Auto Web Presets*. Review the *Auto Web* settings to make sure that they are defined to your liking. For information about the individual fields and values associated with *Auto Web Presets*, please see the section of this document entitled "*Working with GS Truss Presets*."

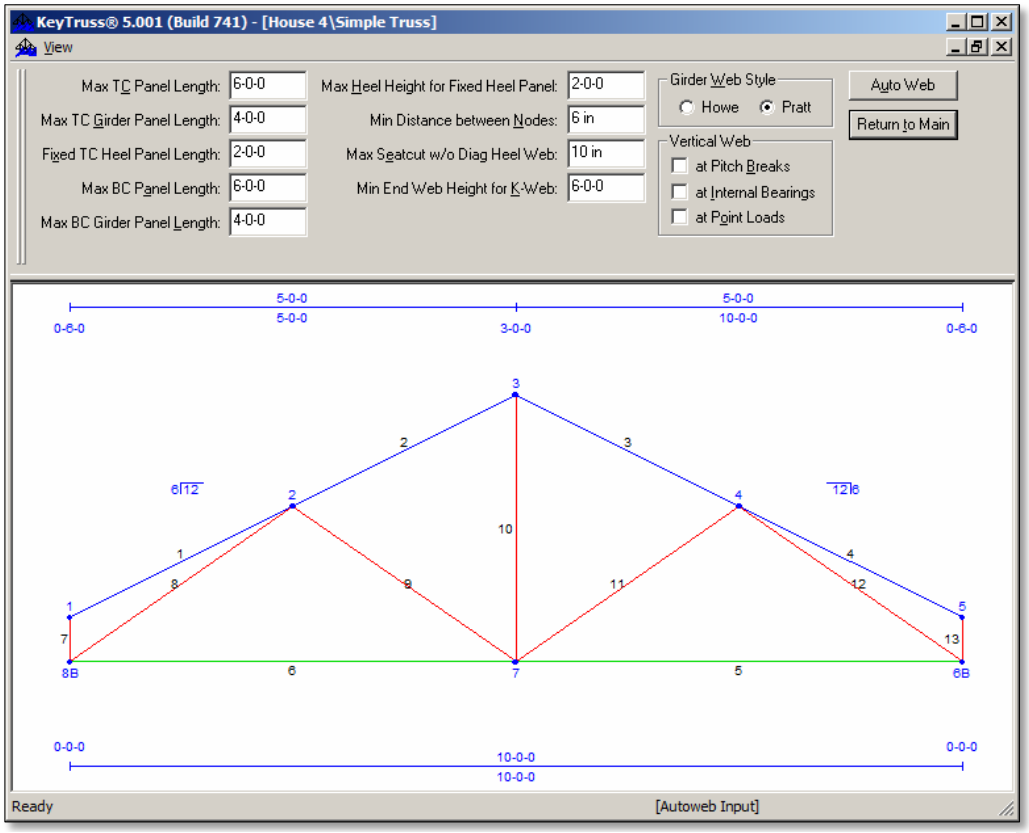


Figure 130: The *Auto Web* window displays your truss in *Element View*.

Command Buttons

Auto Web – Once you are sure that your *Auto Web* settings have been defined according to the current need, click on the *Auto Web* command button to complete the webbing of your truss.

Return to Main – Once you have finished webbing your truss, click on the *Return to Main* command button to return to the main GS Truss window.

Quick Auto Web

As mentioned in the previous section, the *Auto Web* function provides users with an opportunity to review their *Auto Web Presets* prior to initiating the *Auto Web* process. If you are confident that your *Auto Web Presets* are already defined in accord with your needs, you can bypass this review process by executing the *Quick Auto Web* function. There are two different ways to execute *Quick Auto Web*:

1. Click on the *Quick Auto Web* icon on the *Auto Web* toolbar.
2. Go to the GS Truss menu bar and click on *Geometry* → *Quick Auto Web*.

For information about *Auto Web Presets*, please see the section entitled "*Working with GS Truss Presets*."

USING GABLE WEB & QUICK GABLE WEB

Gable Web

The *Gable Web* function is used to web gable trusses automatically. There are two ways to initiate *Gable Web*:

1. Go to the GS Truss menu bar and click on *Geometry* → *Gable Web*.
2. On the GS Truss *Geometry* toolbar, click on the *Gable Web* icon.

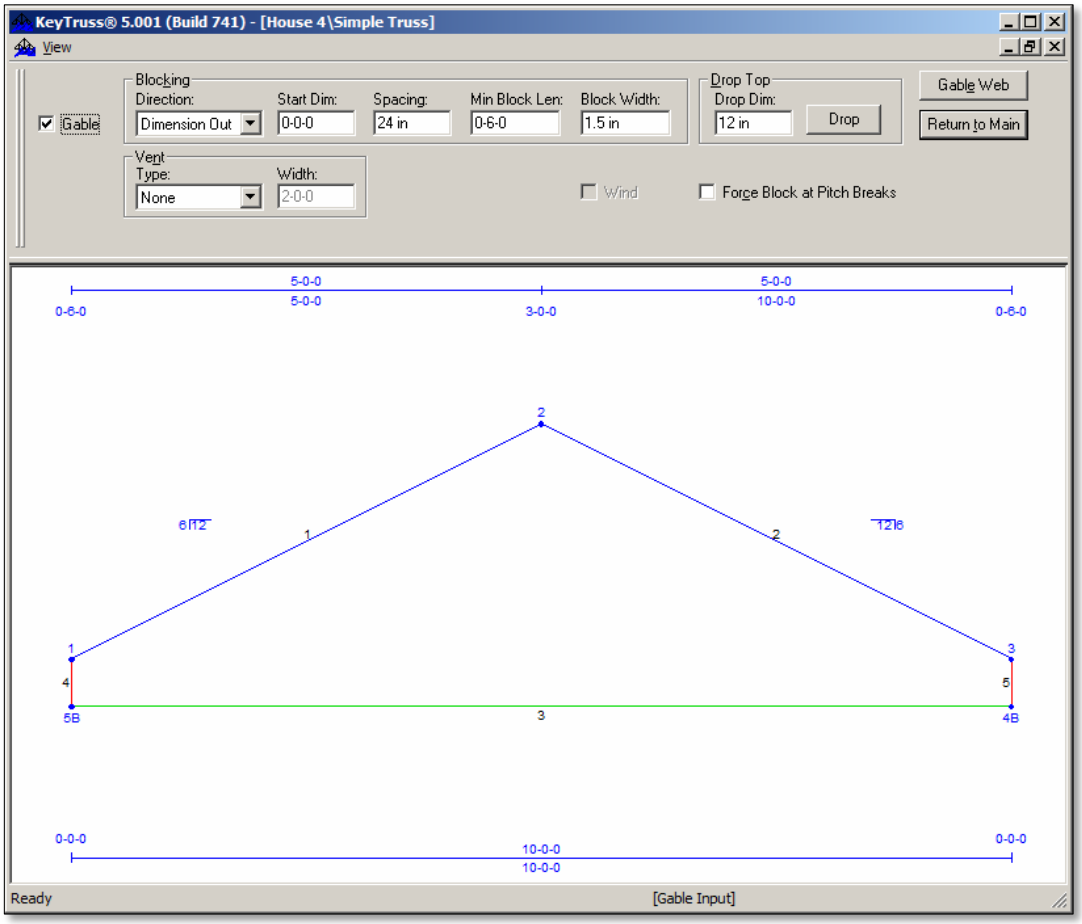


Figure 131: The *Gable Web* window in GS Truss.

Performing either of these actions will open a *Gable Web* window like the one pictured above. This window contains fields for defining *Gable Web* parameters, along with a diagram of the active truss in *Element View*. Notice that the fields presented in the *Gable Web* window, and their associated values, are identical to those defined in the user's *Gable Web Presets*. Review the *Gable Web* settings to make sure that they are defined to your liking. For information about the individual fields and values associated with *Gable Web Presets*, please see the section of this document entitled "*Working with GS Truss Presets*."

Command Buttons

Gable Web – Once you are sure that your *Gable Web* settings have been defined according to the current need, click on the *Gable Web* command button to complete the webbing of your truss.

Return to Main – Once you have finished webbing your truss, click on the *Return to Main* command button to return to the main GS Truss window.

Quick Gable Web

As mentioned in the previous section, the *Gable Web* function provides users with an opportunity to review their *Gable Web Presets* prior to initiating the *Gable Web* process. If you are confident that your *Gable Web Presets* are already defined in accord with your needs, you can bypass this review process by executing the *Quick Gable Web* function. There are two different ways to execute *Quick Gable Web*:

1. Click on the *Quick Gable Web* icon on the *Auto Web* toolbar.
2. Go to the GS Truss menu bar and click on *Geometry* → *Quick Gable Web*.

For information about *Gable Web Presets*, please see the section entitled "*Working with GS Truss Presets*."

WORKING WITH BEARINGS

When a new truss is created, GS Truss automatically adds a single bearing at either end of that truss.[3] Trusses with long spans, or trusses carrying exceptional loads, may require additional bearings. The *Bearings* window is used to create these additional bearings. It is also used to create different combinations of bearings for analysis and design purposes.

The *Bearings* window can be opened in two ways:

1. On the menu bar, click on *Geometry* → *Bearings*, as pictured at right.
2. On the *Geometry* toolbar, click on the *Bearings* icon.

When you open the *Bearings* tool, a diagram of your truss will open in *Element View*, along with a *Bearings* window, like the one pictured below.

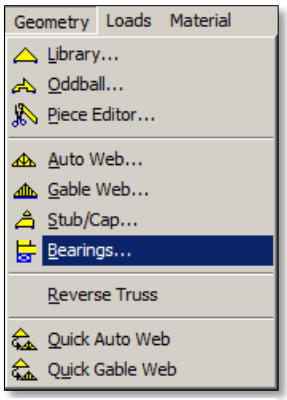


Figure 132: *Bearings* on the *Geometry* menu.

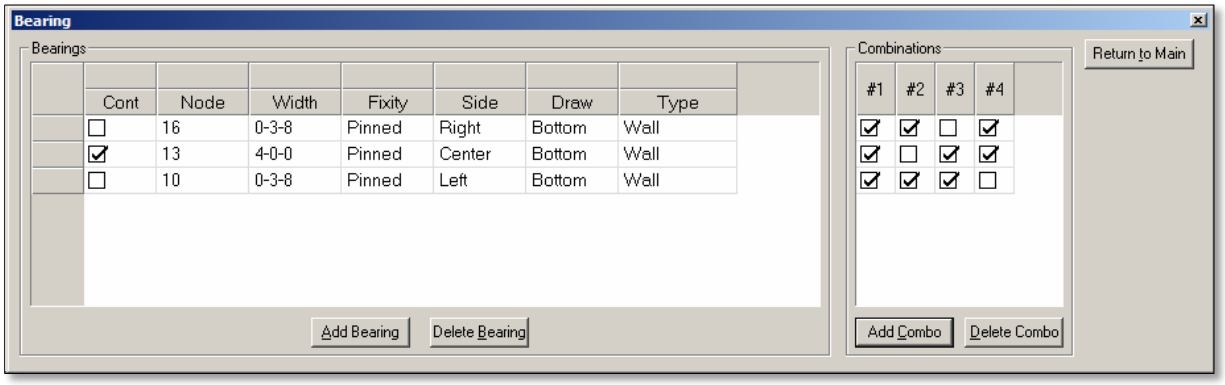


Figure 133: The *Bearings* window is used to define bearing properties and combinations.

Adding a New Bearing

To add a new bearing to your truss, start by clicking on the *Add Bearing* button at the bottom of the *Bearings* window. GS Truss will add a blank row below the rows providing information about the existing bearings. Complete the fields in the new row of bearing information as follows:

Cont – Activate the *Continuous* checkbox if you wish to create a bearing that spans two or more *Nodes*.

Node – All bearings must be associated with a node. Enter the number of the *Node* where the bearing is to be created, or where the bearing is to begin if you are creating a *Continuous* bearing.

Width – Enter the *Width* of the bearing to be created.

Fixity – The *Fixity* field defines the degree and direction a truss is permitted to move over a bearing. The three potential values are:

- *Pinned* – A *Pinned* bearing is immovable.
- *H Roll* – An *H Roll* bearing permits movement along the horizontal plane.
- *V Roll* – A *V Roll* bearing permits movement along the vertical plane.

[3] GS Truss adds bearings automatically when the user exits the *Library* or *Oddball* window in which the truss was created.

NOTE! When the *Cont* checkbox is enabled for a given bearing, the *Fixity* value for that bearing must be *Pinned*.

Side – This field defines the *Side* of the node on which the bearing is to be placed. *Pinned* and *H Roll* bearings may be placed to the *Left*, *Right*, or *Center* of their host node. *V Roll* bearings may be placed on *Top*, *Bottom*, or *Center* of their node.

Draw – *Draw* refers to the bearing's placement on the vertical plane. Enter the direction your bearing is to be drawn in relation to the truss member it supports. *Pinned* and *H Roll* bearings can be drawn on the *Top* or *Bottom* of the truss member. *V Roll* bearings can be drawn to the *Left* or *Right* of the truss member.

Type – Enter the type of bearing to be created. The three potential values are:

- *Wall*
- *Truss to Structure (Trs to Struct)*
- *Truss to Truss (Trs to Trs)*

Once the properties for your new bearing have been defined, no further action is required. Simply click on the *Return to Main* command button in the upper right-hand corner of the *Bearings* window to return to the main window in GS Truss.

Deleting a Bearing

To delete an existing bearing, start by opening the *Bearings* window. Next, click somewhere within the row of information that describes the bearing to be deleted. Once this has been done, all that remains is to click on the *Delete Bearing* button.

Note that all trusses require a minimum of two bearings. If you attempt to delete one bearing when only two bearings are present, a warning message like the one pictured at right will open. To resolve this situation, leave the existing bearings "as is", or add at least one additional bearing to your truss before deleting another.

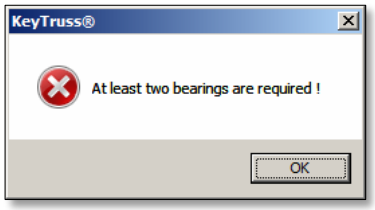


Figure 134: Error when deleting one of only two bearings.

Creating Bearing Combinations

Bearing combinations are collections of bearings grouped together for analysis and design purposes. For example, you may wish to use different bearing combinations when analyzing trusses that are designed to the same specification, but that will be used in different locations throughout your structure. Each of these trusses, though identical in design, can be assigned different loadings. Different bearing combinations can then be used to evaluate and maintain structural integrity without changing the design of the truss. Multiple bearing combinations can be created for a single truss, and each bearing combination must have at least one pinned bearing.

To create a new bearing combination, perform the following actions:

1. From within the *Bearings* window, click on the *Add Combo* button. GS Truss will insert a new column in the *Combinations* pane. This column will contain a checkbox for each existing bearing.
2. Activate the checkboxes for each bearing that you want included in your new combination.

3. When you are done adding new *Bearing Combinations*, click on the *Return to Main* button to return to the main GS Truss window.

NOTE! Each bearing combination is acknowledged by GS Truss during the analysis process.

Deleting Bearing Combinations

To delete an existing *Bearing Combination*, click somewhere in the column representing the combination that is to be removed, and then click on the *Delete Combo* button.

USING THE STUB/CAP FUNCTION

The *Stub/Cap* tool can be a real life saver when you need to create trusses that are too tall or too wide to be manufactured and/or delivered as a single unit. Using *Stub/Cap* you can take your extra tall or extra wide trusses and split them into manageably sized components that are easy to manufacture and ship. The complete truss can then be assembled on site, according to specifications.

There are two ways to open the *Stub/Cap* window:

1. From the GS Truss menu bar, click on *Geometry* → *Stub/Cap*.
2. From the *Geometry* toolbar, click on the *Stub/Cap* icon.

Performing either of these actions will open a *Stub/Cap* window, similar to the one pictured below.

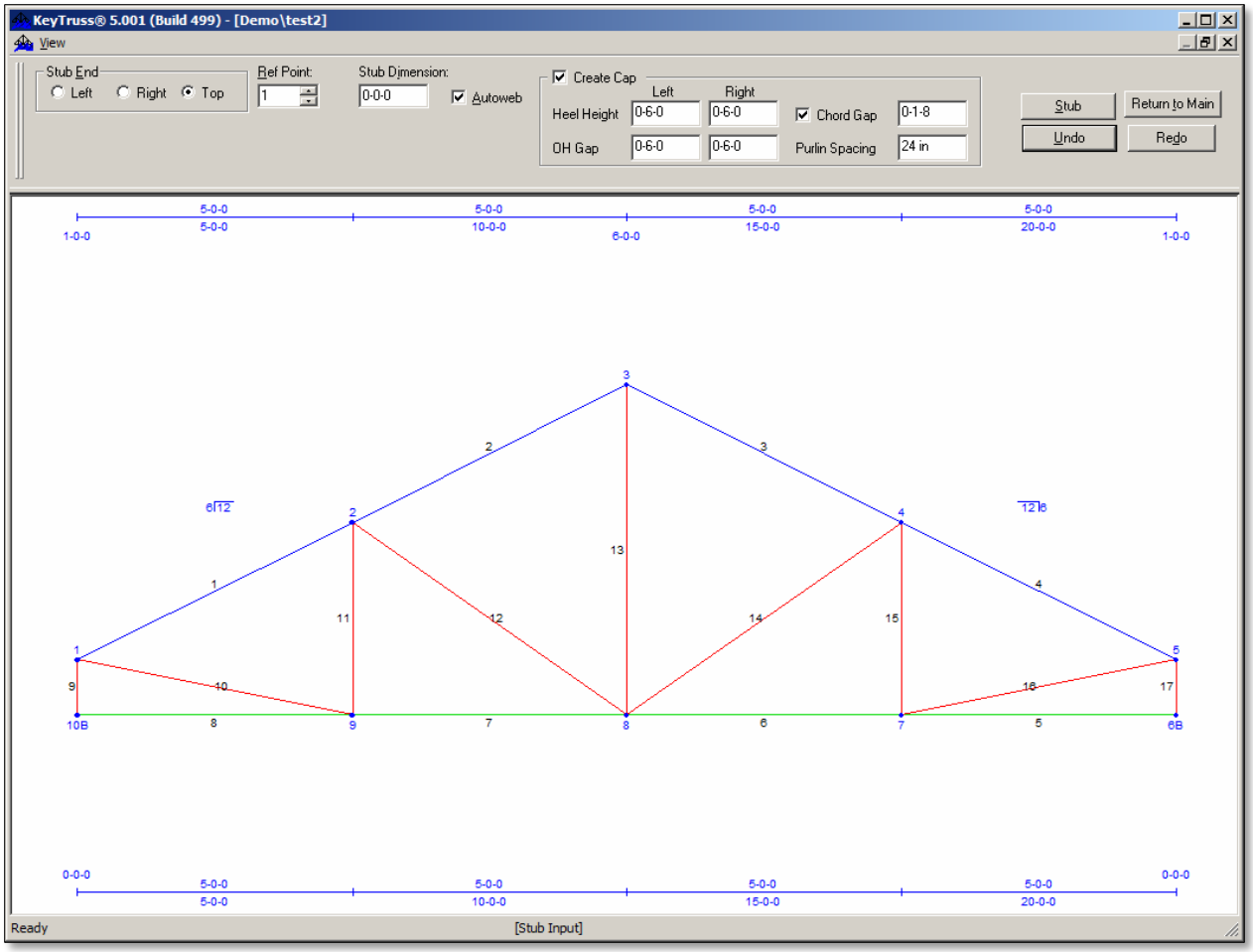


Figure 135: The *Stub/Cap* window includes radio buttons, checkboxes, fields, and buttons for stubbing the active truss.

As you can see, this window contains fields for defining *Stub/Cap* parameters, as well as a diagram of the active truss in *Element View*. Notice that many of the fields presented in the *Stub/Cap* window, and their associated values, are identical to those defined on the *Cap Truss* tab of the user's *Geometry Presets*. To stub and cap your truss, begin by reviewing and modifying the values in the fields provided as follows:

STUB END

The *Stub End* radio buttons are used to identify the section of truss that is to be stubbed.

- *Left* – Specifies that the left side of the truss is to be stubbed.
- *Right* – Specifies that the right side of the truss is to be stubbed. (See Figure 136 at right.)
- *Top* – Specifies that the top of the truss is to be stubbed.

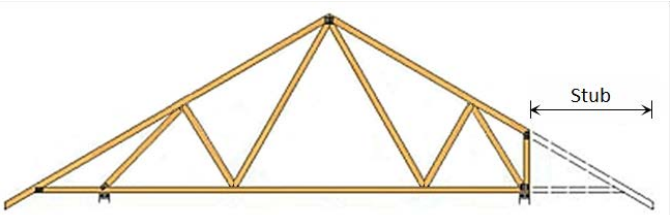


Figure 136: This truss will be stubbed on its right side.

[OTHER]

Ref Point – The panel point from which the stub dimension will be measured.

Stub Dimension – The *Stub Dimension* field defines the precise length or height of the stub, depending upon the section of truss being stubbed.

Autoweb – When this checkbox is enabled, GS Truss will configure webs automatically for the truss being stubbed.

CREATE CAP

The fields and checkbox contained within the *Create Cap* section of this window pertain only to trusses that have a stubbed top with a cap truss.

Create Cap – When this checkbox is activated, GS Truss automatically creates a cap truss as a separate and distinct truss file from that of its stubbed base. The default name for the cap truss is identical to that of the base truss with a hyphen and the word "CAP" appended at the end.

Heel Height (Left/Right) – The left and right *Heel Height* fields are used to define the dimension of heels for a truss that is to be stubbed. (See Figure 137.)

OH Gap (Left/Right) – The left and right *Overhang Gap* fields define the space between the ends of a cap's overhangs and the pitch break of the base truss on which it will rest. (See Figure 137.)

Chord Gap – When this checkbox is activated, a gap is created between the base truss and its cap. (See Figure 137.)

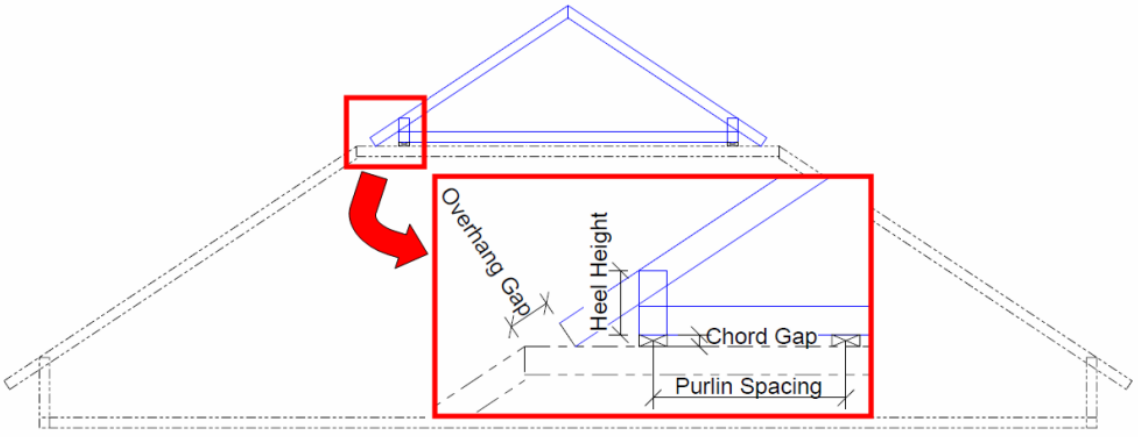


Figure 137: Detail for truss sections involved in stubbing.

[Chord Gap Dimension] – This field is used to define the precise size of the chord gap (the space between a base truss and its cap) that is to be created. (See Figure 137 on the previous page.)

Purlin Spacing – The *Purlin Spacing* field defines the default distance between bracing mechanisms connecting neighboring trusses on the top chord and the bottom chord. (See Figure 137 on the previous page.)

[COMMAND BUTTONS]

Stub – When a user clicks on the *Stub* command button, the active truss is truncated in accord with the values specified within the *Stub/Cap* window.

Undo – The *Undo* button cancels the user's previous action.

Redo – The *Redo* button reapplies the previously cancelled action.

Return to Main – Clicking on the *Return to Main* button closes the *Stub/Cap* window and returns the user to the primary GS Truss window.

WORKING WITH MATERIALS & MATERIAL PRIORITY TABLES

The Material Database and MPTs

In GS Truss, *Material Databases* contain detailed information about the materials an organization uses in the design and construction of truss webs and chords. Every GS Truss installation includes at least one *Material Database*. A *Material Priority Table* (MPT), on the other hand, represents a subset of the data in a *Material Database*. MPTs serve several essential functions:

1. They limit the amount of data a user must wade through in order to locate materials required for truss design.
2. They help automate the assignment of materials during the design process by pre-associating specific materials with the parts of a truss they will be used to fabricate. (For example, one material might be associated with the creation of structural webs while another is associated with non-structural webbing.)
3. They define the exact nature of each material's participation in the bumping process.
4. They define the specific *Bracing* requirements, if any, for a given web material.

Each organization may have multiple MPTs, and each MPT will reflect a different subset of materials to be used and/or the bumping sequence of those materials. Within GS Truss, every truss is associated with a specific MPT. As will be explained in the pages to come, *Material Priority Tables* can be managed on a truss-specific basis or on a system-wide basis.

Working with System MPTs

A *System Material Priority Table* (MPT) defines the default values for materials to be used in the creation of new trusses. An installation may have multiple *System MPTs*, however, only one MPT can serve as the system default at any given time. As pictured in Figure 138 below, the *System MPT* chosen to serve as the default is selected from a drop-down list on the *Files* tab of *System Presets*. In addition to selecting an MPT to serve as the system default, users can also edit the contents of any *System MPT* by clicking on the *Edit MPTs* command button on this tab. Editing *System MPTs* provides users with an opportunity to:

- Add to the list of available materials in the MPT.
- Associate materials with the specific truss pieces they will be used to manufacture.
- Activate or deactivate a material's participation in the bumping process.
- Change the bumping sequence for a specific material.
- Create a new *System MPT*, or copy or delete and existing *System MPT*.

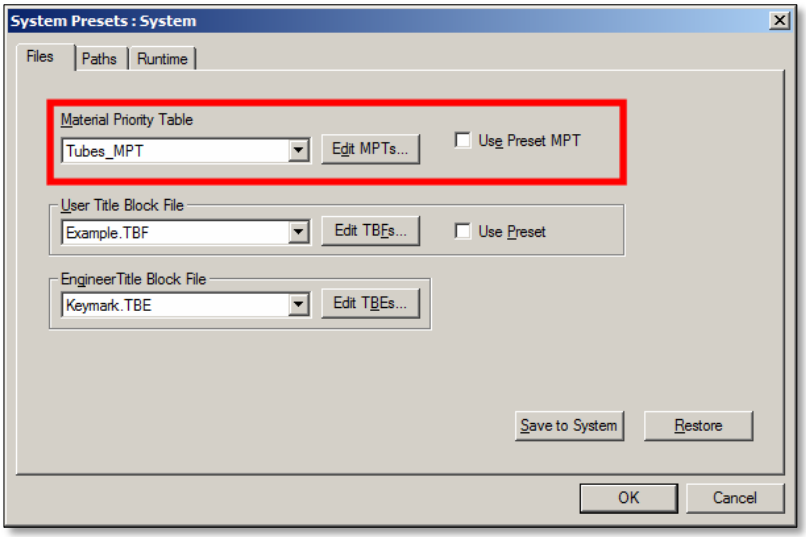


Figure 138: The *Files* tab in the *System Presets* dialog box.

To edit a *System MPT*, go to the menu bar and select *Presets* → *System* → *Files tab*. Click on the *Edit MPTs* command button to open the *System MPT Editor* window, as pictured in Figure 139 below. As can be seen in Figure 139, the title bar of this dialog indicates that you are using the *System MPT Editor* (as opposed to the editor used for truss-specific MPTs). We will now turn to an exploration of the various parts of the *System MPT Editor*.

Priority Tables – The *Priority Tables* field provides a drop-down list of all system-level *Material Priority Tables* currently available in GS Truss.

Material Database – The read-only *Material Database* field displays the name of the database associated with the currently selected MPT file. (As mentioned previously, MPTs represent a subset of the data contained within their parent *Material Database*.)

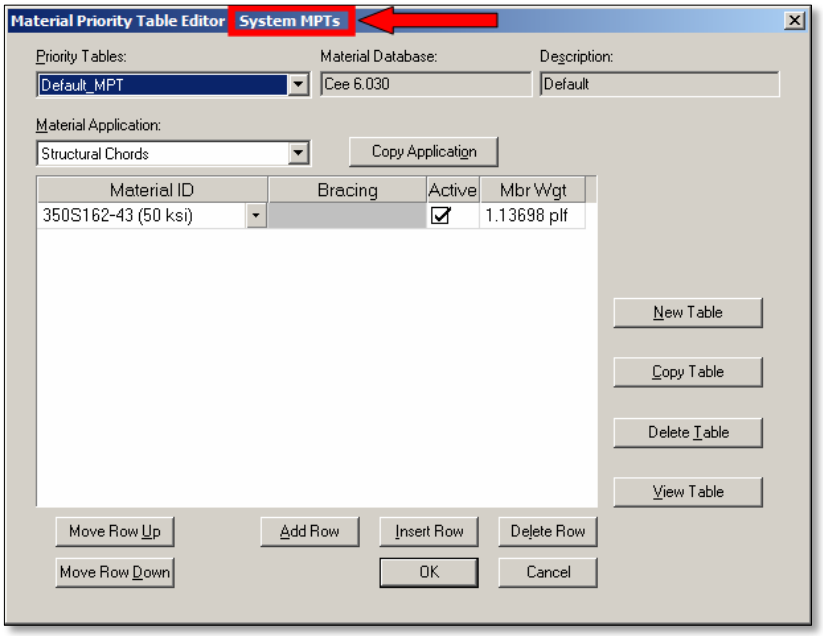


Figure 139: The *Material Priority Table Editor* for *System MPTs*.

Description – The read-only *Description* field displays a brief narrative explanation of the purpose and/or application of the currently selected MPT.

Material Application – The *Material Application* field provides a drop-down list of the various types of truss pieces with which a specific material can be associated. The potential values in this drop-down list include:

1. *Structural Chords*
2. *Structural Webs*
3. *Non-Structural Chords*
4. *Non-Structural Webs*
5. *Composite Only*

When you select a *Material Application* from this drop-down list, say *Structural Chords* for example, the *Material Details* pane will display all materials in the MPT that have been designated as suitable for the construction of *Structural Chords*. Whether editing an existing MPT or creating a new one, you will want to be sure to define the materials associated with each different *Material Application*.

Copy Application – The *Copy Application* command button is used to duplicate the list of materials associated with one *Material Application* for use with a different *Material Application*. For example, you may wish to copy all of the materials listed for *Structural Webs* for use as *Structural Chords* as well. Clicking on the *Copy Application* command button will open a dialog box like the one pictured at right. Within this dialog box, the *Material Application* serving as the data source will be grayed-out and inaccessible, as will any other application for which use of the copied materials is precluded. Click in the checkbox for each *Material Application* to which you want the current list of materials copied. Next, click on the *Copy* button. Once the materials have been copied, select each new *Material Application* individually to edit the *Bracing*, *Active*, and/or *Member Weight* values of each newly copied material, as needed.

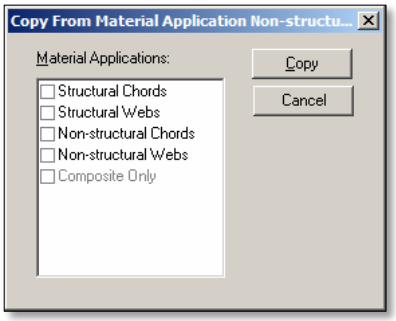


Figure 140: *Copy Application* dialog.

MATERIAL DETAILS

Material ID – The *Material ID* drop-down contains a list of all materials available in the current *Material Database*. Within the *Material Details* pane, these materials are listed in order of their bumping sequence, with the last bumping substitution appearing at the bottom of the list.

Bracing – The *Bracing* field is used to define the type of bracing, if any, to be used with the associated *Material ID*. Since *Bracing* is only applied to webs, this field is disabled when either *Structural Chords* or *Non-Structural Chords* are selected as the *Material Application*. When *Structural Webs* or *Non-Structural Webs* is selected as the *Material Application*, the list of potential *Bracing* values includes:

- *Unbraced*
- *Sheathed*
- *In plane (1)*
- *In plane (2)*
- *Out of plane (1)*
- *Out of (2)*
- *Both planes (1)*
- *Both planes (2)*

Active – The *Active* checkbox dictates whether or not a material is included in the material-bumping process. (The bumping sequence starts with the first material listed in the *Material Details* pane and then progresses down the list, one material at a time, until a material is found that satisfies loading requirements or the list of materials is exhausted – whichever comes first.) When checked, the material is included in bumping; when unchecked, the material is excluded from bumping. By default, the *Active* checkbox is checked (i.e. "true").

Mbr Wgt – The *Member Weight* field displays the weight for a specified length of a given material. GS Truss populates this field automatically using data supplied from the *Material Database*. That said, however, the listed values can be edited directly by users. Changing *Member Weight* values in one *System MPT* does not affect the associated values in other *System MPTs*, or in the *Material Database* itself.

New Table – Clicking on the *New Table* command button opens a *New Material Priority Table* dialog box like the one pictured at right. Enter a unique name for your new *System MPT* in the *New Table Name* field, and type a description for the new table in the *Table Description* field. From the *Material Database* drop-down list, select the database that contains the desired materials for your new MPT, and then click on the *OK* button to complete the table-creation process. Your new MPT will now appear in the list of available MPTs.

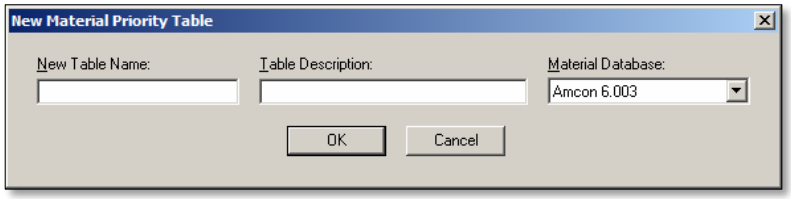


Figure 141: The *New Material Priority Table* dialog box.

Copy Table – Clicking on the *Copy Table* command button opens a *Copy Material Priority Table* dialog box like the one pictured here. Select the MPT you wish to copy from the *Table To Copy* drop-down list, and type in a new name for the copied table in the *New Table Name* field. The *Material Database* field in this dialog box is read-only, and displays the name of the *Material Database* associated with the MPT being copied. To complete the copy process, click on the *OK* button. Your copied MPT will now appear in the list of available MPTs.

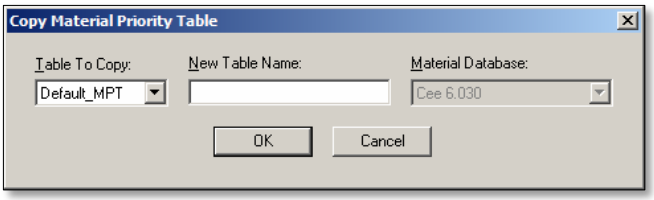


Figure 142: The *Copy Material Priority Table* dialog box.

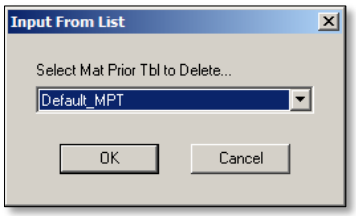


Figure 143: *Delete Table* dialog.

Delete Table – Clicking on the *Delete Table* command button opens a dialog box like the one pictured at left. Select the MPT to be deleted from the drop-down list and click on the *OK* button to complete the deletion process.

View Table – Clicking on the *View Table* command opens a window displaying the entire contents of the active MPT, as shown in Figure 144 at right.

Move Row Up – Clicking on the *Move Row Up* command moves the row currently selected in the *Material Details* pane up one place in the bumping sequence.

Move Row Down – Clicking on the *Move Row Down* command button moves the row currently selected in the *Material Details* pane down one place in the bumping sequence.

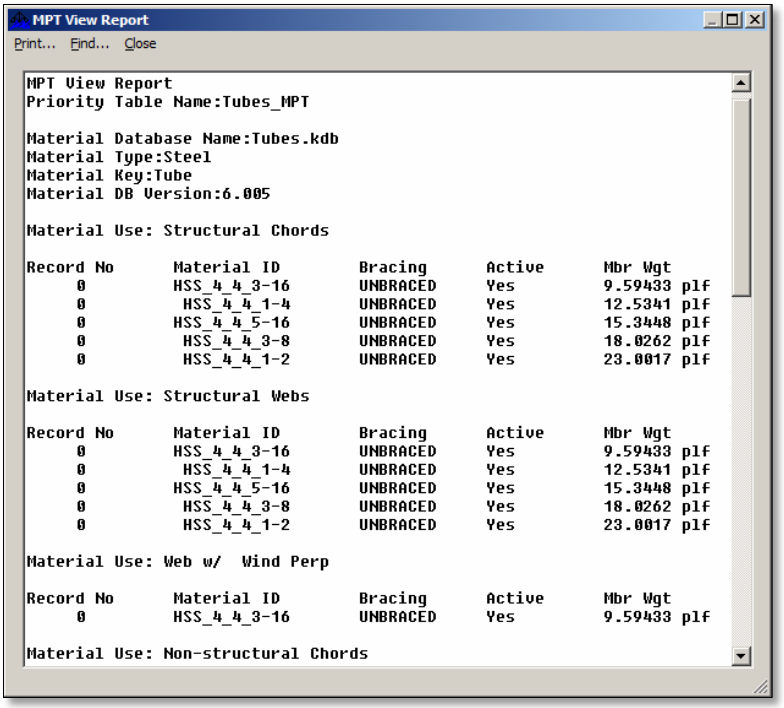


Figure 144: The MPT View Report.

Add Row – Clicking on the *Add Row* command button adds a single, blank row to the bottom of the *Material Details* pane. Once created, this row can be moved up in the bumping sequence using the *Move Row Up* command.

Insert Row – Clicking on the *Insert Row* button adds a single, blank row above the currently selected row in the *Material Details* pane. Once created, this row can be moved up and down in the bumping sequence by using the *Move Row Up* and *Move Row Down* commands.

Delete Row – Clicking on the *Delete Row* button erases the currently selected row from the *Material Details* pane.

OK – Clicking on the *OK* command button saves all user-defined changes to the MPT and closes the *System MPT Editor* window.

Cancel – Clicking on the *Cancel* command button discards all user-defined changes to the MPT and closes the *System MPT Editor* window.

Editing a Truss-Specific MPT

As mentioned previously, all truss files are assigned to a single *Material Priority Table* (MPT). This assignment happens automatically at the time a new truss file is created. Specifically, when a new truss is created, GS Truss creates a copy of the default *System MPT*, gives the copy a new name, and assigns the new copy of the MPT to the truss. (The name given to the new copy of the *System MPT* begins with the word "Truss" followed by a hyphen (–) and the name of the truss file. (For example, "*Truss – J002*.") Therefore, by editing the default *System MPT*, users are effectively modifying the template used to create truss-specific MPTs.

When users want to edit the MPT settings for a specific truss (for example, to change the bumping sequence of materials), they must edit the MPT file assigned to that truss. To edit a truss-specific MPT, begin by making sure that the truss file is open, active, and unlocked. Once this is done, go to the menu bar and select *Material → Edit MPT*. This will open a dialog box like the one pictured below. As can be seen, the title bar of this dialog box indicates that you are using the *Material Priority Table Editor* for the "*Current Truss*" rather than the *System MPT Editor*. Changes made using this dialog box affect the active truss only, not your *System MPTs*.

Priority Tables – When using the truss-specific *MPT Editor*, the *Priority Tables* field is grayed-out and inaccessible. For information about how to change the MPT file associated with an existing truss, see "*Changing the MPT Assigned to an Existing Truss*" on page 128 of this document.

Material Database – This read-only field displays the name of the *Material Database* providing source data for the current MPT.

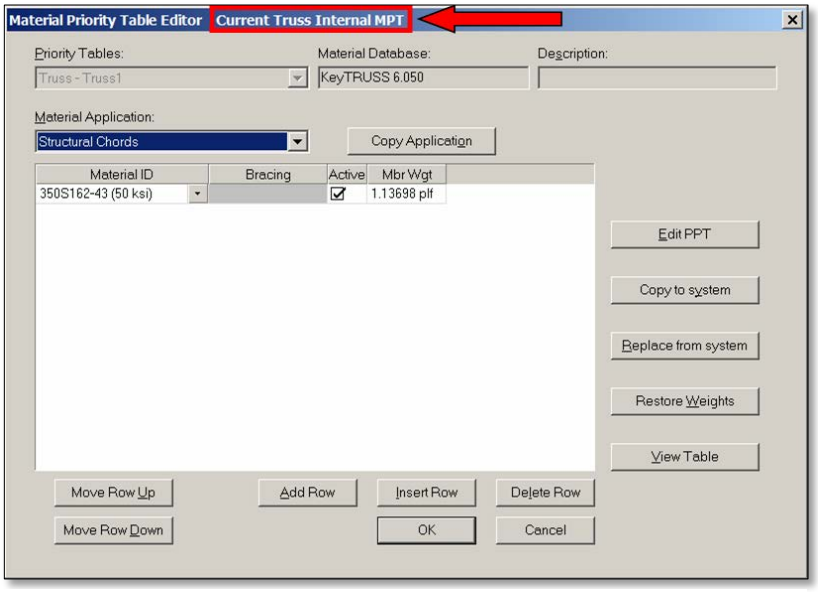


Figure 145: A truss-specific *MPT Editor* dialog box.

Description – The read-only *Description* field displays a brief narrative explanation of the purpose and/or application of the current MPT.

Material Application – The *Material Application* field provides a drop-down list of the various types of truss pieces with which a specific material can be associated. The values in this drop-down list include:

- *Structural Chords*
- *Structural Webs*
- *Non-Structural Chords*
- *Non-Structural Webs*
- *Composite Only*

Copy Application – The *Copy Application* command button is used to duplicate the list of materials associated with one *Material Application* for use with a different *Material Application*. For example, you may wish to copy all of the materials listed for *Structural Webs* for use as *Structural Chords* as well. Clicking on the *Copy Application* command button opens a dialog box like the one pictured at right. Within this dialog box, the *Material Application* serving as the data source will be grayed-out and inaccessible, as will any other application for which use of the copied materials is precluded. Click in the checkbox for each *Material Application* to which you want the current list of materials copied. Next, click on the *Copy* button. Once the materials have been copied, select each new *Material Application* individually to edit the *Bracing*, *Active*, and/or *Member Weight* values of each newly copied material.

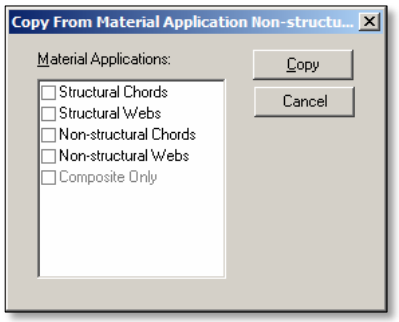


Figure 146: *Copy Application* dialog.

MATERIAL DETAILS

Material ID – The *Material ID* drop-down provides a list of all materials available in the current *Material Database*. Within the *Material Details* pane, these materials are listed in order of their bumping sequence, with the last bumping substitution appearing at the bottom of the list.

Bracing – The *Bracing* field is used to define the type of bracing, if any, to be used with the associated *Material ID*. Since *Bracing* is only applied to webs, this field is disabled when either *Structural Chords* or *Non-Structural Chords* is selected as the *Material Application*. When *Structural Webs* or *Non-Structural Webs* is selected as the *Material Application*, the list of potential *Bracing* values includes:

- *Unbraced*
- *Sheathed*
- *In plane (1)*
- *In plane (2)*
- *Out of plane (1)*
- *Out of (2)*
- *Both planes (1)*
- *Both planes (2)*

Active – The *Active* checkbox dictates whether or not a material is included in the material-bumping process. (The bumping sequence starts with the first material listed in the *Material Details* pane and then progresses down the list, one material at a time, until a material is found that satisfies loading requirements or the list of materials is exhausted – whichever comes first.) When checked, the material is included in bumping; when unchecked, the material is excluded from bumping. By default, the *Active* checkbox is checked (i.e. “true”).

Mbr Wgt – The *Member Weight* field displays the weight for a specified length of a given material. GS Truss populates this field automatically using data supplied by the *Material Database*. That said, however, the listed values can be edited directly by users. Changing *Member Weight* values in one *MPT* does not affect the associated values in other *MPTs*, or in the *Material Database* itself.

COMMAND BUTTONS

Edit PPT – The *Edit PPT* function is documented on pages 138-142 of this manual.

Copy to System – A truss-specific MPT can be saved as a *System MPT* by clicking on the *Copy to System* command button. When you do so, a dialog box like the one pictured at right will open. Simply type in a unique name for your new *System MPT* and click on the *OK* button to complete the copying process.

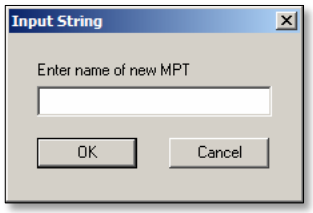


Figure 147: *Copy to System* dialog.

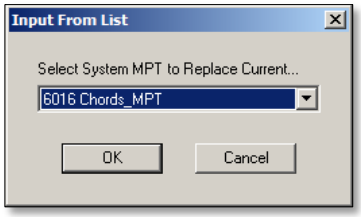


Figure 148: *Replace from System* dialog.

Replace from System – The *Replace from System* command button allows users to substitute a *System MPT* for the current, truss-specific MPT. Clicking on this button opens a dialog box like the one pictured at left. Select the *System MPT* to be implemented from the drop-down list and then click on the *OK* button. A message box will appear that states "*This operation will recreate the truss geometry. Continue*?" Once again, click on the *OK* button to implement your change and close the message box. Though the contents of the MPT will change with the substitution of a *System MPT*, the MPT file name will remain the same.

Restore Weights – When the weight value of one or more materials has been changed in the *Member Weight* (*Mbr Wgt*) column, clicking on the *Restore Weights* command button will discard those changes and restore the original weight values from the *Material Database*. Note that, if the active truss file is locked, the *Restore Weights* command button will be grayed-out and inaccessible.

View Table – Clicking on the *View Table* command button opens a window displaying the entire contents of the active MPT, as shown in Figure 149.

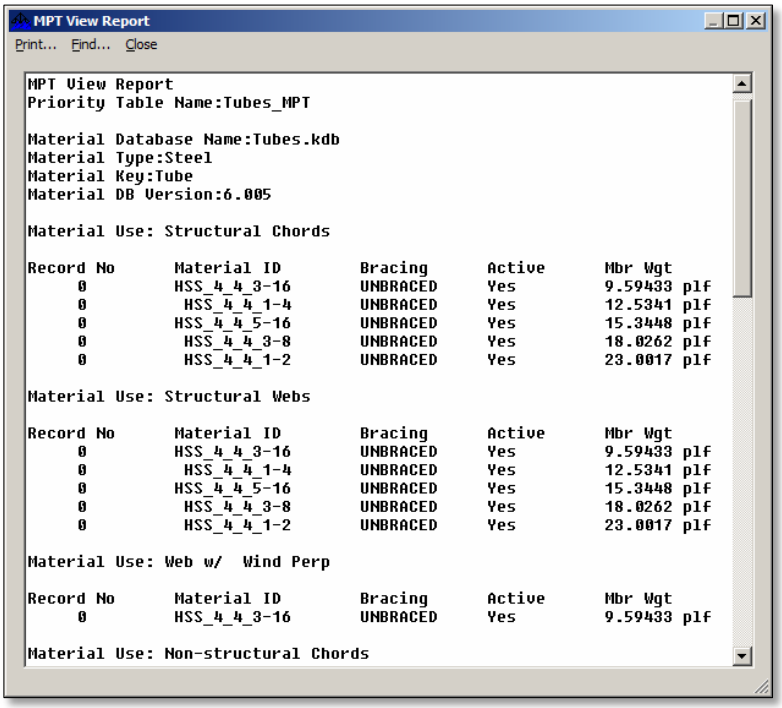


Figure 149: The *View Table* function opens a report like this one.

Move Row Up – Clicking on the *Move Row Up* command button moves the currently selected row up one place in the bumping sequence. Note that if the active truss file is locked, the *Move Row Up* command button will be grayed-out and inaccessible.

Move Row Down – Clicking on the *Move Row Down* command button moves the currently selected row down one place in the bumping sequence. Note that if the active truss file is locked, the *Move Row Down* command button will be grayed-out and inaccessible.

Add Row – Clicking on the *Add Row* command button adds a single, blank row to the bottom of the *Material Details* pane. Once created, this row can be moved up in the bumping sequence using the *Move Row Up* command. Note that, if the active truss file is locked, the *Add Row* command button will be grayed-out and inaccessible.

Insert Row – Clicking on the *Insert Row* button adds a single row immediately above the currently selected row in the *Material Details* pane. Once created, this row can be moved up and down in the bumping sequence by using the *Move Row Up* and *Move Row Down* commands. Note that if the active truss file is locked, the *Insert Row* command button will be grayed-out and inaccessible.

Delete Row – Clicking on the *Delete Row* button erases the currently selected row from the *Material Details* pane. Note that if the active truss file is locked, the *Delete Row* command button will be grayed-out and inaccessible.

OK – Clicking on the *OK* command button saves all user-defined changes to the MPT and closes the *MPT Editor* window.

Cancel – Clicking on the *Cancel* command button discards all user-defined changes to the MPT and closes the *MPT Editor* window.

Changing the Default MPT for All New Trusses

To change the *System MPT* used as the default template for all new trusses, complete the following steps:

1. Go to the menu bar and select *Presets* → *System* to open the *System Presets* dialog box.
2. On the *Files* tab of *the System Presets* dialog box, navigate to the *Material Priority Table* drop-down list and select the MPT you wish to use as the new system default.
3. Click on the *Save to System* button. All truss files created from this point forward will use the newly designated *System MPT* as the template for the creation of their truss-specific MPT files.

Changing the Default MPT for a Single New Truss

To use an MPT other than the default for a truss that you are about to create, complete the following steps:

1. Go to the menu bar and select *Presets* → *System* to open the *System Presets* dialog box.
2. On the *Files* tab of *the System Presets* dialog box, navigate to the *Material Priority Table* drop-down list and select the MPT you wish to apply as the template for your new truss.
3. Click on the *OK* button. This will close the *System Presets* dialog box and the newly selected MPT will be applied when you create your new truss.

NOTE! When the procedure outlined above is followed, the newly selected MPT will remain active as the system default until the user:

- Clicks on the *Save to System* command button to permanently save the newly selected MPT as the system default, or
- Selects a different MPT from the *Material Priority Table* drop-down list and clicks on the *OK* button once again, or
- Clicks on the *Restore* button, or closes and reopens the GS Truss program. (Both of these actions will reinstate the previous MPT file as the system default.)

Changing the MPT Assigned to an Existing Truss

Existing truss files may have been created using an MPT that is different from the current default MPT defined in your *System Presets*. To change the MPT associated with an existing truss file, follow these steps:

1. Make sure the truss file you wish to change is currently closed.
2. Go to the menu bar and select *Presets* → *System* to open the *System Presets* dialog box.
3. On the *Files* tab of *the System Presets* dialog box, select the MPT you wish to apply to your existing truss file from the *Material Priority Table* drop-down list.
4. Click in the *Use Preset MPT* checkbox to activate it.
5. Click on the *OK* button to close the *System Presets* dialog box.
6. Next, go to the *Projects* window in GS Truss and double-click on your truss file to open it. When you do, a message like the one pictured at right will appear, asking if you really want to override the file's current MPT. Click on the *Yes* button, and your newly selected MPT will be assigned to the truss.

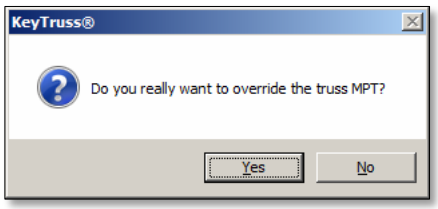


Figure 150: Click *Yes* to overwrite the current MPT settings with the *System MPT*.

Changing the MPT Assigned to a Batch of Existing Trusses

Follow these steps to change the MPT associated with an entire batch of existing truss files:

1. Make sure that all truss files in the batch you wish to change are currently closed.
2. Go to the menu bar and select *Presets* → *System* to open the *System Presets* dialog box.
3. On the *Files* tab of *the System Presets* dialog box, select the MPT you wish to apply to your batch from the *Material Priority Table* drop-down list.
4. Click in the *Use Preset MPT* checkbox to activate it.
5. Click on the *OK* button to close the *System Presets* dialog box.
6. Go to the menu bar and select *File* → *Batch Process* → *Design* to open the *Batch Design* dialog.
7. From within the *Batch Design* dialog box, create or load the batch of truss files you wish to edit.

8. Still within the *Batch Design* dialog box, navigate to the *System Overrides* section and make sure that the "*MPT*" checkbox is currently activated.

9. Click on the *OK* button at the bottom of the *Batch Design* dialog box to begin running your batch. As the batch runs, the previously assigned MPT file will be overwritten with the newly selected MPT.

Material Selection Dialog

Clicking on the *Material* menu's *Selection* option opens the *Material Selection* tool shown in Figure 152 below. This tool is used to for two purposes:

1. To force the use of a particular material in the fabrication of specified portions of a truss.

2. To specify the level at which the bumping process will be executed. (That is, whether bumping is implemented for entire chords, chord segments, or chord pieces.)

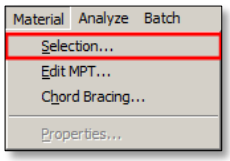


Figure 151: *Material Selection* menu.

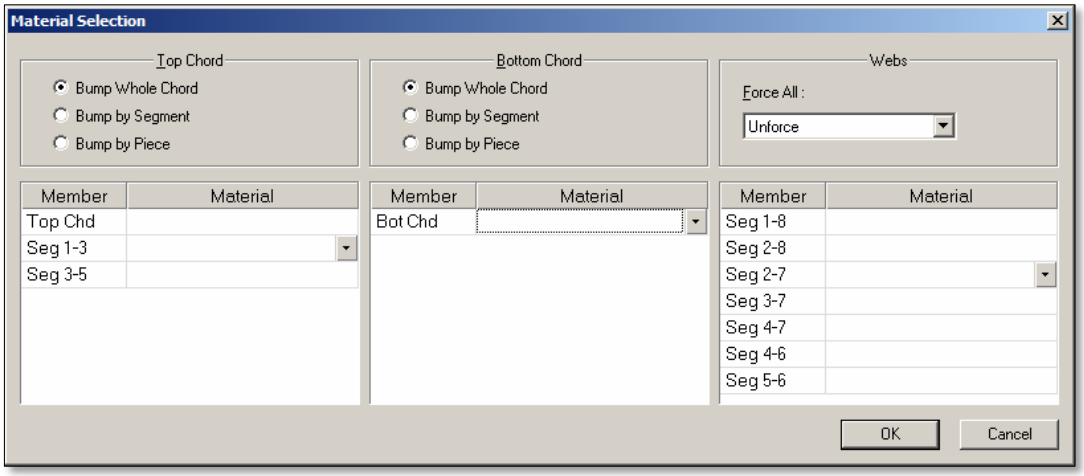


Figure 152: The *Material Selection* dialog box.

TOP CHORD

Bump Whole Chord – When this radio button selected, GS Truss implements bumping at the chord level. That is to say, if a single piece of the top chord fails load testing, the entire top chord is bumped to a sturdier grade of material.

Bump by Segment – When this radio button selected, GS Truss bumps materials at the segment level. If one segment fails only the failed segment is bumped instead of the entire chord.

Bump by Piece – When this radio button selected, GS Truss bumps materials at the piece level. In other words, if one piece fails, only the failed piece is bumped instead of an entire segment or the entire chord.

Member – The *Member* field is read-only and displays each of the individual segments of the top chord of the active truss.

Material – The *Material* field contains a drop-down list of available materials that can be specified for use in the fabrication of each segment of the top chord. Selection of materials in this column forces the use of those materials, and overrides any conflicting value selected in the "*Bump by…*" radio buttons for the *Top Chord*.

BOTTOM CHORD

Bump Whole Chord – When this radio button selected, GS Truss implements bumping at the chord level. That is to say, if a single piece of the bottom chord fails load testing, the entire bottom chord is bumped to a sturdier grade of material.

Bump by Segment – When this radio button selected, GS Truss bumps materials at the segment level. If one segment fails only the failed segment is bumped instead of the entire chord.

Bump by Piece – When this radio button selected, GS Truss bumps materials at the piece level. In other words, if one piece fails, only the failed piece is bumped instead of an entire segment or the entire chord.

Member – The *Member* field is read-only and displays each of the individual segments of the bottom chord of the active truss.

Material – The *Material* field contains a drop-down list of available materials that can be specified for use in the fabrication of each segment of the bottom chord. Selection of materials in this column forces the use of those materials, and overrides any conflicting value selected in the "*Bump by…*" radio buttons for the *Bottom Chord*.

WEBS

Force All – The *Force All* field contains a drop-down list of materials that can be specified for use in the fabrication of all web segments. When a material is selected from this list, no other material will be available for web construction. When the value "*Unforce*" is selected, GS Truss allows for the analysis and application of other materials for each web segment.

Member – The *Member* field is read-only, and displays each of the individual web segments in the active truss.

Material – The *Material* field contains a drop-down list of available materials that can be specified for use in the fabrication of each web segment.

COMMAND BUTTONS

OK – Clicking on the *OK* button saves all user-defined changes and closes the *Material Selection* window.

Cancel – Clicking on the *Cancel* button discards all user-defined changes and closes the *Material Selection* window.

Note that when a material is forced, *Piece View* displays the affected truss segments in yellow, providing the user with a graphic representation of all areas within the truss that are subject to material forcing. (See Figure 153 at right.)

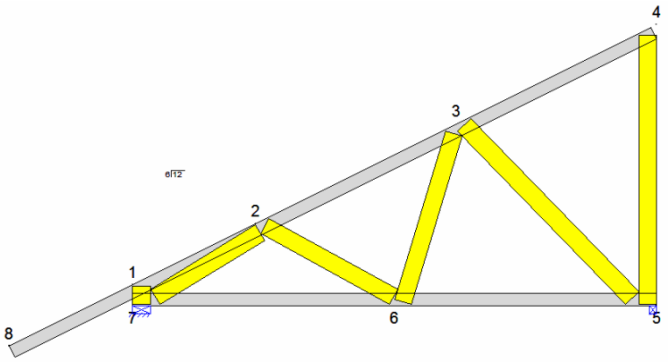


Figure 153: Members with forced materials are displayed in yellow.

Chord Bracing

As the name implies, the *Chord Bracing* function is used to define the type of bracing to be applied to the top and bottom chords of a truss. To work with the chord bracing function, go to the GS Truss menu bar and select *Material* → *Chord Bracing*. When you do so, GS Truss will open a Chord Bracing dialog box like the one pictured below.

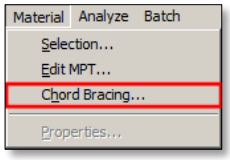


Figure 154: The *Chord Bracing* menu entry.

TOP CHORD BRACING

Section – The read-only *Section* column displays the name of each segment of the top chord of the active truss.

Bracing – The *Bracing* column contains a drop-down list that is used to specify the type of bracing to be applied to each segment of the top chord of a truss. The two potential values are:

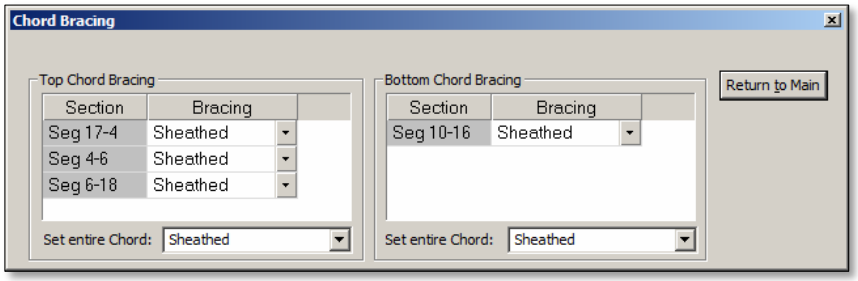


Figure 155: The *Chord Bracing* dialog box.

- *Sheathed* – When the *Sheathed* option is selected, bracing is provided solely by sheathing materials (continuous bracing), rather than through the use of purlins or battens.
- *Sparse* – When the *Sparse* option is selected, purlins are used to provide discreet bracing at every panel point.

Set Entire Chord – The drop-down list in the *Set Entire Chord* field is used to specify the bracing type to be applied to the top chord as a whole. The value entered here overrides any conflicting values entered into rows in the *Bracing* column.

BOTTOM CHORD BRACING

Section – The read-only *Section* column displays the name of each segment of the bottom chord of the active truss.

Bracing – The *Bracing* column contains a drop-down list that is used to specify the type of bracing to be applied to each segment of the bottom chord of a truss. The two potential values are:

- *Sheathed* – When the *Sheathed* option is selected, bracing is provided solely by sheathing materials (continuous bracing), rather than through the use of purlins or battens.
- *Sparse* – When the *Sparse* option is selected, purlins are used to provide discreet bracing at every panel point.

Set Entire Chord – The drop-down list in the *Set Entire Chord* field is used to specify the bracing type to be applied to the bottom chord as a whole. The value entered here overrides any conflicting values entered into rows in the *Bracing* column.

WORKING WITH TRUSS-TO-TRUSS CONNECTION TABLES

The Parts of a Table

As the name implies, Truss-to Truss Connection Tables (TTCs) are used to specify the connections between carried trusses and the girders that carry them. Below is an example of a Truss-to-Truss Connection Table along with an explanation of the columns of which it is comprised.

ID	Carrying Truss	Offset	V Offset	Carried Truss	Offset	V Offset	Angle	Truss Connection
TT1	G1.KTS	6-7-9	0-0-0	G3.KTS	9-1-12	0-0-0	315 deg	Chord - Chord
TT2	G1.KTS	7-11-5	0-0-0	J3.KTS	6-6-12	0-0-0	270 deg	Chord - Chord
TT3	G1.KTS	9-6-9	0-0-0	J5.KTS	0-0-0	0-0-0	90 deg	Chord - Chord
TT3	G1.KTS	11-6-3	0-0-0	J5.KTS	0-0-0	0-0-0	90 deg	Chord - Chord
TT4	G1.KTS	12-9-15	0-0-0	G2.KTS	0-0-0	0-0-0	45 deg	Chord - Chord
TT5	G2.KTS	0-9-3	0-0-0	J2.KTS	5-9-11	0-0-0	135 deg	Chord - Chord
TT6	G2.KTS	0-9-3	0-0-0	J4.KTS	0-0-0	0-0-0	45 deg	Chord - Chord
TT7	G2.KTS	3-6-9	0-0-0	J9.KTS	3-10-2	0-0-0	135 deg	Chord - Chord
TT8	G2.KTS	3-6-9	0-0-0	J7.KTS	0-0-0	0-0-0	45 deg	Chord - Chord
TT9	G2.KTS	6-4-0	0-0-0	J1.KTS	0-0-0	0-0-0	45 deg	Web - Web Flange
TT10	G2.KTS	6-4-0	0-0-0	J8.KTS	1-10-8	0-0-0	135 deg	Chord - Chord
TT11	G3.KTS	2-9-12	0-0-0	J8.KTS	1-10-8	0-0-0	315 deg	Chord - Chord
TT12	G3.KTS	2-9-12	0-0-0	J1.KTS	0-0-0	0-0-0	225 deg	Web - Web Flange
TT13	G3.KTS	5-7-2	0-0-0	J9.KTS	3-10-2	0-0-0	315 deg	Chord - Chord
TT14	G3.KTS	5-7-2	0-0-0	J7.KTS	0-0-0	0-0-0	225 deg	Chord - Chord
TT15	G3.KTS	8-4-9	0-0-0	J2.KTS	5-9-11	0-0-0	315 deg	Chord - Chord
TT16	G3.KTS	8-4-9	0-0-0	J4.KTS	0-0-0	0-0-0	225 deg	Chord - Chord
TT17	G4.KTS	6-0-13	0-0-0	G6.KTS	8-4-3	0-0-0	315 deg	Chord - Chord
TT18	G4.KTS	7-11-5	0-0-0	J10.KTS	6-0-0	0-0-0	270 deg	Chord - Chord
TT19	G4.KTS	9-6-9	0-0-0	J11.KTS	0-0-0	0-0-0	90 deg	Chord - Chord
TT19	G4.KTS	11-6-3	0-0-0	J11.KTS	0-0-0	0-0-0	90 deg	Chord - Chord
TT20	G4.KTS	13-4-11	0-0-0	G5.KTS	0-0-0	0-0-0	45 deg	Chord - Chord
TT21	G5.KTS	0-0-0	0-0-0	J4.KTS	0-0-0	0-0-0	45 deg	Chord - Chord
TT22	G5.KTS	2-9-1	0-0-0	J7.KTS	0-0-0	0-0-0	45 deg	Chord - Chord
TT23	G5.KTS	2-9-1	0-0-0	J6.KTS	3-10-2	0-0-0	135 deg	Chord - Chord
TT24	G5.KTS	5-6-7	0-0-0	J1.KTS	0-0-0	0-0-0	45 deg	Web - Web Flange
TT25	G5.KTS	5-6-7	0-0-0	J8.KTS	1-10-8	0-0-0	135 deg	Chord - Chord
TT26	G6.KTS	2-9-12	0-0-0	J1.KTS	0-0-0	0-0-0	225 deg	Web - Web Flange
TT27	G6.KTS	2-9-12	0-0-0	J8.KTS	1-10-8	0-0-0	315 deg	Chord - Chord
TT28	G6.KTS	5-7-2	0-0-0	J7.KTS	0-0-0	0-0-0	225 deg	Chord - Chord
TT29	G6.KTS	5-7-2	0-0-0	J9.KTS	3-10-2	0-0-0	315 deg	Chord - Chord
TT30	G6.KTS	8-4-3	0-0-0	J2.KTS	5-9-11	0-0-0	315 deg	Chord - Chord

Figure 156: An example of a *Truss-to-Truss Connection Table*.

NOTE! Within this document, the terms "carrying truss" and girder are used interchangeably. This is due to fact that a girder can, itself, be connected to and supported by another girder. In such an instance, the supported girder would be referred to as a "carried truss", while the supporting girder would be referred to as a "carrying truss."

ID – The *ID* column displays the label used to identify a connection between two trusses; a *Carried Truss* and its *Carrying Truss* (girder). If there are multiple connection points between these two trusses, the same *ID* will be repeated for each row in the table that represents a unique connection between the two.

Carrying Truss – The *Carrying Truss* column displays the unique identifier assigned to the *Carrying Truss* (girder) in a truss-to-truss relationship.

Offset – The first of the two *Offset* columns in the TTC represents the placement of a *Carried Truss*, in the horizontal plane (left/right), along the bottom chord of its *Carrying Truss*. If the *Carried Truss* is aligned with the left-most end of the *Carrying Truss* (as displayed on the GS Truss *Main Screen*), the offset is zero (0-0-0).

V Offset – The first of the two *Vertical Offset* columns in the TTC represents the distance that the connector on the *Carried Truss* is raised above the bottom chord of the *Carrying Truss*. This measure is displayed on screen in each of the various views of the *Carrying Truss*.

Carried Truss – The *Carried Truss* column displays the unique identifier assigned to the *Carried* (supported) *Truss* in a truss-to-truss relationship.

Offset – The second of the two *Offset* columns in the TTC is used to define the position of the connector on the *Carried Truss*, in the horizontal plane (left/right). Generally speaking, the connector is usually placed at one end of the truss or the other.

V Offset – The second of the two *Vertical Offset* columns in the TTC represents the distance the given connector is raised above the bottom chord of the *Carried Truss*.

Angle – This column defines the angle at which the *Carried Truss* attaches to its *Carrying Truss*. You can select one of the predefined values from the drop-down list, or type in a value of your own choosing. Predefined values for this field include the following:

- 45 deg
- 90 deg
- 135 deg
- 225 deg
- 270 deg
- 315 deg

Truss Connection – This field is used to specify the type of connection made between a *Carried Truss* and its *Carrying Truss*. There are three potential values:

- *Chord to Chord* – The connection between the *Carried Truss* its *Carrying Truss* is made on the chords of each.
- *Web to Web Flange* – The connection between the *Carried Truss* its *Carrying Truss* is made from the *Web Face* of one truss to the *Web Flange* of the other.
- *Web to Web Face* – The connection between the *Carried Truss* and the *Carrying Truss* is made from the *Web Face* of one truss to the *Web Face* of the other.

Creating a New Table

There are two different ways to create a *Truss-to-Truss Connection Table* in GS Truss; the automated way and the manual way.

CREATING A TABLE AUTOMATICALLY

The easiest and quickest way to create a *Truss-to-Truss Connection Table* is to create your trusses in the GS Plan application first, and then import them into GS Truss. (For information about designing and outputting trusses in GS Plan, please refer the *GS Plan Designer's Manual*.) Once your trusses have been designed and output from GS Plan, perform the following actions to import them into GS Truss and create a TTC automatically:

1. Open the GS Truss application.
2. From within the *Projects* pane in GS Truss, locate the job folder associated with your trusses.
3. From within the job folder, double click on the LDG file associated with that job. Note that the name of this file will be the same as that of the job folder, and the icon associated with the file will look like this  (See the *Senior Center* file in the job shown in Figure 157 at right.)
4. When you double click on the LDG file, GS Truss will create copies of all the truss files associated with the job in its own native (KTS) format. The icons representing these new files will appear blue in color, as pictured in Figure 158 at right. In addition to the new truss files, GS Plan will also automatically create a *Truss-to-Truss Connection Table* (TTC) file, represented by a blue icon that looks like this 
5. Double click on the new TTC file to open the *Truss-to-Truss Connection Table* that GS Truss has created for you.

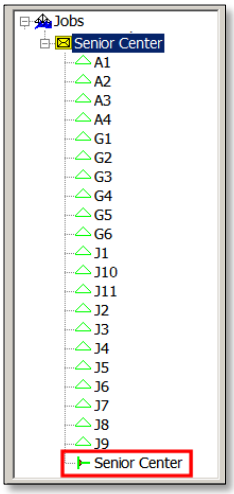


Figure 157: LDG file imported from GS Plan.

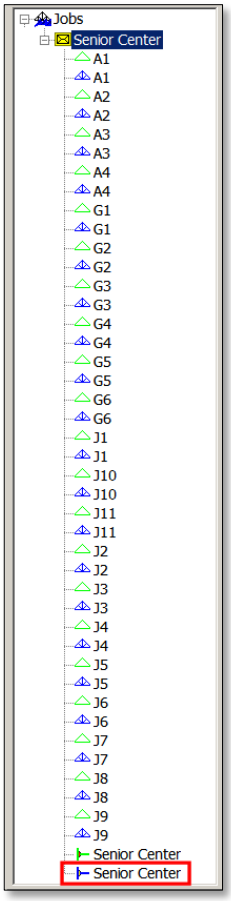


Figure 158: A TTC file.

CREATING A TABLE MANUALLY

If you are creating trusses from scratch using the GS Truss application, you will need to create a *Truss-to-Truss Connection Table* manually. There are numerous variables that can affect this procedure, however, the basic workflow is as follows:

1. From within the GS Truss application, go to the menu bar and click on *File → New TTC*. A blank TTC table will open, containing only the column headers for the new TTC.
2. To define your first connection, return to the GS Truss menu bar and select *TTC → Add Connection*, or click on the *New Connection* icon on the GS Truss toolbar. A single, blank row will be added to the TTC.

3. With your first, blank row now added to the table, return to the GS Truss menu bar a select *File* → *Save*, or click on the *Save* button on the GS Truss toolbar. A *Save As* dialog box like the one pictured at right will open.

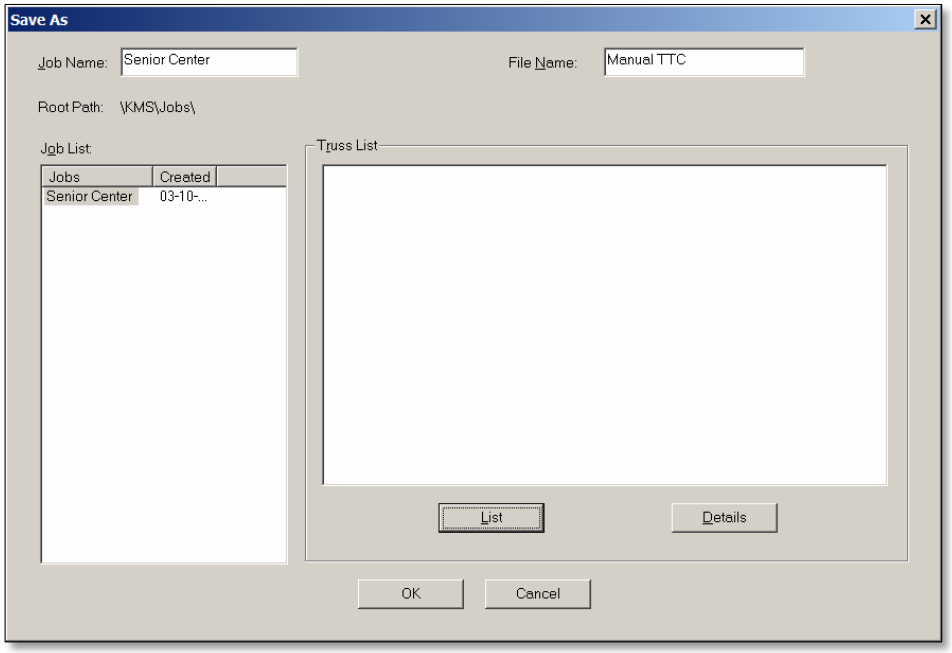


Figure 159: Save your new TTC file using the *Save As* dialog box.

4. From within the *Save As* dialog box, type in a name for your new TTC file in the *File Name* field.
5. Next, click on the *OK* button to save your file and close the *Save As* dialog box. Your new TTC file will now be displayed in the *Projects* pane, along with the other files associated with your job.
6. Within the new TTC table, navigate to the *ID* column. Click on the down-arrow in this column and select *New*. GS Truss automatically enters the name of this first new connection as "*TT1*."
7. Next, click on the down arrow in the *Carrying Truss* column. GS Truss will display a list of all trusses associated with the current job. From this list, select the truss that is to serve as the girder for this new connection.
8. Navigate to the *Carried Truss* field and, from the list of trusses presented, select the truss that is to be joined to the girder selected in the *Carrying Truss* field.
9. Enter the desired values in the remaining columns for this row.
10. Add an additional row for each connection to be made between trusses and girders associated with this job.
11. When you are done, click once again on the *Save* button on the GS Truss toolbar.

Updating a Table

If changes are made to any of your trusses once a TTC has been created, then the TTC must be updated to reflect those changes and ensure their viability. To accomplish this task, go to the GS Truss toolbar and click on the *Analyze* icon to re-run the analysis process. (Note that we recommend using the *Analyze* function rather than the *Design* function in this instance, since this latter process can introduce additional changes to the design of your trusses.)

Modifying a Table

If you modify a *Truss-to-Truss Connection Table* after it has been created, you must ensure that: 1) the changes made to the table are reflected in the trusses, and 2) that the trusses still successfully pass the analysis process. Therefore, once you have completed making changes to a TTC, perform the following actions:

1. Go to the GS Truss menu bar and click on *TTC* → *Analyze*, or click on the *Analyze* button on the GS Truss toolbar.

2. A message box like the one pictured at right will open. Click on the *Analyze Affected* button. GS Truss will re-run the analysis process.

3. Any trusses that fail the analysis process as a consequence of changes made to the TTC will be identified in the *Batch Log* tab of the GS Plan *Data Window*. Rework the entries in your TTC as needed, until all trusses successfully pass analysis.

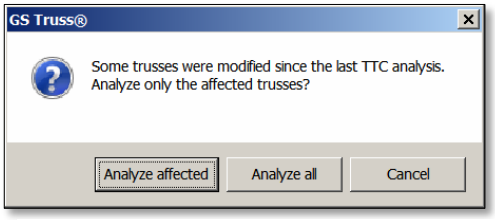


Figure 160: Be sure to re-analyze trusses after making changes to a TTC.

WORKING WITH PLATE PRIORITY TABLES

PPTs, MPTs and Material Databases

Like *Material Priority Tables* (MPTs), *Plate Priority Tables* (PPTs) represent a subset of the data in a *Material Database*. However, where MPTs are used to specify the materials that can be used in the construction of truss chords and webs, PPTs are used to specify the plate materials that can be used in the construction of the various joint types on a truss. Once again, like *Material Priority Tables*, *Plate Priority Tables* can be modified on a system-wide basis (for all trusses using a given *Material Database*), or on a truss-specific basis.

Modifying a System PPT

To modify a *Plate Priority Table* on a system-wide basis, perform the following actions:

1. Go to the GS Truss menu bar and click on *Presets* → *System*. A *System Presets* dialog box will open.

2. From within the *System Presets* dialog box, click on the *Edit MPTs* command button. This will open a *System MPTs Editor* dialog box like the one pictured in Figure 161. Using the *Priority Tables* drop-down list in this dialog box, we need to select an MPT associated with a *Material Database* that contains plates. In this instance, we have selected the CapCee_MPT. This will allow us to modify plate materials in the associated Capped Cee *Material Database*.

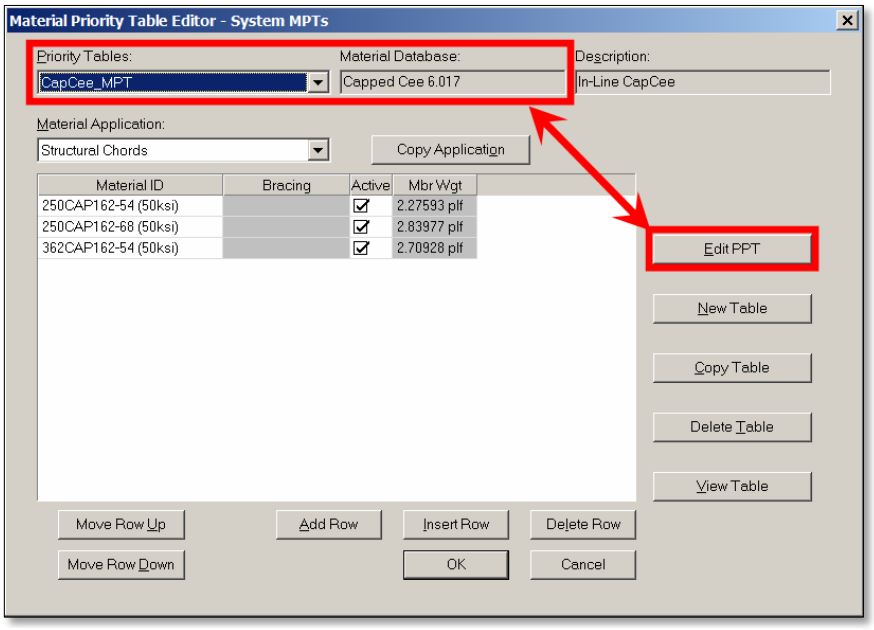


Figure 161: The *Material Priority Table Editor* dialog box for *System MPTs*.

NOTE! Not all *Material Databases* have a PPT associated with them. If plate functionality is not available for a given Material Database, then the *Edit PPT* will not be visible in the *MPT Editor* dialog box.

3. From within the *System MPTs Editor* dialog box, click on the *Edit PPT* command button to open a *System PPT Editor* dialog box like the one pictured in Figure 162. The various parts of the *System PPT Editor* dialog box are described as follows:

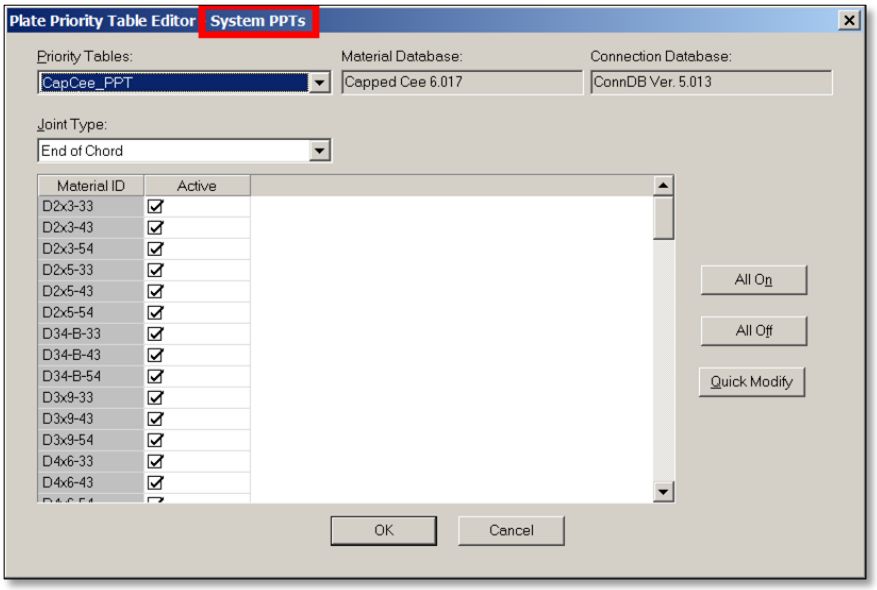


Figure 162: The *Plate Priority Table Editor* dialog box for *System PPTs*.

Priority Tables – The *Priority Tables* field provides a drop-down list of all system level *Material Priority Tables* currently available in GS Truss.

Material Database – This read-only field displays the name of the *Material Database* associated with the *Material Priority Table* (MPT) that has been selected in the *Priority Tables* field of this dialog box.

Connection Database – The information displayed in this read-only field is used exclusively by Keymark for version-identification purposes and has no practical application for designers.

Joint Type – The *Joint Type* field provides a drop-down list of the various types of truss joints to which specific plate materials can be assigned. The potential values in this drop-down list include:

6. *End of Chord*
7. *Smooth Chord*
8. *Full Closed Pitch Break*
9. *Half Closed Pitch Break*
10. *Full Open Pitch Break*
11. *Half Open Pitch Break*
12. *Studio*
13. *Heel*
14. *Interior*

Material ID – The read-only *Material ID* column displays a list of all plate materials available in the current *Connection Database*. These materials are listed in order of their bumping sequence. This bumping sequence starts with the plate at the top of the list and then progresses down, one plate at a time, until a plate that satisfies loading requirements is identified, or the list of plate materials is exhausted – whichever comes first.

Active – The *Active* checkbox dictates whether or not a plate is included in the material-bumping process. When checked, the material is included in bumping; when unchecked, the material is not included in bumping.

COMMAND BUTTONS

All On – Clicking the *All On* command button makes all plate materials *Active* in the bumping process for the selected *Joint Type*.

All Off – Clicking the *All Off* command button excludes all plate materials from the bumping process for the selected *Joint Type*.

Quick Modify – Clicking on the *Quick Modify* command button opens a dialog box that allows the user to modify the availability of *Plates* and *Mils* for all *Joint Types* simultaneously, rather than one *Joint Type* at a time. For more information about using the *Quick Modify* function, please see *"Using the Quick Modify Function"* section below.

OK – Clicking on the *OK* button saves all user-defined changes to the PPT and closes the *Plate Priority Table Editor* dialog box.

Cancel – Clicking on the *Cancel* button discards all user-defined changes to the PPT and closes the *Plate Priority Table Editor* dialog box.

Using the Quick Modify Function

As mentioned above, the *Quick Modify* function allows users to modify the plates available for all *Joint Types* simultaneously, rather than one *Joint Type* at a time. When a user clicks on the *Quick Modify* button, a *Quick Modify PPT* dialog box like the one pictured in Figure 163 will open. The features and functions of this dialog box are as follows:

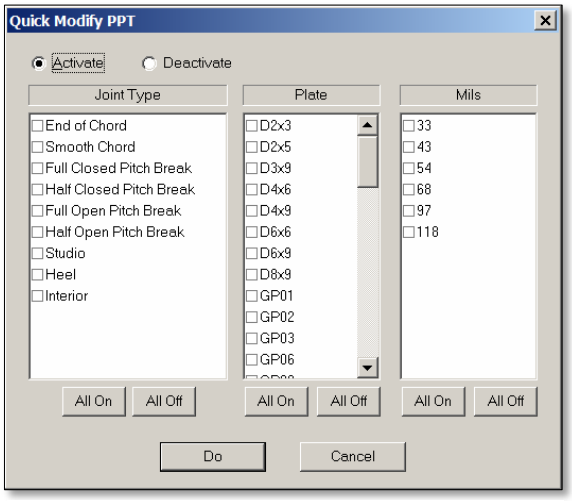


Figure 163: The *Quick Modify PPT* dialog box.

Activate vs. Deactivate – The *Activate* and *Deactivate* radio buttons are used to turn selected values in the *Plate* and *Mil* panes on or off for the selected *Joint Types*. When *Activate* is selected, all *Plate* and *Mil* values with a checkmark are included in the bumping process for the selected *Joint Types*. When *Deactivate* is selected, all *Plate* and *Mil* values with a checkmark are excluded from the bumping process for the selected *Joint Types*.

Joint Type

The *Joint Type* pane contains a checkbox for each of the nine potential categories of joints in a truss, which includes:

1. *End of Chord*
2. *Smooth Chord*
3. *Full Closed Pitch Break*
4. *Half Closed Pitch Break*
5. *Full Open Pitch Break*
6. *Half Open Pitch Break*
7. *Studio*
8. *Heel*
9. *Interior*

All On – Clicking the *All On* button under *Joint Types* will place a checkmark in the checkbox for every *Joint Type*.

All Off – Clicking the *All Off* button under *Joint Types* will remove checkmarks from all checkboxes in the *Joint Types* pane.

Plate

The *Plate* pane provides a list of all plate sizes available in the PPT.

All On – Clicking the *All On* button in the *Plate* pane will place a checkmark in the checkbox for every plate size available in the PPT.

All Off – Clicking the *All Off* button in the *Plate* pane will remove checkmarks from all checkboxes in the *Plate* pane.

Mils

The *Mils* pane provides a list of all plate thicknesses available in the PPT.

All On – Clicking the *All On* button in the *Mils* pane will place a checkmark in the checkbox for every plate thickness available in the PPT.

All Off – Clicking the *All Off* button in the *Mils* pane will remove checkmarks from all checkboxes in the *Mils* pane.

OTHER COMMAND BUTTONS

Do – Clicking on the *Do* button will save all user-defined changes and close the *Plate Priority Table Editor* dialog box.

Cancel – Clicking on the *Cancel* button will discard all user-defined changes and close the *Plate Priority Table Editor* dialog box.

Editing a Truss-Specific PPT

To edit the PPT for a specific truss, begin by making sure that the truss file is open, active, and unlocked. Once this is done, go to the menu bar and select *Material* → *Edit MPT*. This will open an *MPT Editor* dialog box for the current truss, like the one pictured in Figure 164. (As can be seen, the title bar of this dialog box indicates that you are using the *Material Priority Table Editor* for the *Current Truss*, rather than the *System MPT*.) Click on the *Edit PPT* button to open the *Plate Priority Table Editor* dialog box for your specific truss. The steps for editing a truss-specific PPT are the same as those, presented above, for editing a system-wide PPT.

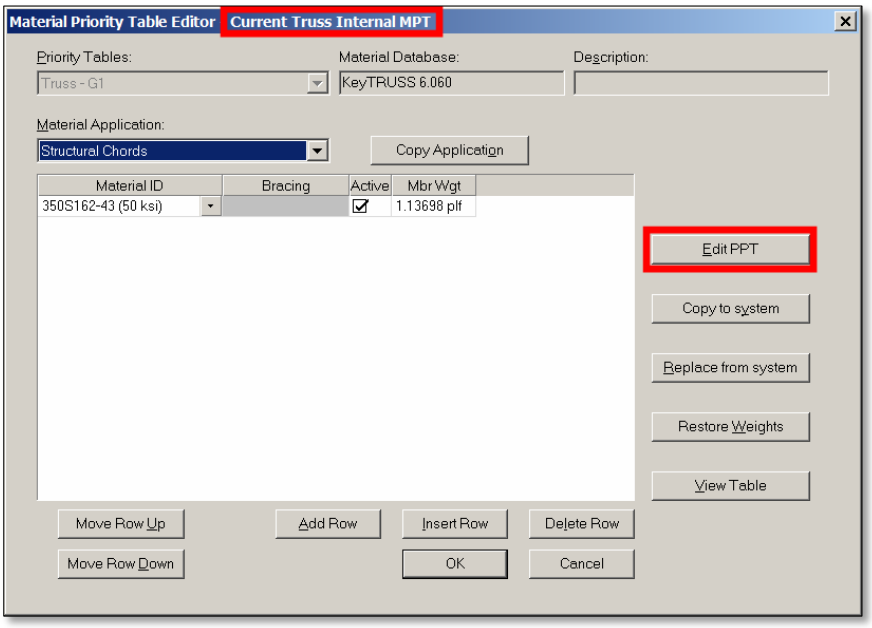


Figure 164: A truss-specific *Material Priority Table Editor* dialog box.

WORKING WITH GS TRUSS LOAD CASES

The Case for Load Cases

If you want to know how your truss designs are going to hold up in the real world, then you will need to put them through their paces using GS Truss load cases. From standard live and dead loads, to snow loads, wind loads, and drag loads, GS Truss will let you know if your trusses pass muster. The process begins with the selection of the load types you would like to apply, along with the configuration of those loads.

Load-Tool Options

There are three options for creating and editing load cases in GS Truss, all of which are accessed from the *Loads* option on the menu bar, as pictured at right:

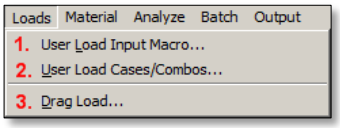


Figure 165: The *Loads* menu.

1. *User Load Input Macro* – Fairly limited in functionality, the *User Load Input Macro* tool can be used to:
   - Change the default values associated with *Standard/Auto Loads*.
   - Add point loads or additional distributed loads to the default *Roof Live Load* and the default *Dead Load*.
   - Create new load cases using a limited set of variables.
2. *User Load Cases/Combos* – The *User Load Cases/Combos* tool provides a comprehensive environment for viewing, creating, and editing load cases, as well as for creating unique combinations of those load cases for testing purposes.
3. *Drag Load* – The *Drag Load* option is used to define lateral loads, imposed by wind or earthquakes, which must be resisted by a structure.

TIP! In the *User Load Cases/Combos* tool, the default *Roof Live Load* is referred to as "*Lr1: Std Live Load*." In the *User Load Input Macro*, the default *Roof Live Load* is referred to as "1." Changes made to this load case using one tool are automatically reflected in the other tool.

When working with GS Truss load tools, there are a few basic principles to keep in mind:

- User-defined load cases and combinations are truss specific and cannot be applied to multiple trusses or a batch.
- The loads associated with a truss cannot be edited unless the truss file is unlocked.
- The analyze/design process must be re-run after a new load is created or an existing load is modified.
- Users cannot delete any of the load cases that come standard in GS Truss.

NOTE! If a user fails to design for a load case that is specified by code, GS Truss automatically adds a note to all *Plot Drawings* that states, "*Truss not engineered for all code specified loads*."

The User Load Input Macro

The *User Load Input Macro* tool is accessed from the *Loads* menu, as pictured at right. As mentioned earlier, this tool is somewhat limited in functionality. It is designed for quick entry of load data, and is used as an alternative to the *User Load Cases/Combinations* entry screen for those instances where:

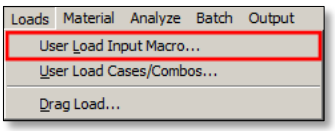


Figure 166: Accessing *User Load Input Macro* via the Loads Menu.

- You wish to create or modify loads that are to be applied to chords only (not webs).
- The specific panel points where point loads are to be applied already exist on the truss.
- You are only interested in working with or modifying values for the standard *Roof Live Load*, or creating new live and/or dead loads.

In order to facilitate quick entry, some assumptions and restrictions have been put in place for the *User Load Input Macro*. They are as follows:

- Each defined load contains both live and dead loads.
- Each load is assigned point numbers; a single point for point loads, and multiple points for distributed loads. Dimensions cannot be used for the application of loads using the *User Load Input Macro*. Therefore, if a point does not exist on a truss in the position where a load is to be applied, that load must be entered using the *User Load Cases/Combinations* tool instead of the *User Load Input Macro*.
- Because loads defined using the *User Load Input Macro* are based on points, if points are altered because of changes to truss geometry, loads that were already in existence will no longer be valid. For this reason, it is strongly recommended that loads not be applied until the geometry of the truss is stable.
- Live distributed loads using the directions *Up*, *Down*, *Left*, or *Right* are assumed to be projected loads. (That is, loads applied relative to the horizontal plane. See Figure 167 at right.) Live distributed loads using the directions *Normal Up*, *Normal Down*, *Parallel Left*, or *Parallel Right* are assumed to be rake loads. (That is, loads applied in line with, or perpendicular to, the angle of the member receiving the load. See Figure 168 at right.)

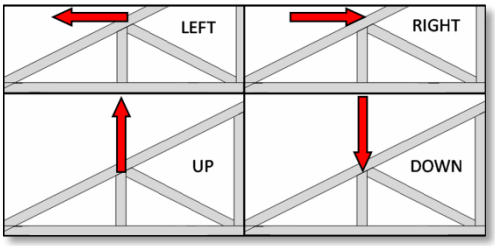


Figure 167: Projected loads.

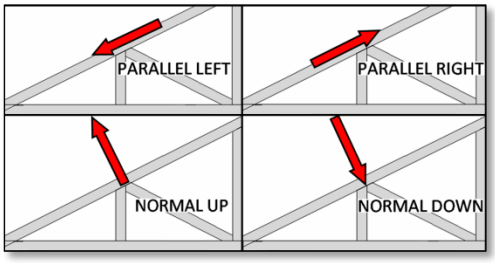


Figure 168: Rake loads.

- Point loads have an assumed tributary width of zero.
- As stated previously, web loading cannot be done using the *User Load Input Macro* tool. Loads for webs must be entered using the *User Load Cases/Combinations* tool.
- Because of its load type and tributary width assumptions, loads created with the *User Load Input Macro* tool should only be edited with the *User Load Input Macro* tool.
- Loads created using the *User Load Cases/Combinations* tool are not viewable within the *User Load Input Macro*.

WARNING! If you modify an existing load case for a truss (or create a custom load case) using the *User Load Cases/Combinations* tool, and you subsequently attempt to open the *User Load Input Macro* tool, you will receive an error message like the one pictured at right.

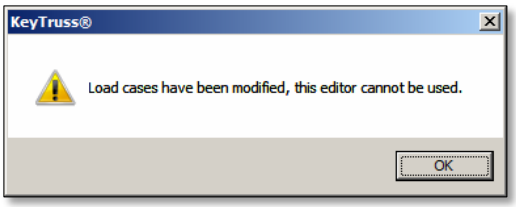


Figure 169: Error attempting to use the *User Load Input Macro* tool.

THE INTERFACE

When you select the *User Load Input Macro* option from the menu bar, GS Truss opens a window that contains a diagram of your truss in *Element View*, along with the *User Load Input Macro* window pictured in Figure 170 below. We will now turn our attention to a detailed examination of this window.

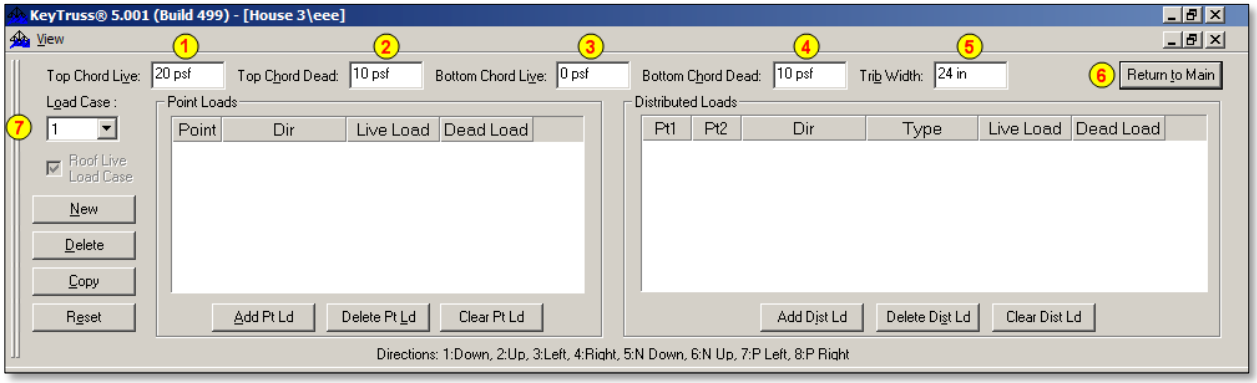


Figure 170: Numbers presented here in the *User Load Input Macro* window correspond with those of the descriptions below.

1. **Top Chord Live** – The *Top Chord Live* field is used to enter the load produced by the use and occupancy of a building, as it applies to the top chord of a truss.

2. **Top Chord Dead** – The value entered into the *Top Chord Dead* field represents the permanent, unmoving load applied to the top chord of a truss.

3. **Bottom Chord Live** – The *Bottom Chord Live* field is used to enter the load produced by the use and occupancy of a building, as it applies to the bottom chord of a truss.

4. **Bottom Chord Dead** – The value entered into the *Bottom Chord Dead* field represents the permanent, unmoving load applied to the bottom chord of a truss.

5. **Trib Width** – This field defines the width of the *Tributary* to which distributed loads will be applied. (Point loads have an assumed tributary width of zero.)

6. **Return to Main** – Clicking on the *Return to Main* command button closes the *User Load Input Macro* window and returns the user to the main GS Truss window.

7. **Load Case** – This field displays the GS Truss-assigned number associated with the active load case. Note that user-generated load cases that were created using the *User Load Cases/Combos* tool are not visible in this drop-down.

TIP! The values initially listed under the top chord and bottom chord live and dead load fields are those defined under the *Standard/Auto Loads* tab of *Engineering/Design Presets*. Changing a value in the *User Load Input Macro* window also changes the value in this preset.

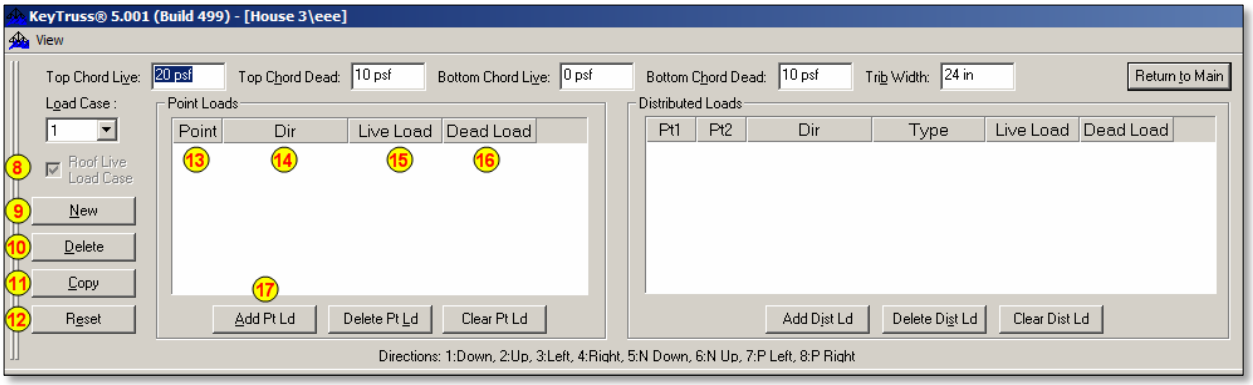


Figure 171: Numbers presented here in the *User Load Input Macro* window correspond with the descriptions below.

8. **Roof Live Load Case** – When this checkbox is activated, the user-created point loads and distributed loads associated with the current load case are applied as *Roof Live Loads*. The value associated with this checkbox (that is, checked or unchecked) is defined at the time a new load case is created and it cannot be altered thereafter.

Load Case Command Buttons

9. **New** – When the *New* button is clicked, a new load case number is added to the *Load Case* drop-down list, and the newly created load case becomes active. Load-case numbers are assigned by GS Truss automatically, in sequence, and cannot be modified by users.

10. **Delete** – Clicking on the *Delete* command button erases the load case currently displayed in the *Load Case* drop-down list.

11. **Copy** – This command button creates a duplicate copy of the load case currently displayed in the *Load Case* drop-down list. The copied version can then be modified as necessary to meet the user's needs.

12. **Reset** – If you have deleted one or more point loads or distributed loads from the active *Load Case*, you can click on the *Rest* button to restore them in their entirety. That said, however, if you click on the *Return to Main* button without clicking on the *Reset* button first, the deleted point loads and distributed loads will be gone for good.

Point Loads

13. **Point** – The *Point* column is used to enter the truss panel point to which a load will be applied.

14. **Dir** – The *Direction* column defines the path along which a load will be applied. The list of potential values in the column's drop-down includes: *Down*, *Up*, *Left*, *Right*, *N Up*, *N Down*, *P Left*, and *P Right*. For more information about the directions in which point loads may be applied, see Figures 167 and 168 on page 144.

15. **Live Load** – The *Live Load* column defines the total weight of the load, produced by the use and occupancy of a building, which is to be applied to the specified panel point.

16. **Dead Load** – The *Dead Load* column defines the total weight of the permanent, unmoving load that is to be applied to the specified panel point.

17. **Add Pt Ld** – Clicking on the *Add Point Load* command button adds a blank row to the *Point Loads* section of the window. By entering values into the columns associated with this new row, the user creates a new point load that is added to the active *Load Case*.

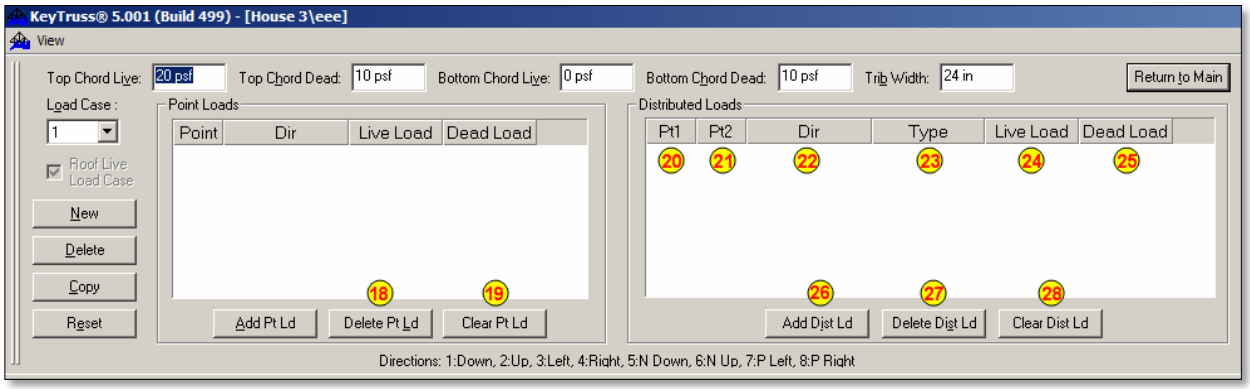


Figure 172: Numbers presented here in the *User Load Input Macro* window correspond with those of the descriptions below.

18. **Delete Pt Ld** – Clicking on the *Delete Point Load* button erases the currently selected *Point Loads* row from the active *Load Case*.

19. **Clear Pt Ld** – When the *Clear Point Loads* button is clicked, all rows are deleted from the *Point Loads* section of the window.

Distributed Loads

20. **Pt1** – The *Point 1* column defines the location where the application of a load is to begin.

21. **Pt2** – The *Point 2* column defines the location where the application of a load is to end.

22. **Dir** – The *Direction* column defines the path along which a load will be applied. The list of potential values in the column's drop-down includes: *Down*, *Up*, *Left*, *Right*, *N Up*, *N Down*, *P Left*, and *P Right*. For more information about the directions in which point loads may be applied, see Figures 167 and 168 on page 144.

23. **Type** – The *Type* column defines the breadth of the surface to which a load will be applied. There are two potential values:

    - *Area* – When the *Area* option is selected, the distributed load will be applied to the line extending from *Point 1* to *Point 2*, as well as to the tributary on either side of that line.
    - *Line* – When the *Line* option is selected, the distributed load will be applied in a direct line extending from *Point 1* to *Point 2*. The load will not be applied to the tributary on either side of that line.

24. **Live Load** – The *Live Load* column defines the total weight of the distributed load, produced by the use and occupancy of a building.

25. **Dead Load** – The *Dead Load* column defines the total weight of the permanent, unmoving, distributed load that is to be applied.

26. **Add Dist Ld** – Clicking on the *Add Distributed Load* command button adds a blank row to the *Distributed Loads* section of the window for the currently selected *Load Case*. By entering values into the columns associated with this new row, the user creates a new distributed load that is added to the active *Load Case*.

27. **Delete Dist Ld** – Clicking on the *Delete Distributed Load* button erases the currently selected *Distributed Loads* row from the active *Load Case*.

28. **Clear Dist Ld** – When the *Clear Distributed Loads* button is clicked, all rows are deleted from the *Distributed Loads* section of the window.

User Load Cases/Combinations

The *User Load Cases/Combinations* tool is accessed from the *Loads* menu, as pictured at right. The *User Load Cases/Combinations* tool allows users to view and edit load cases, and to apply those load cases in various combinations. Users can create as many load cases as needed, and each load case can include multiple point loads and distributed loads. Use the *User Load Cases/Combinations* tool when you wish to:

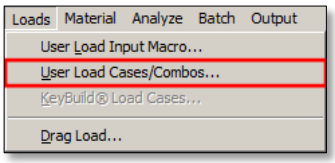


Figure 173: The *User Load Cases/Combos* menu option.

- Apply a point load to an area of a truss for which a panel point does not currently exist.
- Apply loads to webs.
- View detailed specifications for an existing load case.
- View a load case that was created previously with *User Load Cases/Combinations*.
- Define different combinations of loads to be applied.
- Use dimensions instead of points to define a load.
- Create custom names for new load cases.
- Add one or more point loads or distributed loads to the *Standard Live Load* (Lr1) or *Standard Dead Load* (D1) cases.
- Create new, custom load cases consisting of one or more point loads and/or distributed loads.

LOAD CASE EDIT TAB

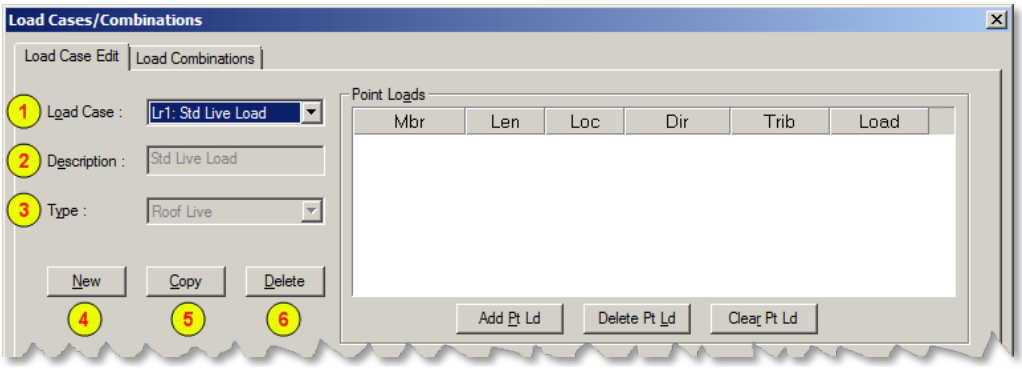


Figure 174: Numbers presented in this figure correspond with the descriptions provided below.

The *Load Case Edit* tab is used to create and modify individual load cases. Following is a brief description of the various parts of this window.

1. **Load Case** – The *Load Case* drop-down provides a list of GS Truss standard load cases, along with all of the custom load cases created using the *User Load Cases/Combinations* tool. The standard load cases displayed in this drop-down list depend on the types of standard loads users have activated in their *Engineering/Design Presets*. With regard to the standard load cases that are listed, only the *Standard Live Roof Load* (*Lr1*) and *Standard Dead Load* (*D1*) cases can be modified directly by users. Point loads and distributed loads can both be added to the *Lr1* and *D1* load cases, however, the pre-populated distributed loads for *Lr1* and *D1* cannot be modified. (*Lr1* and *D1* load cases are applied to all trusses.) Although the remaining standard load cases cannot be edited directly, users can elect to make a copy of any of these cases, and the copied versions can be altered as needed to suit the user's requirements.

TIP! The values associated with the *Lr1* and *D1* load cases are initially defined in the user's *Engineering/Design Presets*, under the *Standard/Auto Loads* tab.

2. **Description** – The *Description* field contains a narrative explanation of the purpose and/or application of the selected load case. *Description* field values cannot be edited for any of the standard load cases.

3. **Type** – The *Type* field defines the kind of load to be applied. *Type* field values cannot be edited for any of the standard load cases. The list of potential values in this drop-down includes:
   - *Dead*
   - *Live*
   - *Roof Live*
   - *Wind*
   - *Snow*
   - *Earthquake*
   - *Rain*
   - *Live-10**
   - *Drag*
   - *Ice Dam*

4. **New** – Clicking on the *New* command button opens a *New Load Case* dialog box like the one pictured at right. Type in a name for your new load case in the *Description* field, and select the kind of load to be created from the *Type* drop-down list. Potential *Type* values include:
   - *Dead*
   - *Live*
   - *Roof Live*
   - *Wind*
   - *Snow*
   - *Earthquake*
   - *Rain*

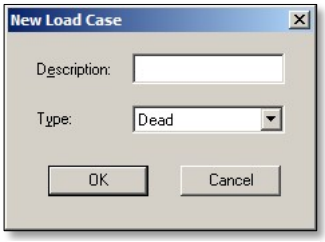


Figure 175: The *New Load Case* dialog box.

5. **Copy** – Clicking on the *Copy* button opens a *Copy Load Case* dialog box like the one pictured at right. Enter a new name for the copied load case in the *Description* field of this dialog box and then click on the *OK* button to complete the *Copy* process. Once the *Copy* has been created, it can be modified as needed to meet the user's requirements.

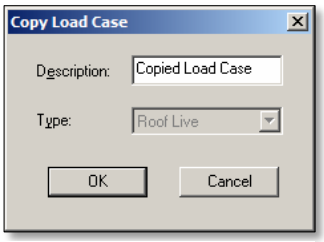


Figure 176: The *Copy Load Case* dialog box.

6. **Delete** – Click on the *Delete* button to erase the active load case entirely (including both point loads and distributed loads). Before the load case is deleted, GS Truss will display a warning message like the one pictured at right. Click on the *Yes* button to confirm and complete the deletion. Click on the *No* button to cancel the deletion process. Note that only user-defined (custom) load cases can be deleted; GS Truss standard load cases cannot be deleted.

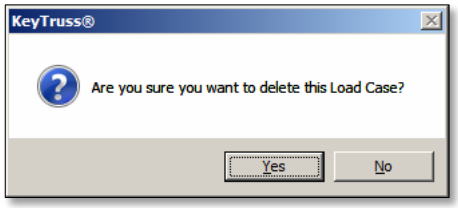


Figure 177: Click *OK* to confirm deletion of your Load Case.

Point Loads

As the name implies, *Point Loads* are applied to a specific spot on a truss member. As shown in Figure 178 below, there are six property columns and three command buttons associated with *Point Loads*:

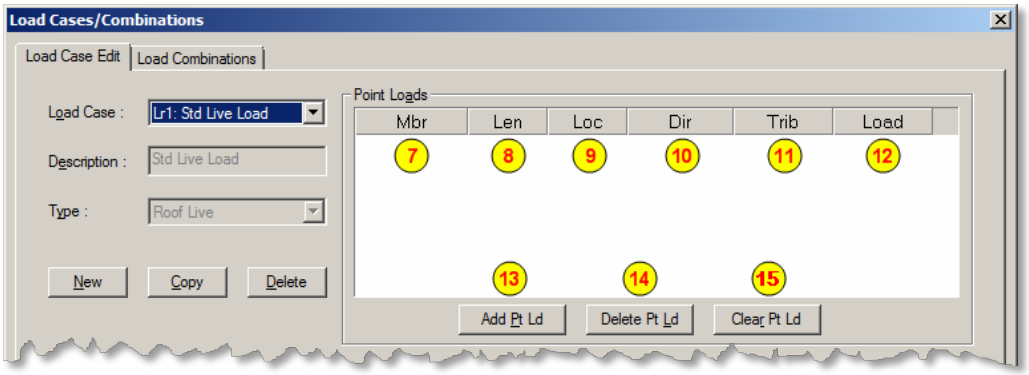


Figure 178: Numbers presented in this figure correspond with the descriptions provided below.

7. **Mbr** – The *Member* column defines the specific truss *Member* to which a load is to be applied. Note that the values displayed in this drop-down list depend upon the composition of the truss file that is currently active. At a minimum, the list of values will include the following:
   - *Top* – The top chord
   - *Bot* – The bottom chord
   - *Web n* – A numbered list of webs
8. **Len** – The *Length* column displays the overall span of the truss member to which a load will be applied. The *Length* value is inserted by GS Truss automatically, based on the truss member selected in the *Mbr* field.
9. **Loc** – The *Location* column identifies the specific dimension where the load will be applied. If the truss member selected in the *Mbr* field has only one point, this field is populated automatically. If the selected truss member has multiple points, *Location* information must be entered into this field manually.
29. **Dir** – The *Direction* column defines the path along which the load will be applied. The list of potential values in this drop-down includes: *Down*, *Up*, *Left*, *Right*, *N Up*, *N Down*, *P Left*, and *P Right*. For more information about the directions in which point loads may be applied, see Figures 167 and 168 on page 144.
10. **Trib** – The *Trib* field is used to specify the width of the point load.
11. **Load** – The *Load* column specifies the total weight of the *Load* to be applied.
12. **Add Pt Ld** – Clicking on the *Add Point Load* command button adds a blank row to the *Point Loads* section of the window. By entering values into the columns associated with this new row, the user creates a new point load that is added to the active *Load Case*.
13. **Delete Pt Ld** – Clicking on the *Delete Point Load* button erases the currently selected *Point Loads* row from the active *Load Case*.
14. **Clear Pt Ld** – When the *Clear Point Loads* button is clicked, all rows are deleted from the *Point Loads* section of the window.

Distributed Loads

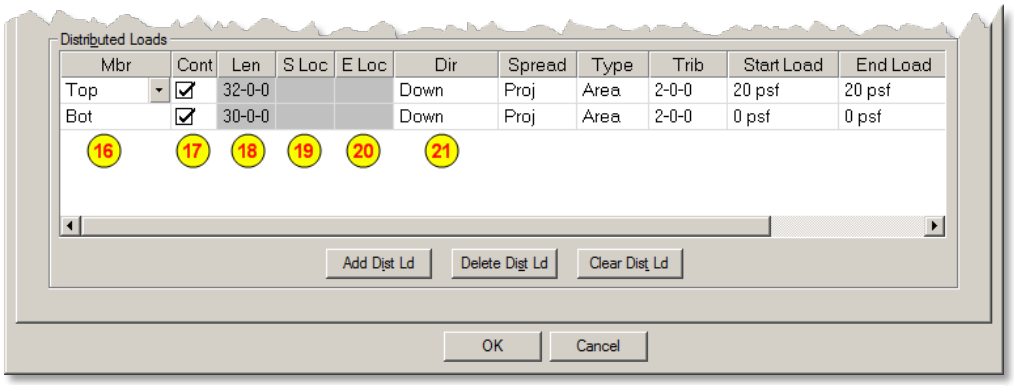


Figure 179: Numbers presented in this figure correspond with the descriptions provided below.

15. **Mbr** – The *Member* column defines the specific truss *Member* to which a load is to be applied. Note that the values displayed in this drop-down list depend upon the composition of the truss that is currently active. At a minimum, the list of values will include the following:
    - *Top* – the top chord
    - *Bot* – the bottom chord
    - *Web n* – a list of numbered webs

16. **Cont** – If the *Continuous* checkbox is activated, the defined load is applied "continuously" along the entire length of the specified truss member. If the *Continuous* checkbox is not activated, the user must manually enter a *Start Location* and an *End Location* for the applied load.

17. **Len** – The *Length* column displays the overall *Length* of the truss member to which a load will be applied. The length value is inserted by GS Truss automatically, based on the member selected in the *Mbr* field.

18. **S Loc** – The *Start Location* column defines the specific location on a truss member where the application of a load is to start, as measured from the left end of that truss member. Note that the *Start Location* (*S Loc*) column is disabled if the *Continuous* checkbox is activated.

19. **E Loc** – The *End Location* column defines the specific location on a truss member where the application of a load is to end, as measured from the left end of that truss member. Note that the *End Location* (*E Loc*) column is disabled if the *Continuous* checkbox is activated.

20. Dir – The *Direction* column defines the path along which a load will be applied. The list of potential values in this drop-down includes: *Down*, *Up*, *Left*, *Right*, *N Up*, *N Down*, *P Left*, and *P Right*. For more information about the directions in which distributed loads may be applied, see Figures 167 and 168 on page 144.

Distributed Loads (continued)

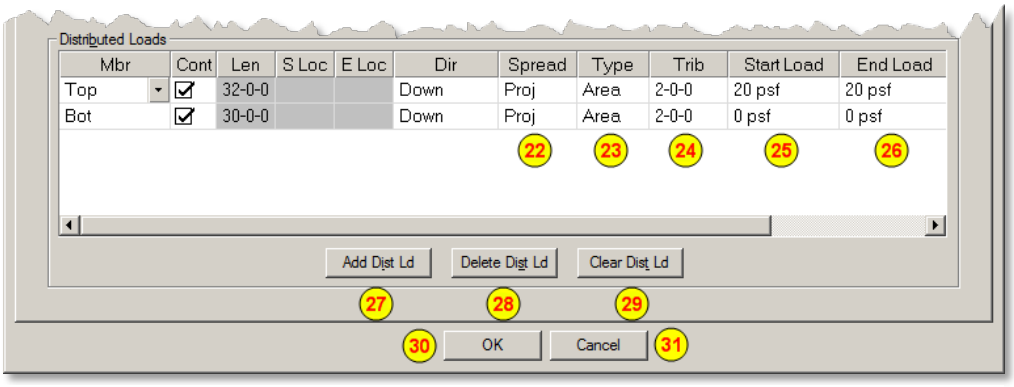


Figure 180: Numbers presented in this figure correspond with the descriptions provided below.

21. **Spread** – As pictured in Figure 181, the *Spread* column is used to define the total surface to which a load will be applied. There are two potential values:

    - *Proj* – A *Projected Spread* is applied in relation to the horizontal plane.
    - *Rake* – A *Rake Spread* is applied along the full length of the member receiving the load**.**

    Note that, since loads are applied per linear or square foot (or the metric equivalent), the total load applied to a web will be greater when *Rake* is specified as the *Spread*, rather than *Projected*.

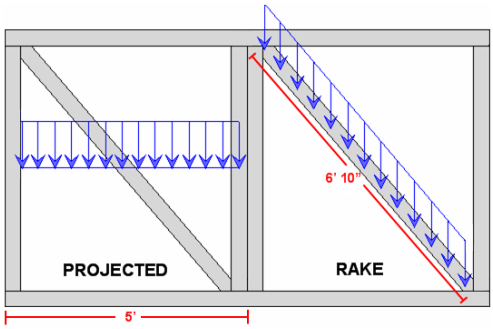


Figure 181: A *Rake Spread* receives a greater load than a *Projected Spread*.

22. **Type** – The *Type* column indicates the expanse to which the load will be applied. The potential values are:

    - *Area* – When the *Area* option is selected, the load is applied to both the truss member and to the width of its associated tributary area.
    - *Line* – When the *Line* option is selected, the load is applied along the length of the truss member only, and does not include the tributary area.

23. **Trib** – The *Trib* field defines the width of the tributary area to which a distributed load will be applied.

24. **Start Load** – The *Start Load* column defines the weight of the load at its starting point on the left side of the target truss member.

25. **End Load** – The *End Load* column defines the weight of the load at its end point on the right side of the target truss member.

26. **Add Dist Ld** – Clicking on the *Add Distributed Load* command button adds a blank row to the *Distributed Loads* section of the window for the currently selected *Load Case*. By entering values into the columns associated with this new row, the user creates a new distributed load that is added to the active *Load Case*.

27. **Delete Dist Ld** – Clicking on the *Delete Distributed Load* button erases the currently selected *Distributed Loads* row from the active *Load Case*.

28. **Clear Dist Ld** – When the *Clear Distributed Loads* button is clicked, all rows are deleted from the *Distributed Loads* section of the window.

29. **OK** – Clicking on the *OK* button will save your changes and close the *User Load Cases/Combinations* tool.

30. **Cancel** – Clicking on the *Cancel* button will discard your changes and close the *User Load Cases/Combinations* tool.

WARNING! If you attempt to open the *User Load Input Macro* tool after creating new load cases using the *User Load Cases/Combos* tool, a warning message like the one pictured in Figure 182 will open.

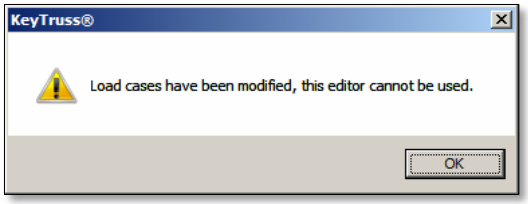


Figure 182: Error attempting to use the *User Load Input Macro* tool.

LOAD COMBINATIONS TAB

The *Load Combinations* tab has three sections. The left side of the screen contains *Default Load Combinations*. These are all of the load combinations that GS Truss creates automatically. The top-right side of the screen holds *Custom Load Combinations*. These are the load combinations created by users. The bottom-right side of the screen contains *Descriptions* of the various load cases.

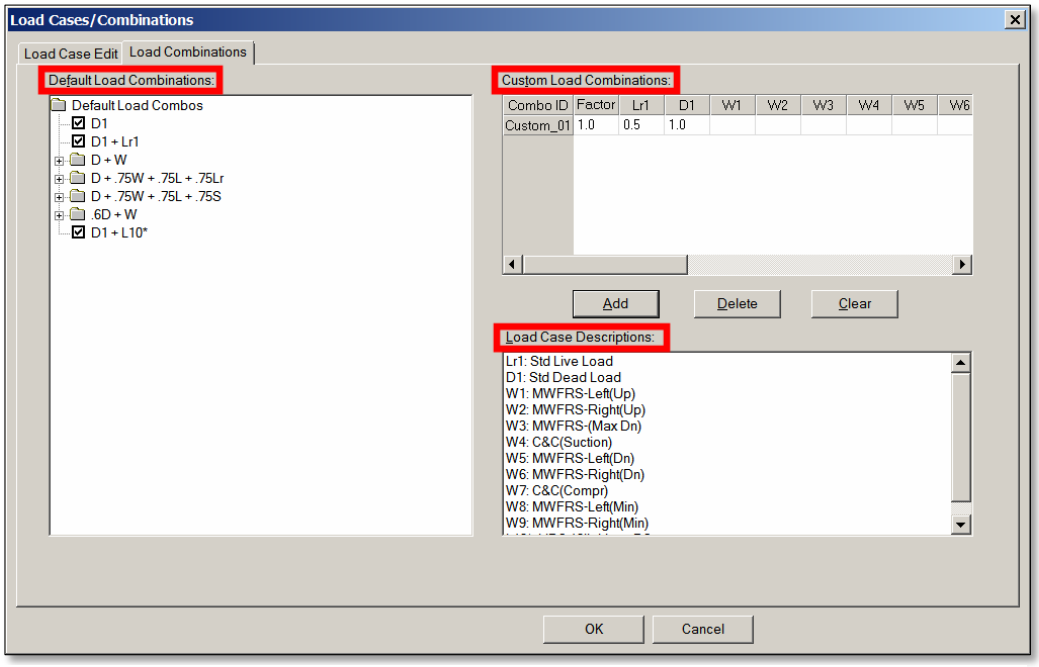


Figure 183: The *Load Combinations* tab.

Default Load Combinations

The *Default Load Combinations* pane provides a listing of all the standard-load-case combinations available for your truss. You can click on the "plus" sign (+) next to a folder to expand that folder and view its contents. All of the load-case-combination checkboxes that are activated will be included in load testing; those left unchecked will be ignored.

Custom Load Combinations

The *Custom Load Combinations* pane is used to create load combinations of your own design.

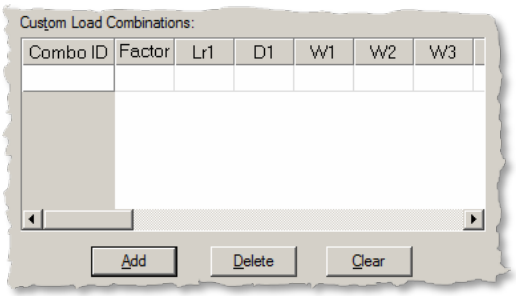


Figure 184: The *Custom Load Combinations* pane.

Combo ID – The *Combo ID* column is used to enter a unique identifier for each user-created custom load combination. As pictured in Figure 185 below, custom *Combo IDs* appear at the bottom of the drop-down list of available load combinations displayed in *Applied Loads View*.

Factor – The value entered into the *Factor* column is used to calculate the percentage of each particular load type (listed in the columns to the right) to be applied. The default *Factor* value is 1.0, which translates as 100%.

[Load Case Columns] – To the right of the *Factor* column, there is an additional column for each standard load case that has been activated in the user's *Engineering/Design Presets*. Users are to enter the percentage of each load case to be applied into the corresponding column. Columns with no value entered will not be applied.

> **EXAMPLE:** For *Custom Load Combinations*, the actual percentage of the load that is applied for any given load case is calculated as the value entered into that load case column, multiplied by the value entered into the *Factor* column. So if, for example, a user entered a value of .5 (50%) into the load case column, and a value of 1.0 (100%) into the *Factor* column, the actual percentage of the load applied would be .5 x 1.0, or .5 (50%). If a user entered a value of .5 (50%) into a load case column, and a value of .5 (50%) into the *Factor* column, the actual percentage of the load applied would be .5 x .5, or .25 (25%).

Add – When the *Add* button is clicked, a new row is inserted into the *Custom Load Combinations* section of the window. By entering values into the columns associated with this new row, the user creates a new load-case combination that will appear at the bottom of the drop-down list of available load combinations displayed in *Applied Loads View*. (See Figure 185 at right.)

Delete – When the *Delete* button is clicked, the active row in the *Custom Load Combinations* pane is erased.

Clear – When the *Clear* button is clicked, all *Custom Load Combinations* are deleted for the active truss.

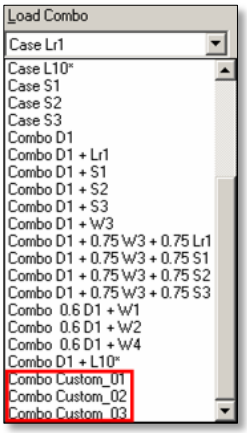


Figure 185: *Custom Load Combina-tions* shown in *Applied Loads View*.

Load Case Descriptions

The *Load Case Descriptions* pane provides a read-only narrative explanation of all standard and custom load cases available for the active truss.

Drag Load

The *Drag Load* menu option is used to add a lateral load to a truss, such as that resulting from an earthquake. Clicking on this menu option opens the *Drag Load* dialog box, pictured in Figure 187.

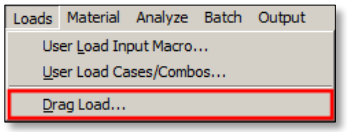


Figure 186: The *Drag Load* menu option.

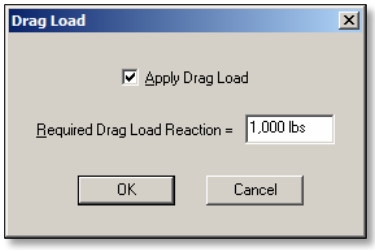


Figure 187: The *Drag Load* dialog.

Apply Drag Load – Click in the *Apply Drag Load* checkbox to activate the *Drag Load* option. Once activated, two different drag loads – *Case LDrag1* and *Case* LDrag2 – will be displayed in the *Load Combo* drop-down list available in *Applied Loads View*. (See Figure 188 below.) These two load cases are identical except for the fact that the load associated with *Case LDrag1* is applied from left to right, whereas the load associated with *Case LDrag2* is applied from right to left.

Required Drag Load Reaction – Enter the value of the full drag load to be applied across the entire span of the truss.

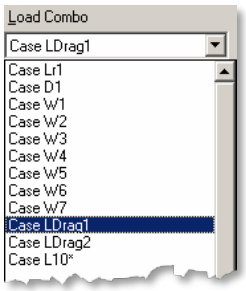


Figure 188: *Drag Loads* in *Applied Loads View*.

Applied Loads View

Once loads have been created and configured, they can be reviewed in action using the GS Truss *Applied Loads View*. There are two ways to open the *Applied Loads View* window:

- From the menu bar select *View* → *Load View*.
- From the *View* toolbar, click on the *Applied Loads View* icon.

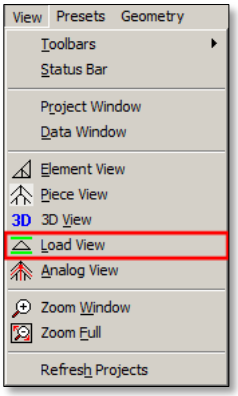


Figure 189: The Load View menu option.

Regardless of the method you use, the *Applied Loads View* window will open, looking similar to the one pictured below. The parts of the *Applied Loads View* window are as follows:

1. **Menu Bar** – The menu bar in the *Applied Loads View* window has only two listings:

   View – The *View* menu provides two options. *Zoom Window* allows users to select a specific area of a diagram to enlarge. The *Zoom Full* function enlarges the diagram to the maximum size in which the entire diagram can be displayed within the confines of the current window.

   Diagrams – The *Diagrams* menu provides another method of accessing the seven different functions available on the *Output View* toolbar.

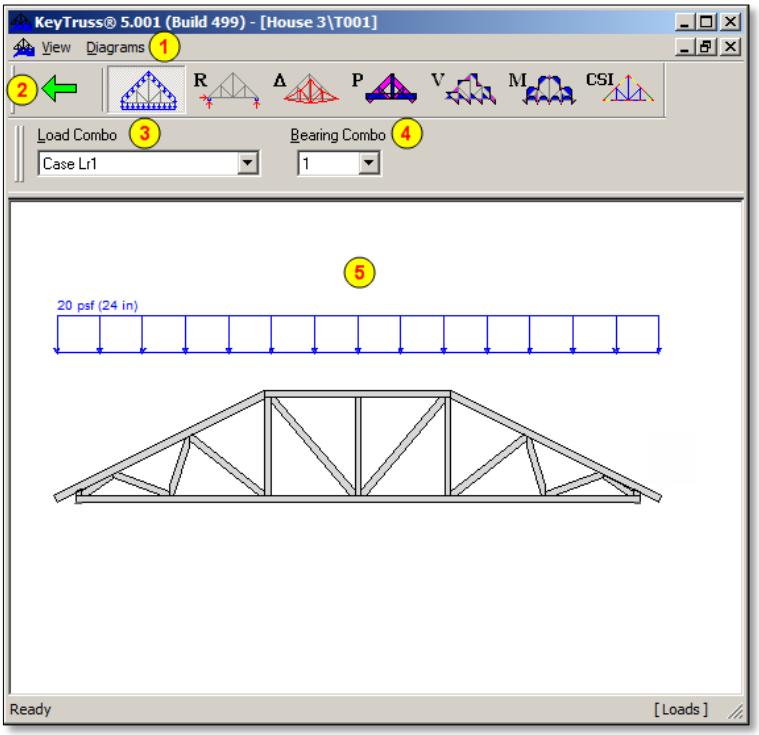


Figure 190: The *Applied Loads View* window.

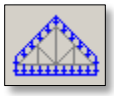
2. **Output View Toolbar** – The *Output View* toolbar provides access to seven different types of stressors that can be applied to your truss. The options include: *Loads*, *Bearing Reactions*, *Deflections*, *Axial Forces*, *Shear Forces*, *Bending Moments*, and *Combined Stress Indices*. Detailed information about these functions is provided on the pages immediately following.

3. **Load Combo** – The *Load Combo* drop-down provides access to a list of all of the standard and custom load cases and load combinations that have been assigned to the active truss.

TIP! Once you have selected an item from the *Load Combo* drop-down list, you can use the scroll button of your mouse to scroll through each of the other load combinations.

4. **Bearing Combo** – The *Bearing Combo* drop-down list provides access to all combinations of bearings that have been created for the active truss. These bearing combinations can be tested to identify their ideal arrangement from an engineering standpoint.
5. **Diagram Pane** – The *Diagram Pane* displays the truss in *Piece View* and shows the direction and intensity of the stressors being applied to it.

When a truss has already been analyzed or designed and is currently in a locked state, there are only two functions that are active and available from within the *Applied Loads View* window; *Loads* and *Bearing Reactions*. The other functions on the *Output View* toolbar are grayed-out and unavailable. To gain access to the full array of diagram functions, the analysis/design process must be re-run immediately prior to entering the *Applied Loads View* window. This ensures that the most current code values are applied to the truss design prior to a detailed engineering review.



LOADS

The *Loads* function is automatically activated when entering *Applied Loads View*. The review of loads begins with the selection of a load case or load combination from the *Load Combo* drop-down list. (See Figure 188 on page 155.) The specific loads and load combinations available on this list will depend upon two things: 1) the standard loads that have been enabled in the user's presets, and 2) whether or not the user has created any custom loads or load combinations for the active truss.

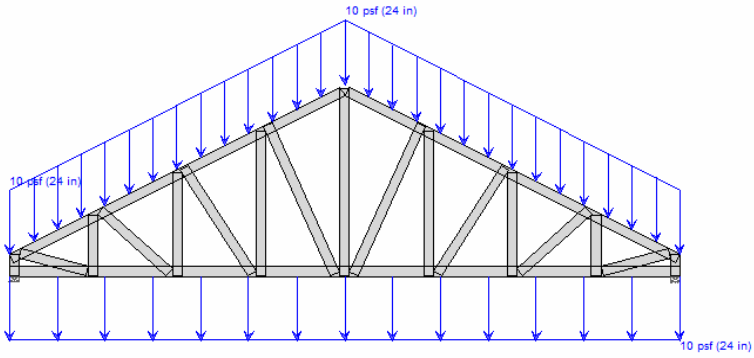
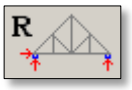


Figure 191: The *Applied Loads View*.



BEARING REACTIONS

The *Bearing Reactions* function shows the impact of loads exerted on the bearings supporting a truss. To begin, click on the *Bearing Reactions* command button on the *Output View* toolbar, and then select the desired values from the *Load Combo* and *Bearing Combo* drop-down lists. (See Figure 188 on page 155.)

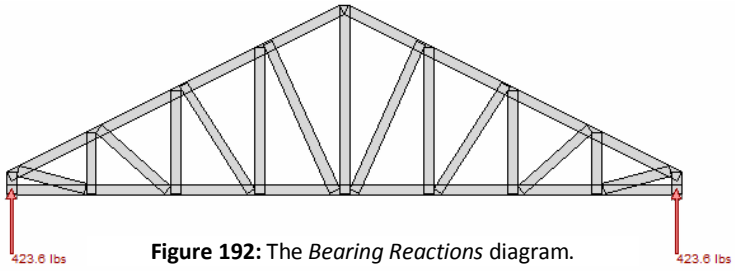


Figure 192: The *Bearing Reactions* diagram.

DEFLECTIONS

Deflection refers to the displacement of a truss member, from its static position, as a result of the forces acting on that member. In other words, *Deflection* diagrams show how much truss members will bend. To begin, click on the *Deflections* button on the *Output View*

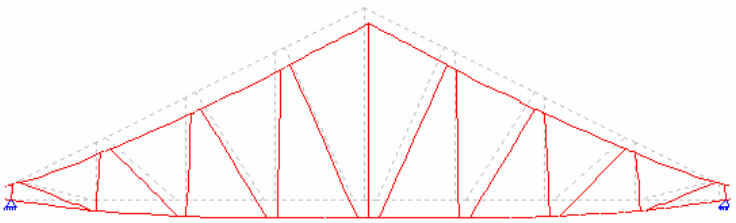


Figure 193: The *Deflections* diagram.

toolbar, and then select the desired values from the *Load Combo* and *Bearing Combo* drop-down lists. (See Figure 188 on page 155.)

Scale Factor – The *Scale Factor* field is used to define the percentage of a load case or load combination to be applied for *Deflection* calculations. The default value is *954.28*.

AXIAL FORCES

Axial Forces pass through the longitudinal axis of a truss member, and can be tension and/or compression related in nature. *Axial Force* diagrams show areas of compression in pink and areas of tension in blue. To begin, click on the *Axial Forces* button on the *Output View* toolbar, and then select the desired values from the *Load Combo* and *Bearing Combo* drop-down lists. (See Figure 188 on page 155.)

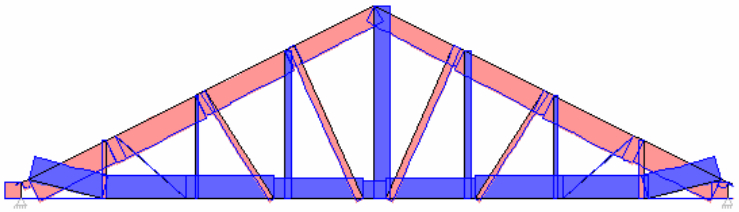
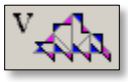


Figure 194: The *Axial Forces* diagram.



SHEAR FORCES

Shear Force diagrams show the vertical pressures bearing upon truss members as a consequence of the opposing forces created by loads and reactions. These diagrams show areas of positive *Shear Force* in blue and negative *Shear Force* in pink. To begin, click on the *Shear Forces* button on the *Output View* toolbar, and then select the desired values from the *Load Combo* and *Bearing Combo* drop-down lists. (See Figure 188 on page 155.)

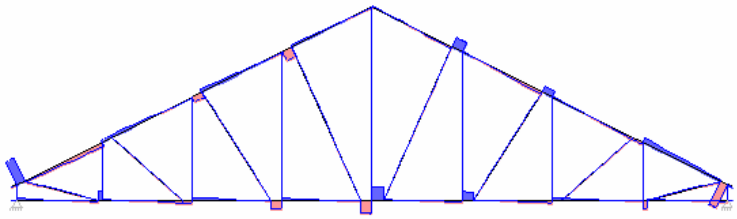
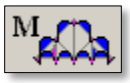


Figure 195: The *Shear Forces* diagram.



BENDING MOMENTS

Bending Moments diagrams show the amount truss members will bow under the application of a load. *Bending Moment* diagrams show positive (convex) bowing in blue and negative (concave) bowing in pink. To begin, click on the *Bending Moments* button on the *Output View* toolbar, and then select the desired values from the *Load Combo* and *Bearing Combo* drop-down lists. (See Figure 188 on page 155.)

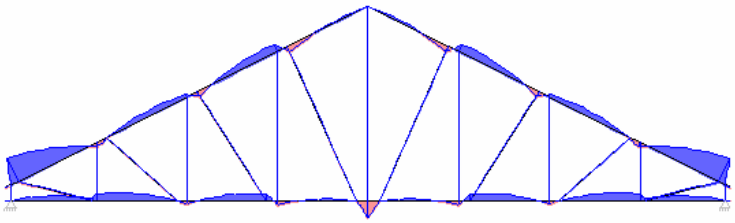


Figure 196: The *Bending Moments* diagram.

COMBINED STRESS INDICES

The *Combined Stress Index* (CSI) is the ratio of the maximum axial and bending forces expected in a member to the forces that the member should be capable of resisting. With CSI diagrams, it is the color of the truss itself that represents whether or not the truss and its members pass the *Combined Stress Indices* test successfully. As can be seen in Figure 197 here, there is a key for the various colors in the upper-right-hand corner of the diagram pane.

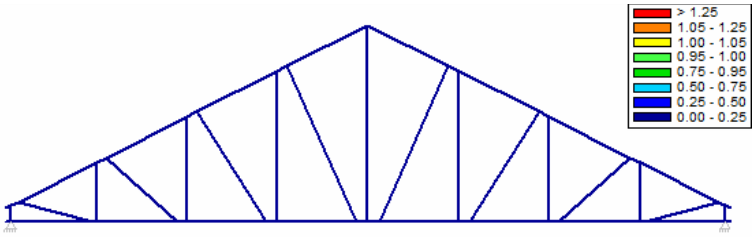


Figure 197: The *CSI* diagram.

Show Envelope – When the *Show Envelope* checkbox is activated, the *Combined Stress Indices* are applied as a worse-case scenario. Since the *Load Combo* and *Bearing Combo* drop-down lists are no longer needed, they are disabled when the *Show Envelope* checkbox is activated. When the checkbox is not activated, CSI loads are applied on a per case basis.

The Analog Element Window

When reviewing *Deflections*, *Axial Forces*, *Shear Forces*, or *Bending Moments*, clicking anywhere on the outer portion of the truss profile opens an *Analog Element* window similar to the one pictured below. The *Analog Element* window provides additional detailed information about the performance of a specific piece of truss.

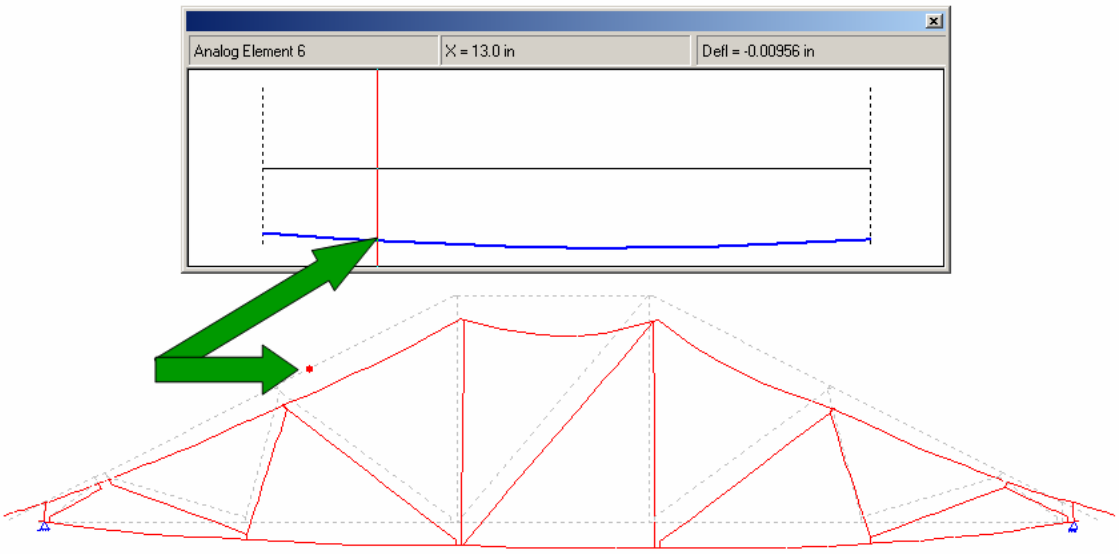


Figure 198: The *Analog Element* window displays detailed info about the performance of a single piece of truss.

GS TRUSS OUTPUTS

GS Truss offers a variety of report outputs for engineering, pricing, and manufacturing review and reference. Outputs can be generated for individual truss files or run as a batch to provide data for multiple trusses. This section of the *GS Truss Designer's Manual* is dedicated exclusively to the topic of generating outputs for individual truss files. For information about generating outputs for a batch of truss files, please refer to the section within this document entitled *"GS Truss Batch Processes."*

Cut Lists

Cut List reports provide a wealth of information about the specific pieces required to create a given truss, including the materials to be used and the precise dimensions of each piece. (For an example of a *Cut List*, see *Appendix C* of this document on page 187.) To create a *Cut List* for the active truss and send it directly to your default printer (without reviewing it first), go to the GS Truss menu bar and select *Output* → *Print* → *Cut List*. To preview a *Cut List* for the active truss file prior to printing it, perform either of the following actions:

- From the GS Truss menu bar, select *Output* → *Preview* → *Cut List*.
- On the GS Truss *Output* toolbar, click on the *Preview Cut List* icon.

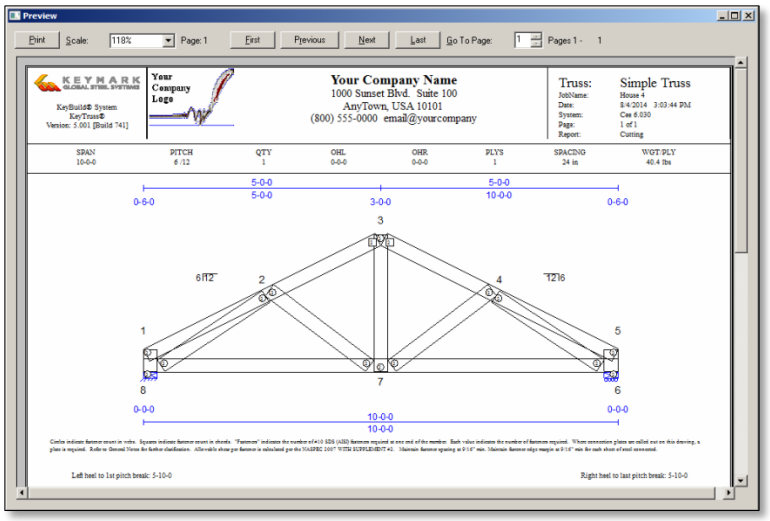


Figure 199: Reviewing and printing a *Cut List*.

Either of these actions will open a *Preview* window like the one pictured at right. Within this window, GS Truss provides a couple of fields and a handful of command buttons to help you navigate and review the contents of your *Cut List*:

Scale – The *Scale* field is used to define the size of the *Cut List* as it is displayed within the *Preview* window. Type a percentage into this field, or use the drop-down arrow to select one of the following predefined settings: *50%*, *100%*, *200%*, *Page Width*, or *Whole Page*.

Go To Page – Use the *Go To Page* field to type in the number of the specific page to which you wish to navigate. If you prefer, you may click on the *Up* and *Down* arrow buttons to enter the desired page number.

COMMAND BUTTONS

Print – Click on the *Print* button to open a Windows *Print* dialog box. From here, you can select the desired printer, along with the range of pages and the number of copies to be printed.

First – Click on the *First* button to navigate back to the first page of a multi-page report.

Previous – Click on the *Previous* button to navigate to the page immediately preceding the page currently displayed.

Next – Click on the *Next* button to navigate to the page that immediately follows the page currently displayed.

Last – Click on the *Last* button to display the final page of a multi-page report.

> **NOTE!** The specific content and format of *Cut Lists* are defined within the *Cutting* tab of *Cutting/Plotting Presets*. For additional information about *Cut List* content and format options, please refer to the section within this document entitled "*Working with GS Truss Presets.*"

Plot Drawings

Plot Drawings provide both detailed and summary information about the reactions of your truss to the various loads that have been applied to it during analysis. (For an example of a *Plot Drawing*, see *Appendix D* of this document on page 188.) To create a *Plot Drawing* for the active truss and send it directly to your default printer (without reviewing it first), go to the GS Truss menu bar and select *Output* → *Print* → *Plot Drawing*. To preview a *Plot Drawing* for the active truss file prior to printing it, perform either of the following actions:

- From the GS Truss menu bar, select *Output* → *Preview* → *Plot Drawing*.
- On the GS Truss *Output* toolbar, click on the *Preview Plot* icon.

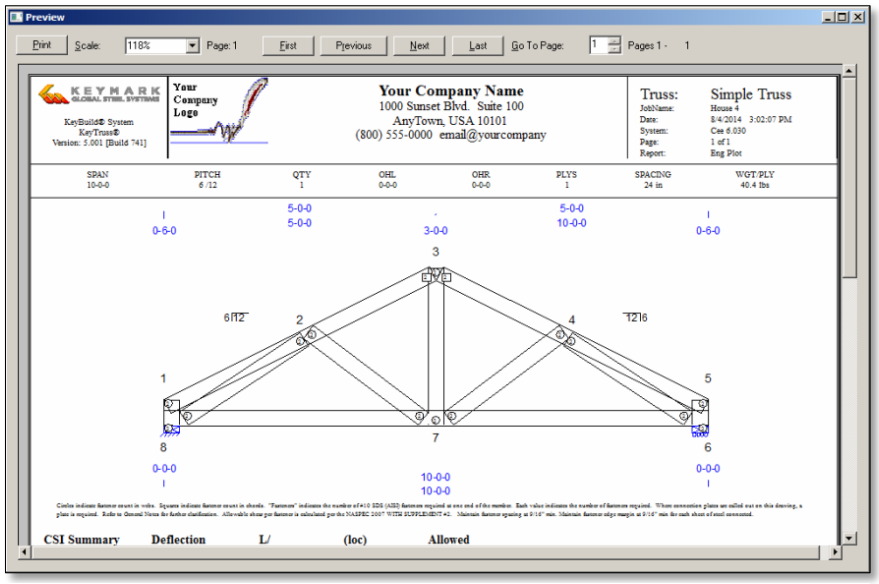


Figure 200: Reviewing and printing a *Plot Drawing*.

Either of these actions will open a *Preview* window like the one pictured at right. Within this window, GS Truss provides a couple of fields and a handful of command buttons to help you navigate and review the contents of your *Plot Drawing*:

Scale – The *Scale* field is used to define the size of the *Plot Drawing* as it is displayed within the *Preview* window. Type a percentage into this field, or use the drop-down arrow to select one of the following predefined settings: *50%*, *100%*, *200%*, *Page Width*, or *Whole Page*.

Go To Page – Use the *Go To Page* field to type in the number of the specific page to which you wish to navigate. If you prefer, you may click on the *Up* and *Down* arrow buttons to enter the desired page number.

COMMAND BUTTONS

Print – Click on the *Print* button to open a Windows *Print* dialog box. From here, you can select the desired printer, along with the range of pages and the number of copies to be printed.

First – Click on the *First* button to navigate back to the first page of a multi-page report.

Previous – Click on the *Previous* button to navigate to the page immediately preceding the page currently displayed.

Next – Click on the *Next* button to navigate to the page that immediately follows the page currently displayed.

Last – Click on the *Last* button to display the final page of a multi-page report.

NOTE! The specific content and format of *Plot Drawings* are defined within the *Plotting* tab of *Cutting/Plotting Presets*. For additional information about *Plot Drawing* content and format options, please refer to the section entitled "*Working with GS Truss Presets.*"

Joint Detail Reports

As the name implies, *Joint Details Reports* provide in-depth information about where and how the various pieces of a truss are joined together. (For an example of a *Joint Details Report*, see *Appendix E* of this document on page 189.) To create a *Joint Details Report* for the active truss and send it directly to your default printer (without reviewing it first), go to the GS Truss menu bar and select *Output* → *Print* → *Joint Details*. To preview a *Joint Details Report* for the active truss file prior to printing it, perform either of the following actions:

- From the GS Truss menu bar, select *Output* → *Preview* → *Joint Details*.
- On the GS Truss *Output* toolbar, click on the *Preview Joint Details* icon.

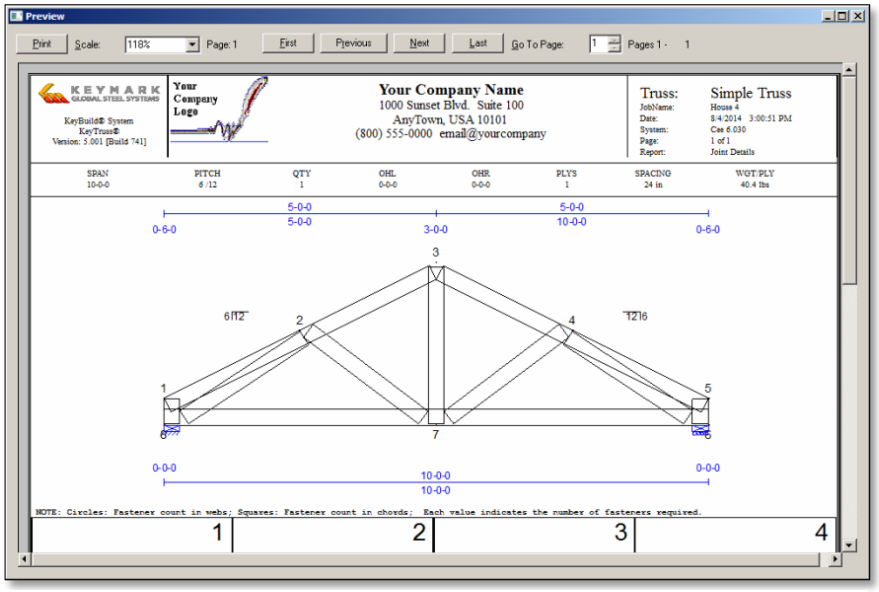


Figure 201: Reviewing and printing a *Joint Details Report*.

Either of these actions will open a *Preview* window like the one pictured at right. Within this window, GS Truss provides a couple of fields and a handful of command buttons to help you navigate and review the contents of your *Joint Details Report*:

Scale – The *Scale* field is used to define the size of the *Joint Details Report* as it is displayed within the *Preview* window. Type a percentage into this field, or use the drop-down arrow to select one of the following predefined settings: *50%*, *100%*, *200%*, *Page Width*, or *Whole Page*.

Go To Page – Use the *Go To Page* field to type in the number of the specific page to which you wish to navigate. If you prefer, you may click on the *Up* and *Down* arrow buttons to enter the desired page number.

COMMAND BUTTONS

Print – Click on the *Print* button to open a Windows *Print* dialog box. From here, you can select the desired printer, along with the range of pages and the number of copies to be printed.

First – Click on the *First* button to navigate back to the first page of a multi-page report.

Previous – Click on the *Previous* button to navigate to the page immediately preceding the page currently displayed.

Next – Click on the *Next* button to navigate to the page that immediately follows the page currently displayed.

Last – Click on the *Last* button to display the final page of a multi-page report.

Single Page Joint Details Reports

Similar in content to the *Joint Details* report, each page of a Single *Page Joint Details* report provides an enlarged diagram of a single joint, along with a diagram of the entire truss as a whole. (For an example of a *Single Page Joint Details Report* see *Appendix F* of this document on page 190.) To create a *Single Page Joint Details Report* for the active truss and send it directly to your default printer (without reviewing it first), go to the GS Truss menu bar and select *Output* → *Print* → *Single Page Joint Details*. To preview a *Single Page Joint Details Report* for the active truss file prior to printing it, perform either of the following actions:

- From the GS Truss menu bar, select *Output* → *Preview* → *Single Page Joint Details*.
- On the GS Truss *Output* toolbar, click on the *Preview Single Page Joint Details* icon.

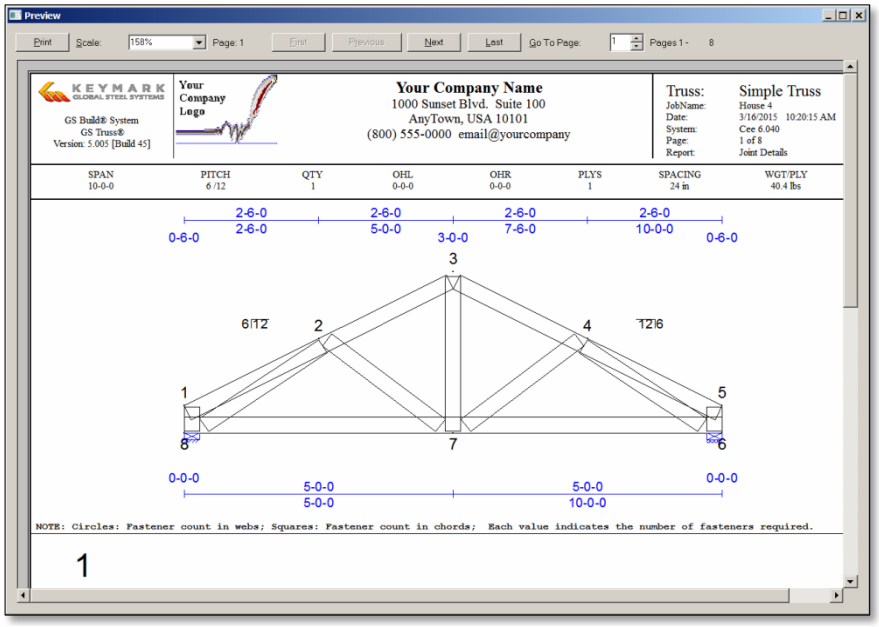


Figure 202: Reviewing and printing a *Single Page Joint Details Report*.

Either of these actions will open a *Preview* window like the one pictured in Figure 202 at right. Within this window, GS Truss provides a couple of fields and a handful command buttons to help you navigate and review the contents of your *Single Page Joint Details Report*:

Scale – The *Scale* field is used to define the size of the *Single Page Joint Details Report* as it is displayed within the *Preview* window. Type a percentage into this field, or use the drop-down arrow to select one of the following predefined settings: *50%*, *100%*, *200%*, *Page Width*, or *Whole Page*.

Go To Page – Use the *Go To Page* field to type in the number of the specific page to which you wish to navigate. If you prefer, you may click on the *Up* and *Down* arrow buttons to enter the desired page number.

COMMAND BUTTONS

Print – Click on the *Print* button to open a Windows *Print* dialog box. From here, you can select the desired printer, along with the range of pages and the number of copies to be printed.

First – Click on the *First* button to navigate back to the first page of a multi-page report.

Previous – Click on the *Previous* button to navigate to the page immediately preceding the page currently displayed.

Next – Click on the *Next* button to navigate to the page that immediately follows the page currently displayed.

Last – Click on the *Last* button to display the final page of a multi-page report.

Full Scale Joint Details Reports

Each page of a *Full Scale Joint Details* report provides a life-sized, full-scale diagram of a single joint in a truss. To create a *Full Scale Joint Details Report* for the active truss and send it directly to your default printer (without reviewing it first), go to the GS Truss menu bar and select *Output* → *Print* → *Full Scale Joint Details*. To preview a *Full Scale Joint Details Report* for the active truss file prior to printing it, perform either of the following actions:

- From the GS Truss menu bar, select *Output* → *Preview* → *Full Scale Joint Details*.
- On the GS Truss *Output* toolbar, click on the *Preview Full Scale Joint Details* icon.

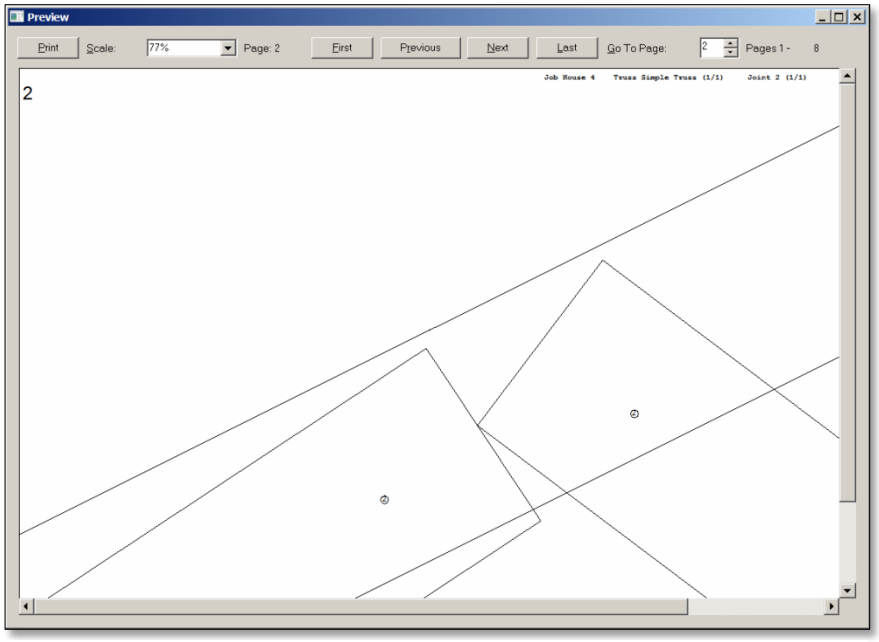


Figure 203: Reviewing and printing a *Full Scale Joint Details Report*.

Either of these actions will open a *Preview* window like the one pictured at right. Within this window, GS Truss provides a couple of fields and a handful command buttons to help you navigate and review the contents of your *Full Scale Joint Details Report*:

Scale – The *Scale* field is used to define the size of the *Full Scale Joint Details* as it is displayed within the *Preview* window. Type a percentage into this field, or use the drop-down arrow to select one of the following predefined settings: *50%*, *100%*, *200%*, *Page Width*, or *Whole Page*.

Go To Page – Use the *Go To Page* field to type in the number of the specific page to which you wish to navigate. If you prefer, you may click on the *Up* and *Down* arrow buttons to enter the desired page number.

COMMAND BUTTONS

Print – Click on the *Print* button to open a Windows *Print* dialog box. From here, you can select the desired printer, along with the range of pages and the number of copies to be printed.

First – Click on the *First* button to navigate back to the first page of a multi-page report.

Previous – Click on the *Previous* button to navigate to the page immediately preceding the page currently displayed.

Next – Click on the *Next* button to navigate to the page that immediately follows the page currently displayed.

Last – Click on the *Last* button to display the final page of a multi-page report.

Pricing Reports

Pricing reports provide information about the material and labor costs associated with the manufacture of a given truss. (For an example of a *Pricing Report*, see *Appendix G* of this document on page 198.) To create a *Pricing Report* for the active truss and send it directly to your default printer (without reviewing it first), go to the GS Truss menu bar and select *Output* → *Print* → *Pricing*. To preview a *Pricing Report* for the active truss file prior to printing it, perform either of the following actions:

- From the GS Truss menu bar, select *Output* → *Preview* → *Pricing*.
- On the GS Truss *Output* toolbar, click on the *Preview Pricing* icon.

Either of these actions will open a *Preview* window like the one pictured at right. Within this window, Key-Truss provides a couple of fields and a handful command buttons to help you navigate and review the contents of your report:

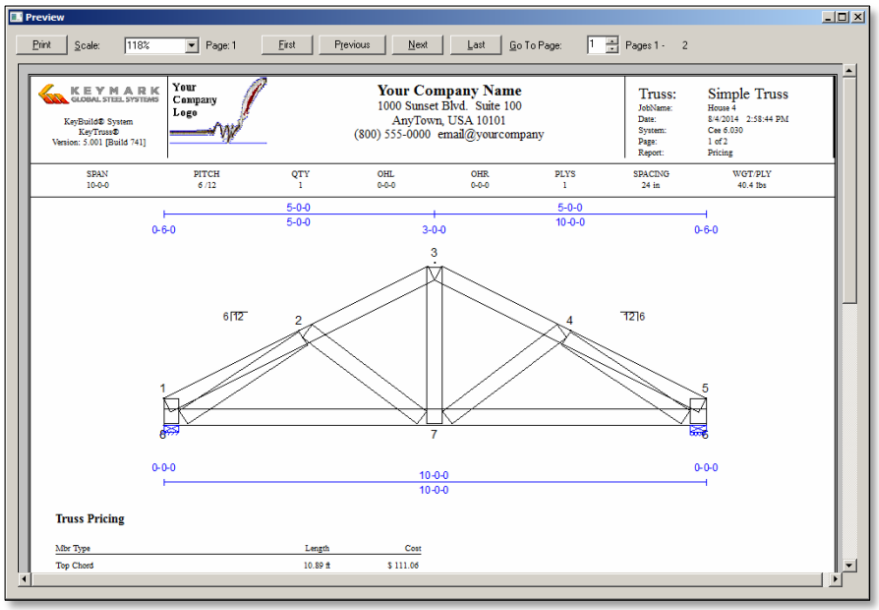


Figure 204: Reviewing and printing a *Pricing Report*.

Scale – The *Scale* field is used to define the size of the *Pricing Report* as it is displayed within the *Preview* window. Type a percentage into this field, or use the drop-down arrow to select one of the following predefined settings: *50%*, *100%*, *200%*, *Page Width*, or *Whole Page*.

Go To Page – Use the *Go To Page* field to type in the number of the specific page to which you wish to navigate. If you prefer, you may click on the *Up* and *Down* arrow buttons to enter the desired page number.

COMMAND BUTTONS

Print – Click on the *Print* button to open a Windows *Print* dialog box. From here, you can select the desired printer, along with the range of pages and the number of copies to be printed.

First – Click on the *First* button to navigate back to the first page of a multi-page report.

Previous – Click on the *Previous* button to navigate to the page immediately preceding the page currently displayed.

Next – Click on the *Next* button to navigate to the page that immediately follows the page currently displayed.

Last – Click on the *Last* button to display the final page of a multi-page report.

NOTE! The specific content and prices applied in *Pricing Reports* are defined in the user's *Pricing Presets*. For additional information, please refer to the section within this document entitled "*Working with GS Truss Presets.*"

Jig Setting Reports

Jig Setting Reports provide information about the setup and configuration of a jig table as required for the manufacture of a given truss. (For an example of a *Jig Settings Report*, see *Appendix H* of this document on page 200.) To create a *Jig Settings Report* for the active truss and send it directly to your default printer (without reviewing it first), go to the GS Truss menu bar and select *Output* → *Print* → *Jig Settings*. This will open a *Jig Table Offsets* dialog box like the one pictured in Figure 205 at right. Enter the desired horizontal ("X") and vertical ("Y") offsets for your table and then click on the *OK* button to close this dialog box and print your report.

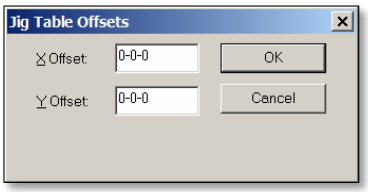


Figure 205: The *Jig Table Offsets* dialog box.

To preview a *Jig Settings Report* for the active truss file prior to printing it, perform either of the following actions:

- From the GS Truss menu bar, select *Output* → *Preview* → *Jig Settings*.
- On the GS Truss *Output* toolbar, click on the *Preview Jig Settings* icon.

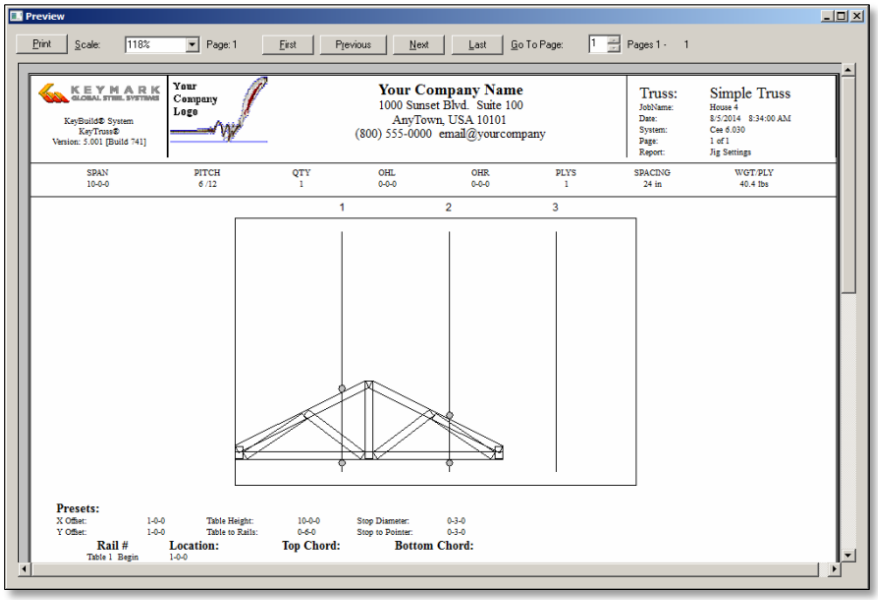


Figure 206: Reviewing and printing a *Jig Settings Report*.

Either of these actions will open a *Jig Table Offsets* dialog box like the one pictured in Figure 205. Enter the desired horizontal ("X") and vertical ("Y") offsets for your table and then click on the *OK* button. This will close the *Jig Table Offsets* dialog box and open a *Preview* window like the one pictured at above. Within this window, GS Truss provides a couple of fields and a handful command buttons to help you navigate and review the contents of your *Jig Setting Report*:

Scale – The *Scale* field is used to define the size of the *Jig Setting Report* as it is displayed within the *Preview* window. Type a percentage into this field, or use the drop-down arrow to select one of the following predefined settings: *50%*, *100%*, *200%*, *Page Width*, or *Whole Page*.

Go To Page – Use the *Go To Page* field to type in the number of the specific page to which you wish to navigate. If you prefer, you may click on the *Up* and *Down* arrow buttons to enter the desired page number.

COMMAND BUTTONS

Print – Click on the *Print* button to open a Windows *Print* dialog box. From here, you can select the desired printer, along with the range of pages and the number of copies to be printed.

First – Click on the *First* button to navigate back to the first page of a multi-page report.

Previous – Click on the *Previous* button to navigate to the page immediately preceding the page currently displayed.

Next – Click on the *Next* button to navigate to the page that immediately follows the page currently displayed.

Last – Click on the *Last* button to display the final page of a multi-page report.

NOTE! The specific content of *Jig Setting Reports* is dictated by the user's *Jig Settings Presets*. For additional information, please refer to the section within this document entitled "*Working with GS Truss Presets.*"

APPENDIX A: GLOSSARY OF TERMS

Allowable Stress Design – Allowable Stress Design (ASD) is a method of proportioning the structural components of a building such that their allowable strength equals or exceeds the required strength of the components under the action of ASD loading combinations.

American Society of Civil Engineers – The American Society of Civil Engineers (ASCE) is a professional organization founded in 1852 to represent members of the civil engineering profession worldwide. Based in Reston, Virginia, it is the oldest national engineering society in the United States.

Analysis Process – The GS Truss analysis process checks current /selected materials against applied loads.

Apex – The uppermost point of a truss where the sloped top chords meet. Keymark uses the terms peak and apex interchangeably.

Area – A space or surface contained within a defined set of geometric boundaries.

ASCE – See "*American Society of Civil Engineers*."

ASD – See "*Allowable Stress Design*."

Axial Force – A force that passes through the longitudinal axis of a truss member. Axial forces can be either tension or compression.

Batch – A collection of trusses, usually consisting of an entire job.

Bearing – An object or surface that serves as a structural support for a truss.

Bearing Wall – A wall that supports a load in addition to its own weight.

BIM – See "*Building Information Modeling*."

Blocking – Non-structural webbing used in gables.

Building Category – The classification of structures (put forth by the American Society of Civil Engineers) based on the nature of occupancy, for the purpose of applying flood, wind, snow, earthquake, and ice provisions. The categories range from I to IV, where category I represents buildings and other structures with a low hazard to human life in the event of failure and category IV represents essential facilities.

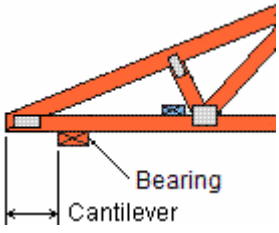
Building Information Modeling – Building Information Modeling (BIM) is a design methodology that maintains a single database of information about a building's design including components used to design the model, views of the project, drawings of the design, and related documentation.

Building Standard Loads – Loads that are applied to a structure in GS Plan and imported into GS Truss via a GS Plan ITR or ITF file.

Bumping – The process of upgrading the class of construction materials from less to more robust, one class at a time, until design requirements are satisfied.

C & C – See "*Components and Cladding*."

Cantilever – The part of a structural member or truss that extends beyond one or both of its bearings.



Appendix A: Glossary of Terms (continued)

Chord – Any of the outer members of a truss that define its shape or profile.

Combined Stress Index – The Combined Stress Index (CSI) is the ratio of the maximum axial and bending forces expected in a member to the forces that the member should be capable of resisting.

Component – A building element that is usually delivered and installed on site, rather than built on site. For example, window and door components are usually delivered to a site fully assembled. In contrast, walls, floors, and roofs are built on site.

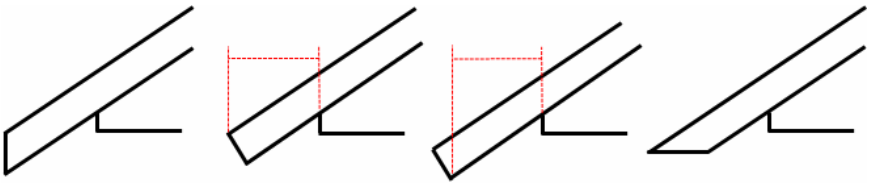
Components and Cladding – Elements of the building envelope that do not qualify as part of the Main Wind Force Resisting System (MWFRS). Cladding receives wind loads directly. (Roof covering and wall covering are examples of cladding.) Components receive wind loads either directly or from the cladding and then transfer the loads to the Main Wind Force Resisting System. (Examples of components include fasteners, purlins, girts, studs, roof decking, and roof trusses.)

Compression – A force that pushes on a body and tends to compress or shorten it. In truss members, this force acts along the length of the member. As the term is used in Keymark applications, compression is the opposite of tension.

Cripple Stud – A short steel member used above or below a window or door opening to support the frame.

CSI – See "*Combined Stress Index*."

Cut Type – The style in which a material is trimmed. For example, in GS Truss, overhanging members of a truss may be trimmed in four different ways, as pictured below. Note: The difference between the Cut Types "Cut In" and "Cut Out" is one of dimension. That is to say, though the cuts may appear to be identical, the actual length of each overhang will differ, with a "Cut In" overhang being slightly shorter than a "Cut Out" overhang of the same specified dimension.



Cutback – The calculated adjustment to truss geometry that ensures chord and/or segment ends meet without overlapping one another at a join.

Dead Load – 1) A vertical, gravity load that results from the weight of the building itself and any fixed equipment in the building. 2) A load that is permanent, unmoving, and consistent across its member, such as the weight of roofing, flooring, sheathing, insulation, or ceiling material, as well as the weight of the truss itself.

Deflection – Displacement of a member from its static position as a result of the forces acting on that member.

Appendix A: Glossary of Terms (continued)

Design Process – The GS Truss design process distributes applied loads to truss members, computes internal force distributions, and selects truss member and connection materials to withstand the internal stresses and/or limit states in accordance with the selected building code design criteria.

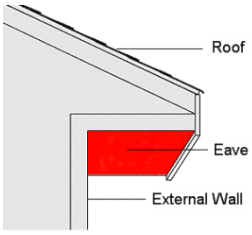
Dimension – A view-specific element that shows the size of an element or shows distances between elements or points in a building model.

Distributed Load – A load that is spread over a defined length of a truss member.

Drag Load – Lateral stresses, imposed by wind or earthquakes, which must be resisted by a structure.

Drop Top – A gable truss in which the top chord has been lowered vertically in order to allow outlookers to form an overhang.

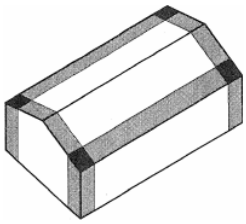
DXF – Drawing Exchange Format (DXF) is an open file format that is supported by many CAD applications.



Eave – The projecting edge of a roof that extends beyond its supporting wall.

Elevation Table – An optional section of information that can be added to GS Truss cut lists and plot drawings. Elevation tables provide details about the location of a truss's chords along the horizontal plane.

Enclosure Classification – The categorization of structures based upon the degree to which their interior space is enclosed. Enclosure classifications in GS Truss include: Full, Partial, and Open.

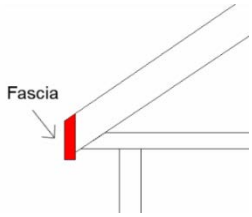


End Zone Truss – A truss located in the "end zone" of a building. (See the figure at right.) Trusses located in the end zone require a higher wind load capacity than those located in the interior zones of a structure.

Engineer Title Block File – An Engineer Title Block File (TBE) contains information about the component engineer or company-specific engineering information that is to be displayed in the bottom right corner of the engineering plot drawings. Users can create multiple TBEs and, thereby, customize the engineering information displayed on engineering output (for example, plot drawings).

Exposure Category – A classification of structures based upon the degree to which they are subject to elemental forces such as wind, rain, and snow. Exposure categories in GS Truss include: Fully Exposed, Partially Exposed, and Sheltered.

Exterior – The outside of a building, or the outside face of a surface.



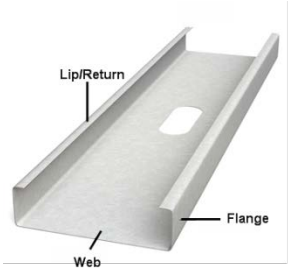
Fascia – The finish board covering the edges of a roof at the eaves.

FBC – See "*Florida Building Code*."

Fixity – The degree to which a bearing is either moveable or immovable and, if permitted, the direction in which movement is allowed. A pinned bearing is immovable. A horizontal roll (H Roll) bearing permits movement along the horizontal plane. A vertical roll (V Roll) bearing permits movement along the vertical plane. All trusses must have at least one pinned bearing.

Appendix A: Glossary of Terms (continued)

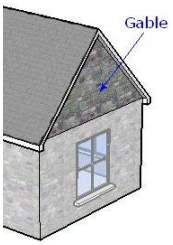
Flange – A ridge that projects at right angles from the edge of a truss member to provide strength and rigidity.



Florida Building Code – The Florida Building Code (FBC) is based on national model building codes and national consensus standards which are amended, where necessary, for Florida's specific needs. The code incorporates all building-construction-related regulations for public and private buildings in the state of Florida.

Force – The energy that causes a mass to accelerate. In structural design, force is generally experienced as a push or pull.

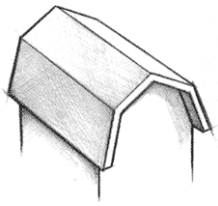
Foundation – The lower part of a building, which transfers structural loads from the building to the ground.



Gable – A triangular portion of the end-wall of a building directly under the sloping roof and above the eave line.

Gable Truss – A truss that has vertical "in-plane" webs fastened to its chords, instead of diagonal web members, so that sheathing can be easily attached. These trusses usually occur at the ends of a structure.

Gambrel Roof – A roof having two slopes on each side, the lower slope usually steeper that the upper one. Generally seen on farm structures.



Gambrel Roof

Girder Truss – A truss that supports other trusses.

Gusset Joint – An area where two or more pieces of truss material are joined together with a gusset plate.

Gusset Plate – A sheet of steel used to connect beams and girders to columns or to connect truss members. A gusset plate can be fastened to a permanent member by bolts, rivets, welding, or a combination of the three. Gusset plates not only serve as a method of joining steel members together but they also strengthen the joint.

Gusset Table – An optional section of information that can be added to GS Truss plot drawings, used to provide details about the gusset plates and joints associated with a given truss.

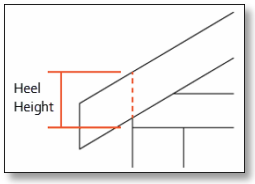
Gutter – A trough (often made of metal or plastic) along the edge of a roof. A gutter collects water off the eaves and carries it to the down spouts.

H Roll – A bearing type that accommodates limited horizontal forces while resisting vertical forces. Pictured at right are the icons that GS Truss uses to represent H-Roll bearings.

H Roll icons

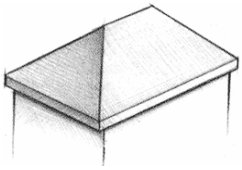
Heel – The area of a truss where the top and bottom chords intersect. With a high heel, the top and bottom chords of a truss do not actually meet.

Heel Height – The length from the top of the top chord through the underside of the bottom chord on either end of a truss. This includes any connection material. Heel heights may be different on either end of a truss.



Appendix A: Glossary of Terms (continued)

Hip Roof – A roof with three or more roof planes coming together at a peak, with four separate hip legs.



Hip Roof

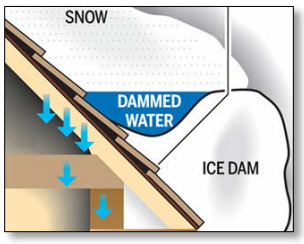
Hip Set – A collection of trusses, girders, and connective materials required to frame a hip roof.

Horizontal – Parallel to the horizon.

Horizontal Offset – A measure of specific distance, from a given point, parallel to the plane of the horizon.

Horizontal Roll Bearing – See "*H Roll*."

IBC – See "*International Building Code*."



Ice Dam – The ice that forms at the end of an overhang due to the processes of melting and refreezing.

Imperial Units – The British imperial system of weights and measures. (Examples of imperial units include: feet and inches; pounds and ounces.)

Inches on Center – Inches on Center (IOC) is the measure GS Truss uses to describe the spacing of trusses and bracing.

International Building Code – The International Building Code (IBC) is a model building code developed by the International Code Council. The IBC has been adopted throughout most of the United States.

International Residential Code – The International Residential Code (IRC) is a comprehensive, stand-alone residential code that creates minimum regulations for one- and two-family dwellings of three stories or less. It includes building, plumbing, mechanical, fuel gas, energy, and electrical provisions.

IOC – See "*Inches On Center*."

IRC – See "*International Residential Code*."

ITF – A floor truss file created in GS Plan. ITF files contain the profile of a truss, some structure information, and some loading. Only the profile (exterior shape), loads, and bearing locations of the truss are imported into GS Truss. Webbing, bracing, and other internal design functions are added once the profile is imported.

ITR – A roof truss file created in GS Plan. ITR files contain the profile of a truss, some structure information, and some loading. Only the profile (exterior shape), loads, and bearing locations of the truss are imported. Webbing, bracing, and other internal design functions are added once the profile is imported.

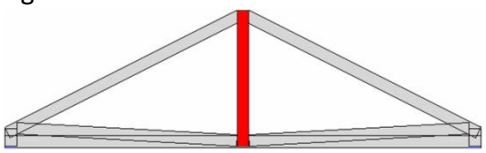
Jig Table – A specialized table, used to stage the construction of a truss, which holds the individual pieces of material and guides their placement as they are secured together. A jig table's primary purpose is to provide efficiency, repeatability, accuracy, and interchangeability in the manufacturing of trusses.

Appendix A: Glossary of Terms (continued)

Job – In GS Truss, the term "Job" refers to the organization of truss files into logical groups according to one or more shared properties, such as the name of the company, customer, or structure to which they belong. Jobs are displayed in the GS Truss Projects window of GS Truss.

Joint – Any area where two or more truss pieces are connected together.

King Post – A vertical web at the center of a common or gable truss, or the vertical web at the end of a mono truss.



A king post affixed to a common truss

KTC – A GS Truss file that contains truss-to-truss connection information.

KTS – A truss file generated when an imported or newly created truss is saved in GS Truss. KTS files contain all of the information required for output and production. Other type of truss files (ITR/ITF) will be converted to KTS files upon their import into GS Truss.

LDG – A GS Plan loading file that is converted to a KTC file when opened in GS Truss.

Linear – Arranged in a line.

Live Load – Stressors produced by the use and occupancy of a building or other structure. Live loads do not include construction or environmental loads such as wind, snow, rain, earthquakes, or floods.

Load – Any stressor, such as weight or friction, applied at any angle to a truss member.

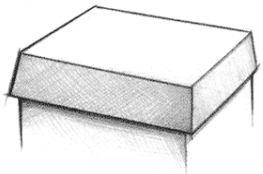
Load and Resistance Factor Design – A method of proportioning the structural components of a building such that their design strength equals or exceeds the required strength of the components under the action of LRFD load combinations.

Load Factor – The amount by which a specified load is multiplied in order to calculate the design load.

LRFD – See "*Load Resistance Factor Design*."

Main Wind Force Resisting System – Main Wind Force Resisting System (MWFRS) refers to the assemblage of structural elements assigned to provide support and stability for the overall structure. The system generally receives wind loading from more than one surface. Structural elements such as cross bracing, shear walls, roof trusses, and roof diaphragms are part of MWFRS.

Mansard – A decorative steep-sloped roof on the perimeter of a building.



Mansard Roof

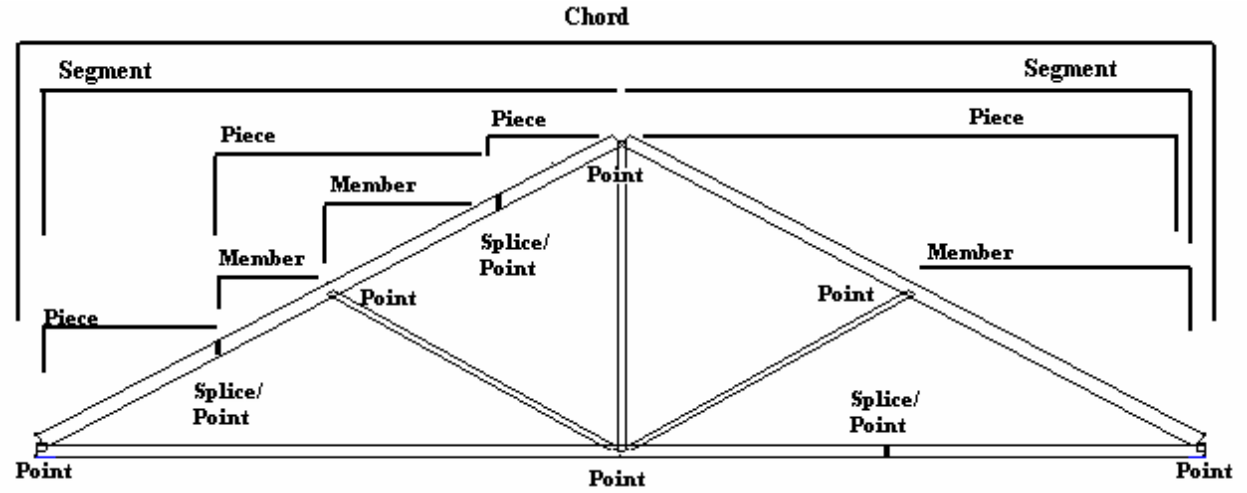
Material – The substance of which an object is made.

Material File – See "*MTR*."

Material Priority Table – A GS Truss register that contains a detailed list of material options for the construction of truss chords and webs. A single implementation of GS Truss can contain multiple MPTs; each based upon a company's inventory and desired bumping sequence for truss materials.

Appendix A: Glossary of Terms (continued)

Member – A section of truss that extends between two points or nodes. (See figure below.)



The parts of a truss include chords, webs, segments, members, points, splices, and pieces.

Metric Units – The decimal-based system of measurement in predominant use throughout most of the world. (Examples of metric units include: meters and centimeters; kilograms and grams.)

Miter – A joint made by the equal beveling of each of the two parts to be joined.

Model – A representation of a building or other design.

Moment – A force that causes rotation, or has a tendency to cause rotation.

Moment Connection – A connection that is designed to prevent joints from rotating when external force is applied to the unit.

MPT – See "*Material Priority Table*."

MTR – A GS Truss file that provides material specifications for a given truss. GS Truss provides the option to create an MTR file for each user-created truss.

MWFRS – See "*Main Wind Force Resisting System*."

Node – Any point on a truss where two or more members intersect.

Non-Bearing Wall – A wall that supports no additional vertical load beyond its own weight. Non-bearing walls can be used to define and divide spaces

Non-Structural – In GS Truss, any truss, or portion of a truss, that is not designed for loading or other forces.

Offset – A defined distance from an element or line, along which the element or line will move, or a new element or line will be created.

Open Joint – A joint connection type in which the joining members meet at one corner of an edge, leaving the remainder of the edge exposed.

ORD – An output file for the AMS roll-former controller.

Appendix A: Glossary of Terms (continued)

Origin – A fixed starting point, or the point in a coordinate system where the axes intersect.

Orthogonal – At right angles to, or perpendicular to.

Outlooker – A steel member affixed to a truss to form an overhang beyond the wall line of a gable.

Outrigger – See "*Outlooker*."

Overhang – An extension of the top chord of a truss beyond the heel.

Panel – Any section of truss between two adjacent joints**.**

Panel Length – The distance between joints measured along a chord.

Panel Point – A position on a truss member associated with a joint, bearing, or splice.

PDF – A Portable Document Format (PDF) file.

Peak – The uppermost point of a truss where the sloped top chords meet. Keymark uses the terms peak and apex interchangeably.

Piece – A portion of a truss formed from a single, continuous section of material.

Pinned Bearing – A fixed bearing that resists horizontal and vertical forces. Pictured at right are the icons that GS Truss uses to represent pinned bearings.

Pinned icons

Pitch – The overall slope of the top chord of a truss, usually expressed as vertical rise over horizontal run (e.g. 6/12). In GS Truss, the terms pitch and slope are used interchangeably.

Pitch Break – The point on a truss where two members with differing slopes meet.

Plate – See "*Gusset Plate*."

Plot – An architectural- or engineering-plan drawing that shows the building(s), utility runs, and equipment layout of a project.

Plumb Cut – A cut type in which the end of one member is cut vertically.

Ply – A single truss belonging to a multi-truss unit. In GS Truss, two to four identical trusses can be joined as a single unit for added strength.

Point – See "*Panel Point*."

Point Load – A load concentrated at a specific location.

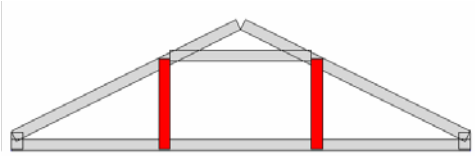
Projected Load – A load that is applied relative to the horizontal plane.

PRT – An output file for the AMS roll-former controller.

Purlin – A bracing mechanism connecting neighboring trusses on the top chord and/or bottom chord. Purlins support the loads from the roof deck or sheathing.

Appendix A: Glossary of Terms (continued)

Queen Post – One of two upright supporting webs, set vertically between the bottom and top chords of a truss, at equal distances from the apex of the truss. For example, an attic truss has two queen posts.



Queen posts on an attic truss

R Value – A numerical value used to indicate resistance to the flow of heat.

Radial – Arranged along a radius or arc.

Rake – The sloped sides on the end of a roof.

Rake Load – A load that is applied in line with, or perpendicular to, the angle of the member receiving the load.

Reaction – The force on a bearing produced by a truss.

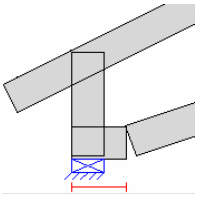
Reference Point – An identified location that is used to position other objects relative to it.

Ridge – The line formed by the juncture of two sloping roof planes.

Roof Live Load – An impermanent load exerted on a roof, excluding snow and wind. The combined weight of construction workers building a roof is an example of a Roof Live Load.

Roof Plane – 1) A roofing area defined by having three or more separate edges. 2) A single side of a gable, hip, or mansard roof.

Seat Cut – A horizontal section of truss, at the end of a sloping bottom chord, which provides a level surface for the truss to rest on a bearing.



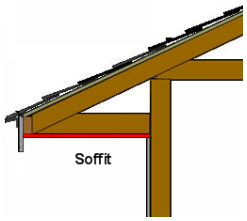
Segment – Any section of a truss that extends from end to end on a continuous member. Segments include both chords and webs.

Shear Force – A stress that develops in a truss member due to the opposing forces created by loads and reactions.

SKP – The file format used for projects created using Trimble SketchUp.

Slope – The angle of incline as measured against the horizontal plane, usually expressed as a ratio of vertical rise to horizontal run, or as a percent. (For example, 6/12 or 33%.) In GS Truss, the terms pitch and slope are used interchangeably.

Soffit – A board (or other material) fixed to the underside of an eave, along the length of a structure, used to conceal the underlying assembly.

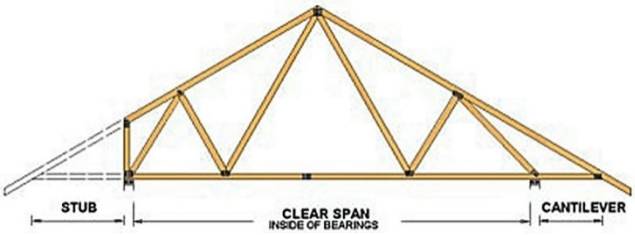


Span – The distance equal to the total unsupported length of the bottom chord of a truss, from bearing to bearing.

Splice – An area where two chord members are joined together to form a single member. Splices may occur at or between panel points.

Square Cut – A cut made perpendicular to the length of a member.

Appendix A: Glossary of Terms (continued)



Stub – The action of cutting/trimming a section of a truss, usually to accommodate size limits for shipping.

Structural – As the term is used in GS Truss, the term *structural* refers to any truss that supports load and adds to the physical integrity of a building as a whole. With the exception of gables, most trusses are structural; however, gables may be designed for structural integrity as well.

Substrate – A subsurface to which another material is bonded

TBF – See "*Title Block File*."

Tension – A force that tends to stretch or elongate a body. As the term is used in Keymark applications, tension is the opposite of compression.

Terrain Category – A measure of the wind-breaking effect of the terrain surrounding a building site. The more a building site is surrounded by trees, other buildings, and/or structures, the less exposed it is to the full force of the wind.

Title Block File – A GS Truss Title Block File (TBF) file contains information about a company, including the organization's name, address, logo, and contact numbers. GS Truss embeds TBF information in construction-document outputs.

Tributary Width – That portion of a roof where a load acts on the truss immediately below it. Tributary width includes the width of the given truss, plus half the distance to the adjoining trusses on either side.

Truss – An engineered, structural component, designed to carry its own weight plus the weight of superimposed loads. Truss members form a semi-rigid structural framework, and are assembled such that members form triangles.

Truss Engineering Drawing – A drawing, prepared by a professional engineer, that prescribes truss geometry (span, slope, chords, webs, panel point locations, plating, design loads, etc.) usually required for manufacturing and building inspection.

Truss Member – See "*Member*."

Truss Panel – See "*Panel*."

Truss Piece – See "*Piece*."

Truss Segment – See "*Segment*."

Truss-To-Truss Connection Table – A Truss-to-Truss Connection (TTC) table defines the specific relationship between each carried truss and its carrying truss. GS Truss automatically generates a TTC table each time a GS Plan LDG file is loaded. Once created, the contents of a TTC table can be edited directly, when changes to truss design warrant it. A TTC table can also be created manually when a collection of trusses has been created from scratch by the user. GS Truss saves TTC information in a file with a "KTC" extension.

TTC – See "*Truss-To-Truss Connection Table*."

Appendix A: Glossary of Terms (continued)

V Roll – A bearing type that accommodates limited vertical forces while resisting horizontal forces. Pictured at right are the icons that GS Truss uses to represent V-Roll bearings.

V Roll icons

Valley – The internal angle formed by the intersection of two sloping sides of a roof.

Valley Set – A collection of trusses used to continue a roof line when roofs intersect.

A Roof Valley

Vent – An opening placed in a structure in order to promote air circulation.

Vertical – Perpendicular to the horizon.

Vertical Offset – A measure of specific distance, from a given point, perpendicular to the plane of the horizon.

Vertical Roll Bearing – See "*V Roll*."

Web – Internal members that join the top and bottom chords of a truss. These members typically carry axial forces.

Web Crippling – The limit state of local failure for a web plate in the immediate vicinity of a concentrated load or reaction.

APPENDIX B: GSS PRESETS

GSS Presets are used to define the parameters used for manufacturing CFS-framing components with a Global Steel Systems (GSS) roll former equipped with a Beck controller. The following is a description of the various fields and functions available in the *GSS Presets* dialog box:

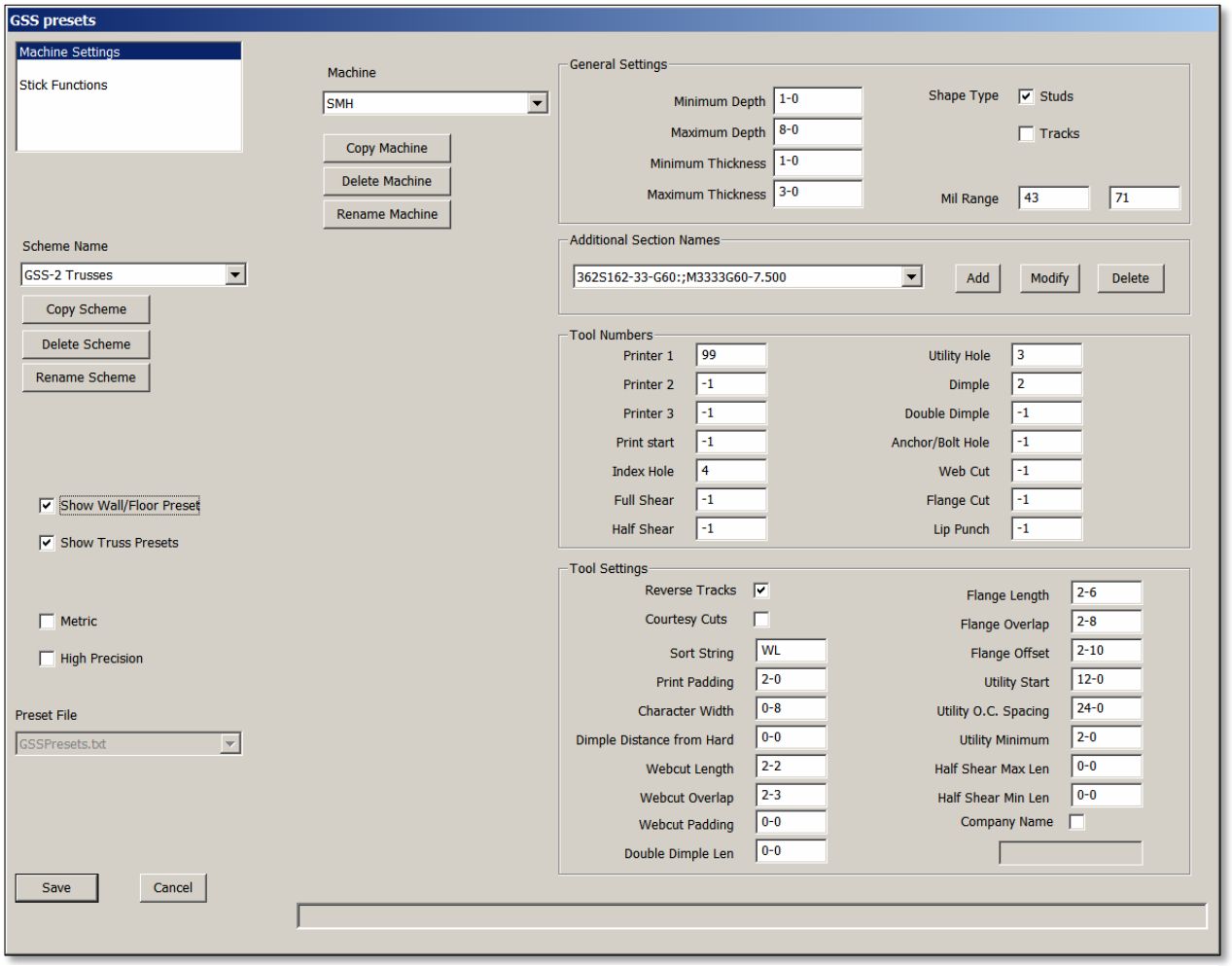


Figure 207: The *Machine Settings* page for *GSS Presets*.

Machine Settings vs. Stick Functions – When the *Machine Functions* option is selected, the *GSS Presets* dialog box will appear as it does the figure above. This page of the dialog box is used to control *Section* information (that is, profile and material specifications), as well as the assignment of *Tool Numbers* and *Tool Settings*. The *Stick Functions* page of this dialog box is used to define the specific types of pieces to be manufactured. (See page 185.)

GLOBAL SETTINGS

The following settings in the *GSS Presets* dialog box are global in nature, affecting both *Machine Settings* and *Stick Functions*.

Scheme Name – All of the settings defined within the *GSS Presets* dialog box are saved, collectively, as a scheme. A single scheme can be used to control the settings for multiple machines and, within a single scheme, the settings for each machine can be configured differently. Likewise, each GSS machine can be assigned to multiple schemes. Only one scheme can be active for at any given time.

Appendix B: GSS Presets (continued)

The *Scheme Name* drop-down provides a list of all schemes available for your GSS roll formers. The scheme that is selected from this list will serve as the default scheme for all your *GSS Production* files.

Copy Scheme – Click on the *Copy Scheme* button to create a copy of the scheme that is currently selected in the *Scheme Name* drop-down list. When you click on this button, GS Truss will open a *Copy Scheme* dialog box like the one pictured in Figure 208. Type a unique name into the *New Name* field, and then click on the *OK* button to save the new copy of your scheme. You can then modify the new copy of your scheme as desired. (Click on the *Cancel* button to close this dialog box without saving a copy of your scheme.)

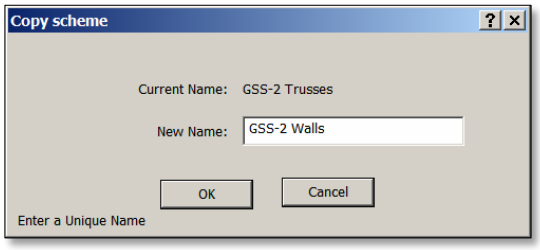


Figure 208: The *Copy Scheme* dialog box.

Delete Scheme – Click on the *Delete Scheme* button to erase the scheme that is currently selected in the *Scheme Name* drop-down list. When you click on this button, GS Truss will display the warning message shown in Figure 209. Click on the *OK* button to proceed with erasing the selected scheme. Click on the *Cancel* button to close this message box without deleting the scheme.

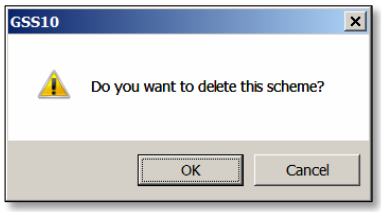


Figure 209: The warning message displayed when deleting a scheme.

Rename Scheme – Click on the *Rename Scheme* button to change the name of the scheme currently selected in the *Scheme Name* drop-down list. When you do so, a *Rename Scheme* dialog box like the one pictured in Figure 210 will open. Type a new and unique name for the scheme in the *New Name* field, and then click on the *OK* button to save your changes. Click on the *Cancel* button to close this dialog box without changing the name of the selected scheme.

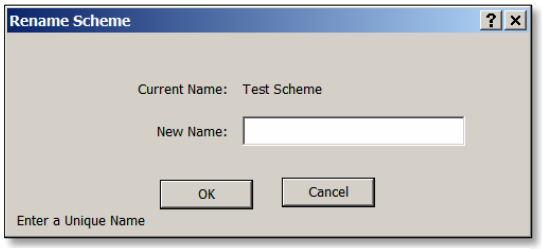


Figure 208: The *Rename Scheme* dialog box.

Show Wall/Floor Presets – When this checkbox is activated, wall and floor-related presets in the *GSS Presets* dialog box are enabled and available for editing. When not checked, wall and floor-related presets are grayed-out and their current values cannot be changed.

Show Truss Presets – When this checkbox is activated, truss-related presets in the *GSS Presets* dialog box are enabled and available for editing. When not checked, truss-related presets are grayed-out and their current values cannot be changed.

Metric – When this checkbox is activated, measurement values in the *GSS Presets* dialog box are displayed in millimeters, rather than feet, inches, and sixteenths of an inch.

High Precision – When the *High Precision* checkbox is activated, measurement values in the *GSS Presets* dialog box are calculated and displayed down to four decimal points.

Preset File –This read-only field displays the name of the file used to store *GSS Presets* information.

Appendix B: GSS Presets (continued)

COMMAND BUTTONS

Save – Clicking on the *Save* button stores all user-defined changes to *GSS Presets* and closes the *GSS Presets* dialog box.

Cancel – Clicking on the *Cancel* button discards all user-defined changes to *GSS Presets* and closes the *GSS Presets* dialog box.

MACHINE SETTINGS

Machine – This drop-down provides a list of all roll formers currently entered into the system. (Note that all machine names are user defined.) The machines in this list are presented in the order in which they are designated to process a job. Select a machine from this list if you wish to view or make changes to its current settings.

Copy Machine – Click on the *Copy Machine* button to create a duplicate copy of all the settings defined for the roll former that is currently selected in the *Machine* drop-down list. When you do so, a *Copy Machine* dialog box like the one pictured in Figure 211 will open. Type a name for your copy in the *New Name* field. (Note that all machine names must be unique.) When you are done, click on the *OK* button to save your copy and close the *Copy Machine* dialog box. Click on the *Cancel* button to close the dialog box without saving your copy.

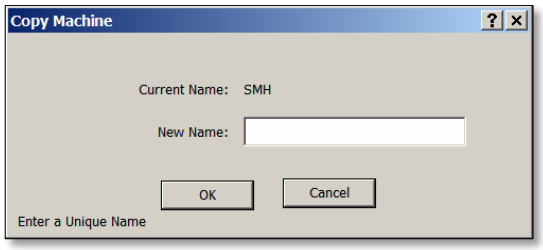


Figure 209: The *Copy Machine* dialog box.

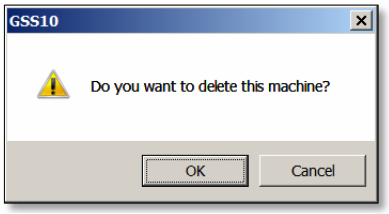


Figure 210: The warning message dis-played when deleting a machine.

Delete Machine – Click on the *Delete Machine* button to erase the machine that is currently selected in the *Machine* drop-down list. When you do so, a warning message like the one pictured in Figure 212 will open. Click on the *OK* button to delete the selected machine and close this message box. Click on the *Cancel* button to close the dialog box without deleting the selected machine.

Rename Machine – Click on the *Rename Machine* button to change the name assigned to an existing roll former. When you click on this button, a *Rename Machine* dialog box like the one pictured in Figure 213 will open. Bear in mind that the name assigned to each machine must be unique.

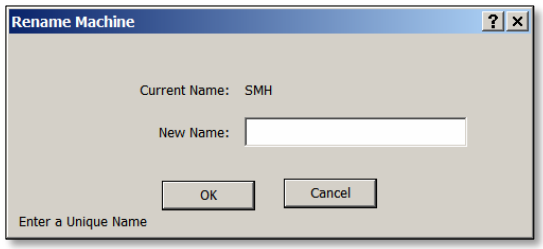


Figure 211: The *Rename Machine* dialog box.

General Settings

Minimum Depth – This field is used to define the minimum stick depth that the selected machine can accommodate.

Maximum Depth – This field is used to define the maximum stick depth that the selected machine can accommodate.

Appendix B: GSS Presets (continued)

Minimum Thickness – This field is used to define the minimum stick thickness that the selected machine can accommodate.

Maximum Thickness – This field is used to define the maximum stick thickness that the selected machine can accommodate.

Shape Type

Studs – When this checkbox is activated, the selected machine is designated for manufacturing stud sections. If the checkbox is not activated, the machine is designated as not supporting the manufacture of stud sections.

Tracks – When this checkbox is activated, the selected machine is designated for manufacturing track sections. If the checkbox is not activated, the machine is designated as not supporting the manufacture of track sections.

Mil Range – The minimum and maximum thicknesses of CFS coils supported by the selected machine.

Additional Section Names

In GS Truss, a section is the combination of the profile and material specification designated for machine output. Section information allows products specified in GS Truss and GS Panel to have a coil associated with them.

[Drop Down] – This drop-down provides a list of all sections currently available in the system.

Add – Clicking on the *Add* button opens an *Add Section* dialog box like the one pictured in Figure 214. Type the desired *Section Name* and *Coil Name* into the fields provided, and then click on the *OK* button to save your new *Section*. Click *Cancel* to close this dialog box without saving the new *Section*.

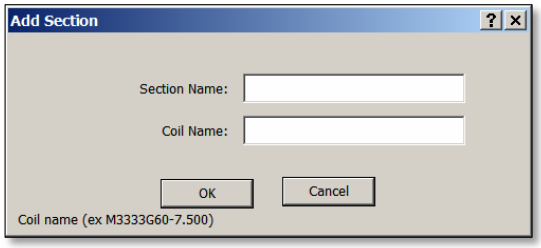


Figure 212: The *Add Section* dialog box.

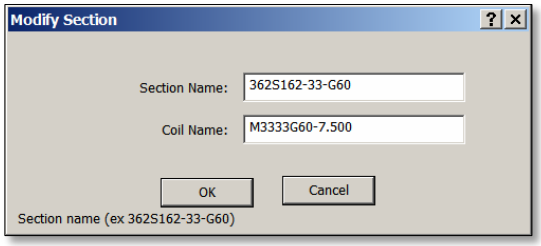


Figure 213: The *Modify Section* dialog box.

Modify – Clicking on the *Modify* button will open a *Modify Section* dialog box like the one pictured in Figure 215. Change the *Section Name* and *Coil Name* data as desired, and then click on the *OK* button to save your changes. Click *Cancel* to close this dialog box without saving your changes.

Delete – If you click on the Delete button, the section that is currently displayed in the Section Name drop-down list will be deleted from the system. No warning message is displayed prior to the deletion, so be sure you wish to delete the selected section before clicking on this command button.

Appendix B: GSS Presets (continued)

Tool Numbers

Printer 1 – The assigned *Tool Number* for *Printer 1*. A value of "-1" is used to designate that *Printer 1* does not exist. A value of "99" indicates a GSS-specified printer command.

Printer 2 – The assigned *Tool Number* for *Printer 2*. A value of "-1" is used to designate that *Printer 2* does not exist. A value of "99" indicates a GSS-specified printer command.

Printer 3 – The assigned *Tool Number* for *Printer 3*. A value of "-1" is used to designate that *Printer 3* does not exist. A value of "99" indicates a GSS-specified printer command.

Print Start – The field is used to define the starting location for location-specific printing operations.

Index Hole – This field is used to assign a *Tool Number* for an *Index Hole Punch*. A value of "-1" is used to designate that no *Index Hole Punch* is present.

Full Shear – This field is used to assign a *Tool Number* for a *Full Shear Punch*. A value of "-1"" is used to designate that no *Full Shear Punch* is present.

Half Shear – This field is used to assign a *Tool Number* for a *Half Shear Punch*. A value of "-1 " is used to designate that no *Half Shear Punch* is present.

Utility Hole – This field is used to assign a *Tool Number* for a *Utility Hole Punch*. A value of "-1 " is used to designate that no *Utility Hole Punch* is present.

Dimple – This field is used to assign a *Tool Number* for a *Dimple Punch*. A value of "-1 " is used to designate that no *Dimple Punch* is present.

Double Dimple – This field is used to assign a *Tool Number* for a *Double Dimple Punch*. A value of "-1 " is used to designate that no *Double Dimple Punch* is present.

Anchor/Bolt Hole – This field is used to assign a *Tool Number* for an *Anchor Punch*. A value of "-1 " is used to designate that no *Anchor Punch* is present.

Web Cut – This field is used to assign a *Tool Number* for a *Web Cut Punch*. A value of "-1 " is used to designate that no *Web Cut Punch* is present.

Flange Cut – This field is used to assign a *Tool Number* for a *Flange Cut Punch*. A value of "-1 " is used to designate that no *Flange Cut Punch* is present.

Lip Punch – This field is used to assign a *Tool Number* for a *Lip Punch*. A value of "-1 " is used to designate that no *Lip Punch* is present.

Tool Settings

Reverse Tracks – When this checkbox is activated, tracks that are modeled right-to-left are reversed to align printing with the other pieces in a given component.

Courtesy Cuts – When this checkbox is activated, bottom tracks are machined to include web cuts for doors.

Appendix B: GSS Presets (continued)

Sort String – This field is used to define the sort order for sticks, according to the following values:

- "W" sorts sticks by from greatest to least width.
- "w" sorts sticks by from least to greatest width
- "L" sorts sticks by from greatest to least length.
- "l" sorts sticks by from least to greatest length

Note that two characters may be entered into this field to designate a two-level sort order.

Print Padding – This field is used to define the distance between a punch and the start of a print message.

Character Width – This field specifies the width of individual print characters (in inches).

Dimple Distance from Hard – The specified distance from the hard side of a section to a *Dimple Punch*. A value of 0.0 is used to center the dimple in relation to both a stud and its track.

Webcut Length – This field is used to define the actual size of the web cut tool.

Webcut Overlap – This field is used to define the overlap required between successive web cut punches to eliminate any extra sharp pieces of metal when there are double or triple web cuts.

Webcut Padding – This field enlarges web cuts at each end by the value entered here.

Double Dimple Len – This field defines the spacing between dimples of double dimple tool.

Flange Length – This field defines the size of the flange cut punch.

Flange Overlap – This field defines the amount flange cuts will overlap when more than one successive cut is called for.

Flange Offset – This field allows the user to offset the cutting if not aligning correctly.

Utility Start – This field is used to define the location of the first utility hole.

Utility O. C. Spacing – This field is used to define the spacing of utility punches.

Utility Minimum – The minimum distance of a utility hole from the end of a stick.

Half Shear Max Len – Sticks shorter than this length will receive a half shear rather than a full shear.

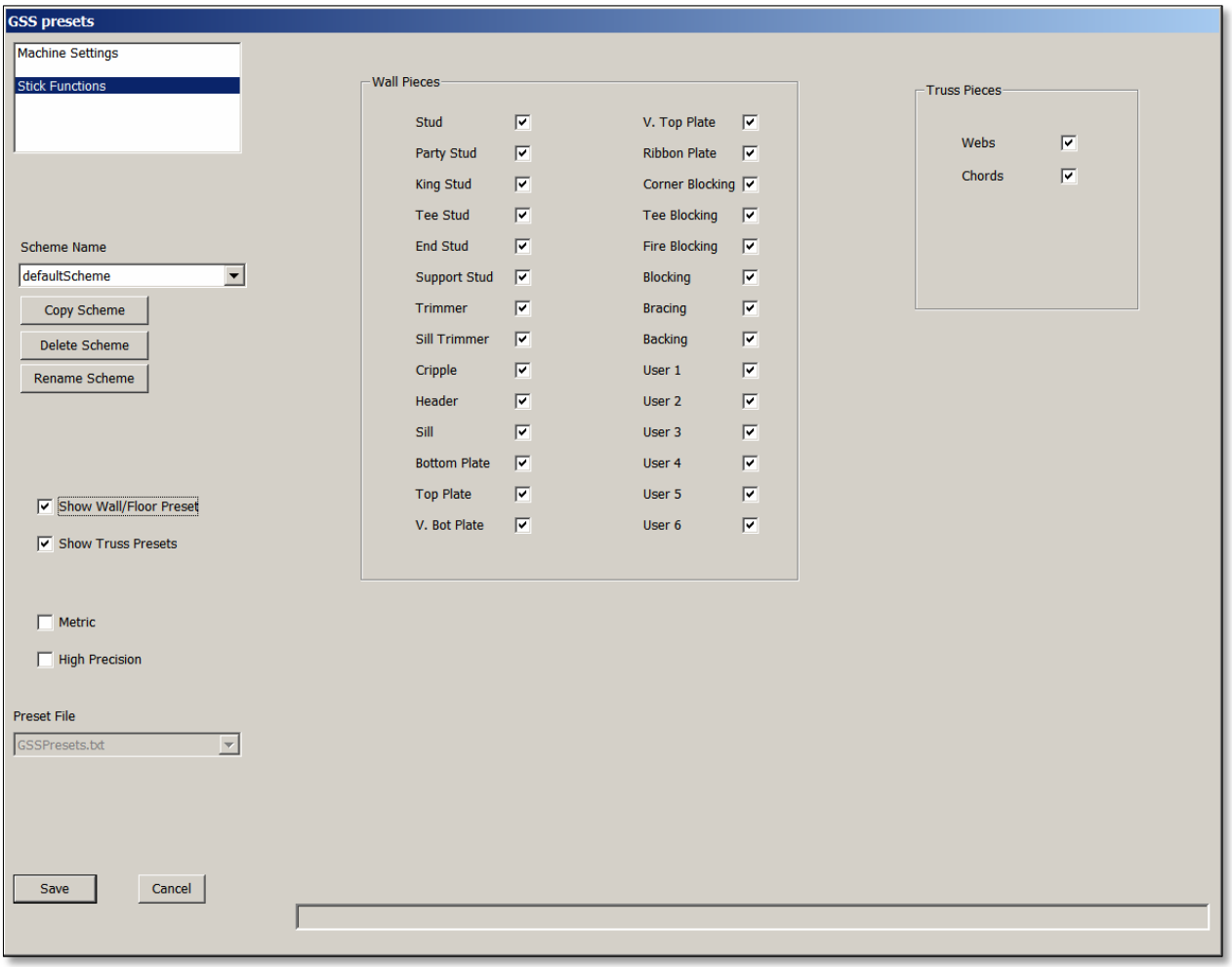
Half Shear Min Len – The maximum total length for consecutive, half-sheared sticks.

Company Name – When this checkbox is activated, the user may elect to enter a *Company Name* to be printed on machine outputs.

Appendix B: GSS Presets (continued)

STICK FUNCTIONS

These checkboxes are used to define the stick types to be processed for the selected machine.



Wall Pieces

When any of the *Wall Piece* checkboxes are activated, the scheme for the selected machine will include the ability to manufacture the given piece type. The list of wall pieces that can be produced includes the following:

Party Stud
King Stud
Tee Stud
End Stud
Support Stud
Trimmer
Sill Trimmer
Cripple
Header
Sill
Bottom Plate
Top Plate
V. Bot Plate
V. Top Plate
Ribbon Plate
Corner Blocking
Tee Blocking
Fire Blocking
Blocking
Bracing
Backing
User 1-6

Appendix B: GSS Presets (continued)

Truss Pieces

Webs – When this checkbox is activated, the selected machine is designated to produce web pieces.

Chords – When this checkbox is activated, the selected machine is designated to produce chord pieces.

APPENDIX C: CUT LIST

KEYMARK GLOBAL STEEL SYSTEMS

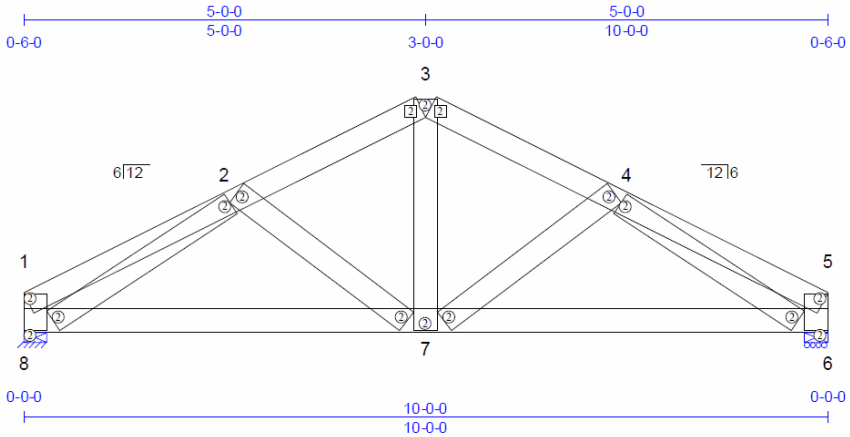
KeyBuild® System
KeyTruss®
Version: 5.001 [Build 741]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss: Simple Truss
JobName: House 4
Date: 8/4/2014 1:54:59 PM
System: Cee 6.030
Page: 1 of 1
Report: Cutting

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



Circles indicate fastener count in webs. Squares indicate fastener count in chords. "Fasteners" indicates the number of #10 SDS (AISI) fasteners required at one end of the member. Each value indicates the number of fasteners required. Where connection plates are called out on this drawing, a plate is required. Refer to General Notes for further clarification. Allowable shear per fastener is calculated per the NASPEC 2007 WITH SUPPLEMENT #2. Maintain fastener spacing at 9/16" min. Maintain fastener edge margin at 9/16" min for each sheet of steel connected.

Left heel to 1st pitch break: 5-10-0

Right heel to last pitch break: 5-10-0

Chords

350S162-43 (50 ksi) (1) Top Chd 1-3	350S162-43 (50 ksi) (1) Top Chd 3-5	350S162-43 (50 ksi) Notch Flange 0-2-13 at 6 Notch Flange 0-2-13 at 8 (1) Bot Chd 6-8

Webs

350S162-43 (50 ksi) (1) Web 1-8	350S162-43 (50 ksi) (1) Web 2-8	350S162-43 (50 ksi) (1) Web 2-7
350S162-43 (50 ksi) (1) Web 3-7	350S162-43 (50 ksi) (1) Web 4-7	350S162-43 (50 ksi) (1) Web 4-6
350S162-43 (50 ksi) (1) Web 5-6		

WARNING: The following pieces are longer than their maximum specified splice lengths : Top Chd 1-3, Top Chd 3-5, Bot Chd 6-8

Joint Connection Table

Joint	Mbr	Fasteners	PGov	Mbr	Fasteners	PGov	Mbr	Fasteners	PGov	Mbr	Fasteners	PGov
1	Top Chd 1-3	-	0 lbs	Web 1-8	2	96 lbs						
2	Top Chd 2-3	-	45 lbs	Top Chd 3-4	-	-473 lbs	Web 2-8	2	553 lbs	Web 2-7	2	125 lbs
3	Top Chd 2-3	2	413 lbs	Web 3-7	2	261 lbs	Top Chd 3-4	2	413 lbs			
4	Top Chd 4-5	-	-473 lbs	Top Chd 5-6	-	45 lbs	Web 4-7	2	125 lbs	Web 4-6	2	553 lbs
5	Top Chd 3-5	-	0 lbs	Web 5-6	2	96 lbs						
6	Bot Chd 6-8	-	0 lbs	Web 5-6	2	96 lbs	Web 4-6	2	553 lbs			
7	Bot Chd 10-11	-	461 lbs	Bot Chd 13-14	-	461 lbs	Web 2-7	2	125 lbs	Web 3-7	2	261 lbs
	Web 4-7	2	125 lbs									
8	Bot Chd 6-8	-	0 lbs	Web 1-8	2	96 lbs	Web 2-8	2	553 lbs			

Elevation Table:

X Location:	Top Chord:	Bottom Chord:	X Location:	Top Chord:	Bottom Chord:	X Location:	Top Chord:	Bottom Chord:
0-0-0	0-6-0	0-0-0	5-0-0	2-8-1	0-0-0	10-0-0	0-6-0	0-0-0
2-6-0	1-9-0	0-0-0	7-6-0	1-9-0	0-0-0			

APPENDIX D: PLOT DRAWING

KEYMARK GLOBAL STEEL SYSTEMS

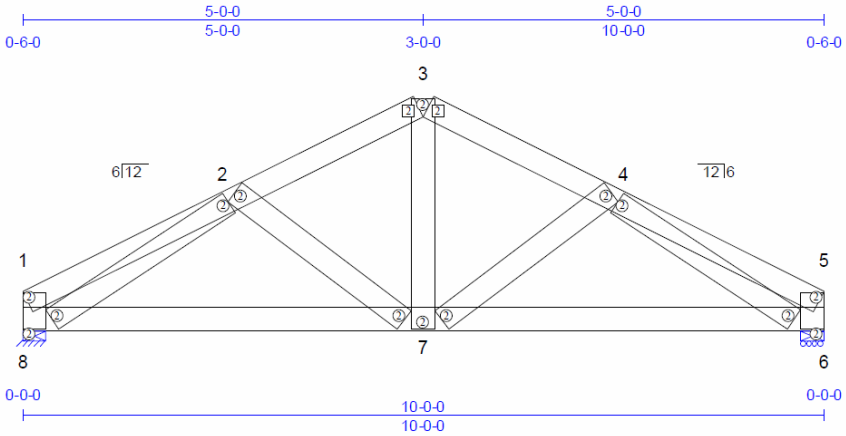
KeyBuild® System
KeyTruss®
Version: 5.001 [Build 741]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	8/4/2014 2:11:00 PM
System:	Cee 6.030
Page:	1 of 1
Report:	Eng Plot

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



Circles indicate fastener count in webs. Squares indicate fastener count in chords. "Fasteners" indicates the number of #10 SDS (AISI) fasteners required at one end of the member. Each value indicates the number of fasteners required. Where connection plates are called out on this drawing, a plate is required. Refer to General Notes for further clarification. Allowable shear per fastener is calculated per the NASPEC 2007 WITH SUPPLEMENT #2. Maintain fastener spacing at 9/16" min. Maintain fastener edge margin at 9/16" min for each sheet of steel connected.

CSI Summary

		Deflection	L/	(loc)	Allowed
TC :	0.108 (3-4)	TL: 0.02 in	L / 999	(6-7)	L / 180
BC :	0.163 (7)	LL: 0.01 in	L / 999	(7-8)	L / 240
Web:	0.113 (2-8)	Horz TL: 0.01 in		5	

Reaction Summary

JT	Type	Brg Combo	BrgWidth	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
8	Pin (WL)	1	3.5 in	412 lbs					
6	H Roll (WL)	1	3.5 in	412 lbs					

Material Summary

TChd	350S162-43 (50 ksi)	TChd Bracing: Sheathed	
BChd	350S162-43 (50 ksi)	BChd Bracing: Sheathed	
Webs	350S162-43 (50 ksi)		

Loads Summary

1) This truss has been designed for the effects due to standard loading of TC Live = 20 psf; TC Dead = 10 psf; BC Live = 0 psf; BC Dead = 10 psf at 24 ioc.
2) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
3) This truss has been designed for the effects of balanced and unbalanced snow loads in accordance with ASCE7 - 02, using a ground snow load of 20 psf and terrain category B. The exposure condition is Partially Exposed. The thermal condition is All Others (Ct = 1.0) with building category IV (I = 1.2). The roof ventilation is Unknown with Roof R-Value Unknown. The roof slope is 6 /12 and the surface type is All Others. This truss has not been designed to account for the effects of ice dams forming at the eaves.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TChd	1-2	0.058	45 lbs	(-38 lbs)	2-3	0.108	-473 lbs		3-4	0.108	-473 lbs		4-5	0.058	45 lbs	(-38 lbs)
BChd	6-7	0.133	461 lbs	(0 lbs)	7-8	0.133	461 lbs	(0 lbs)								
Webs	1-8	0.018	-96 lbs		2-7	0.025	-125 lbs		4-7	0.025	-125 lbs		5-6	0.018	-96 lbs	
	2-8	0.113	-553 lbs		3-7	0.052	261 lbs	(0 lbs)	4-6	0.113	-553 lbs					

Additional Notes:

The end of every chord segment shall be braced laterally perpendicular to the plane of the truss. Lateral braces shall be installed within 6 " of the end of each chord segment.
NOTE : Web crippling calculation assume truss is fastened to support.

ALL GENERAL NOTES OF THIS DRAWING PACKAGE SHALL BE CONSIDERED AS AN INTEGRAL PART OF THIS COMPONENT DESIGN DOCUMENT. NOTE THAT THE PROFESSIONAL ENGINEER'S SEAL INDICATES ONLY THAT THE TRUSS ASSEMBLY SHOWN ON THIS SHEET MEETS THE MINIMUM APPLICABLE DESIGN CRITERIA FOR THE LOADS, LOADING CONDITIONS, TRUSS MEMBER CONFIGURATIONS, AND SPANS LISTED ON THIS SHEET

TestCo, Inc.
1000 Wonder Way
Boulder, Colorado 80301

APPENDIX E: JOINT DETAILS

KEYMARK GLOBAL STEEL SYSTEMS

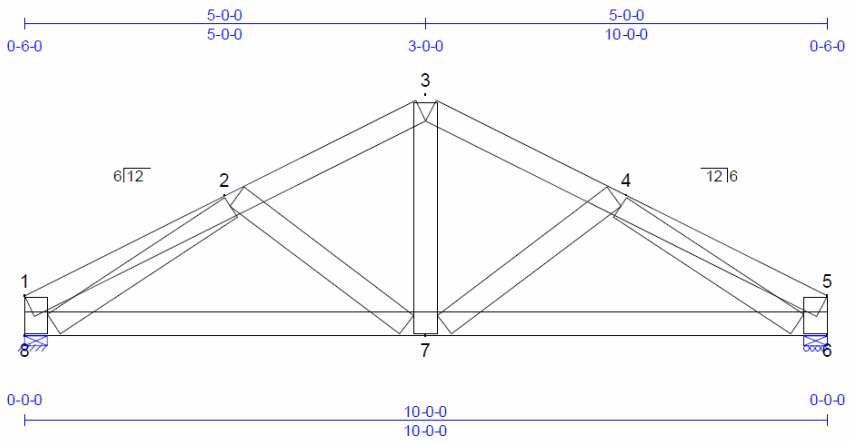
KeyBuild® System
KeyTruss®
Version: 5.001 [Build 741]

Your Company Logo

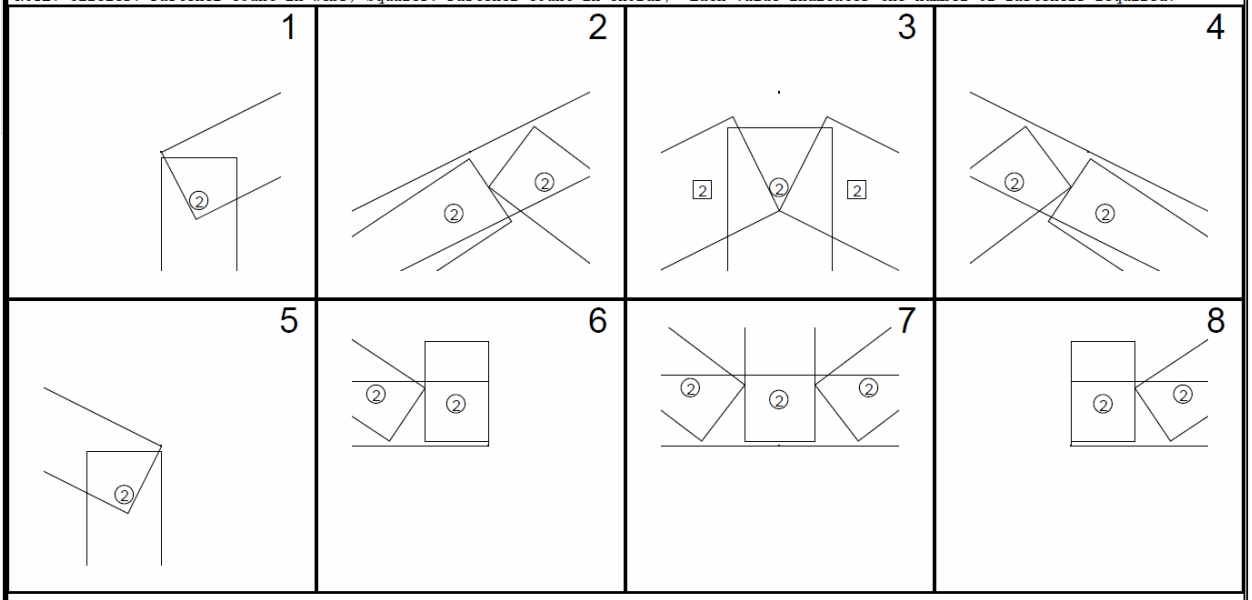
Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	8/4/2014 2:26:51 PM
System:	Cee 6.030
Page:	1 of 1
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.



APPENDIX F: SINGLE PAGE JOINT DETAILS

KEYMARK GLOBAL STEEL SYSTEMS

GS Build® System
GS Truss®
Version: 5.005 [Build 45]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	3/12/2015 12:51:19 PM
System:	Cee 6.040
Page:	1 of 8
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
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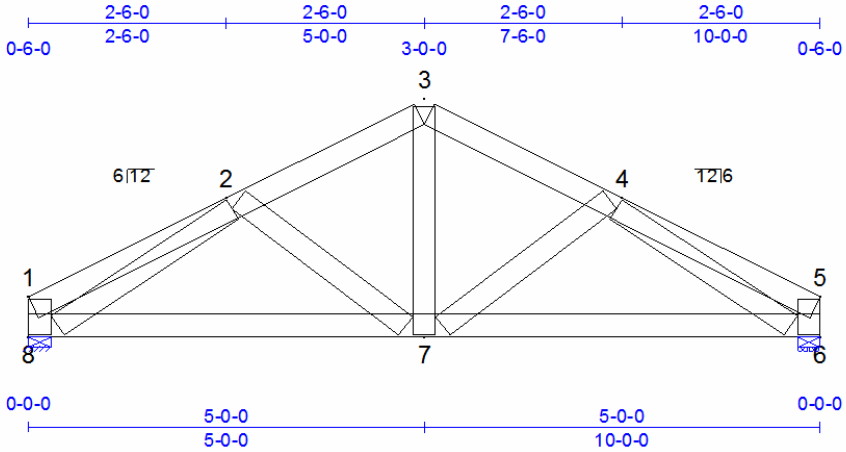
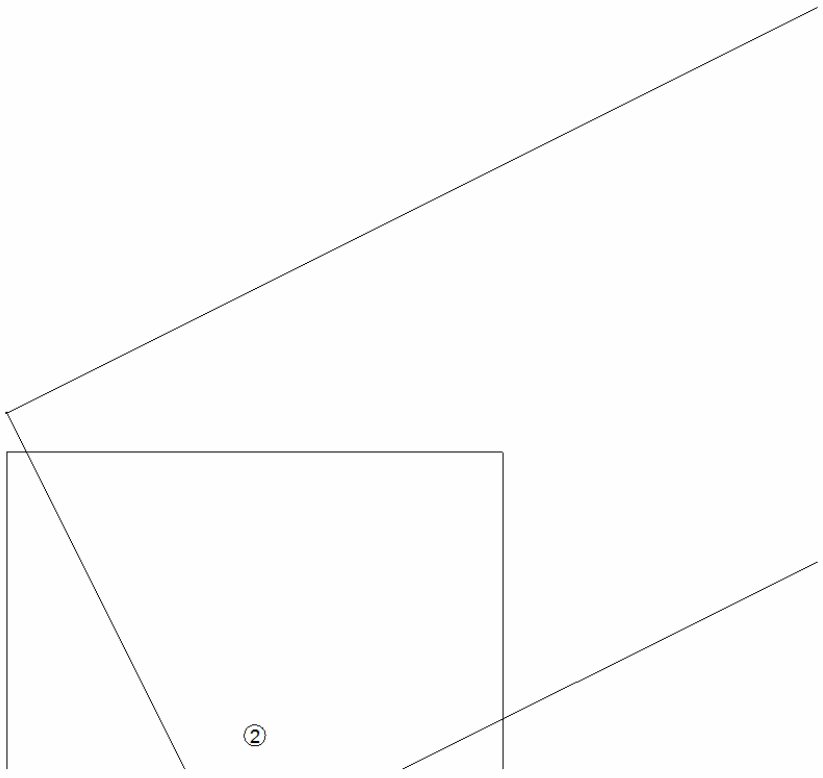


NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.

1



Appendix F: Single Page Joint Details (continued)

KEYMARK GLOBAL STEEL SYSTEMS

GS Build® System
GS Truss®
Version: 5.005 [Build 45]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	3/12/2015 1:02:48 PM
System:	Cee 6.040
Page:	2 of 8
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
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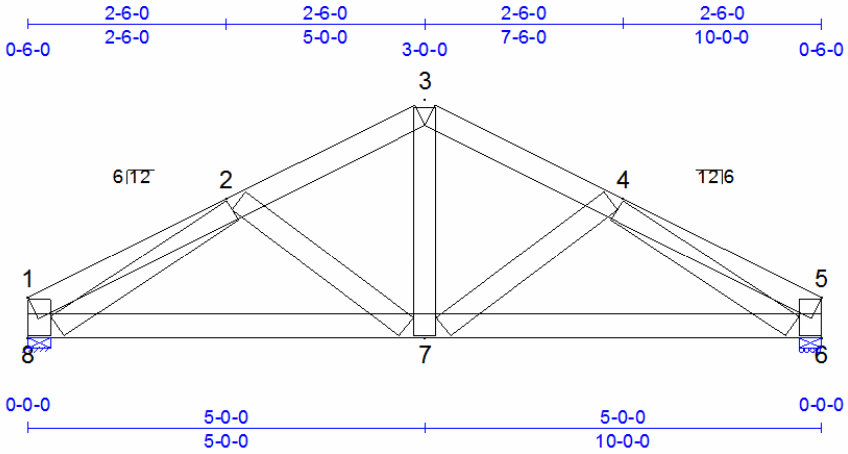
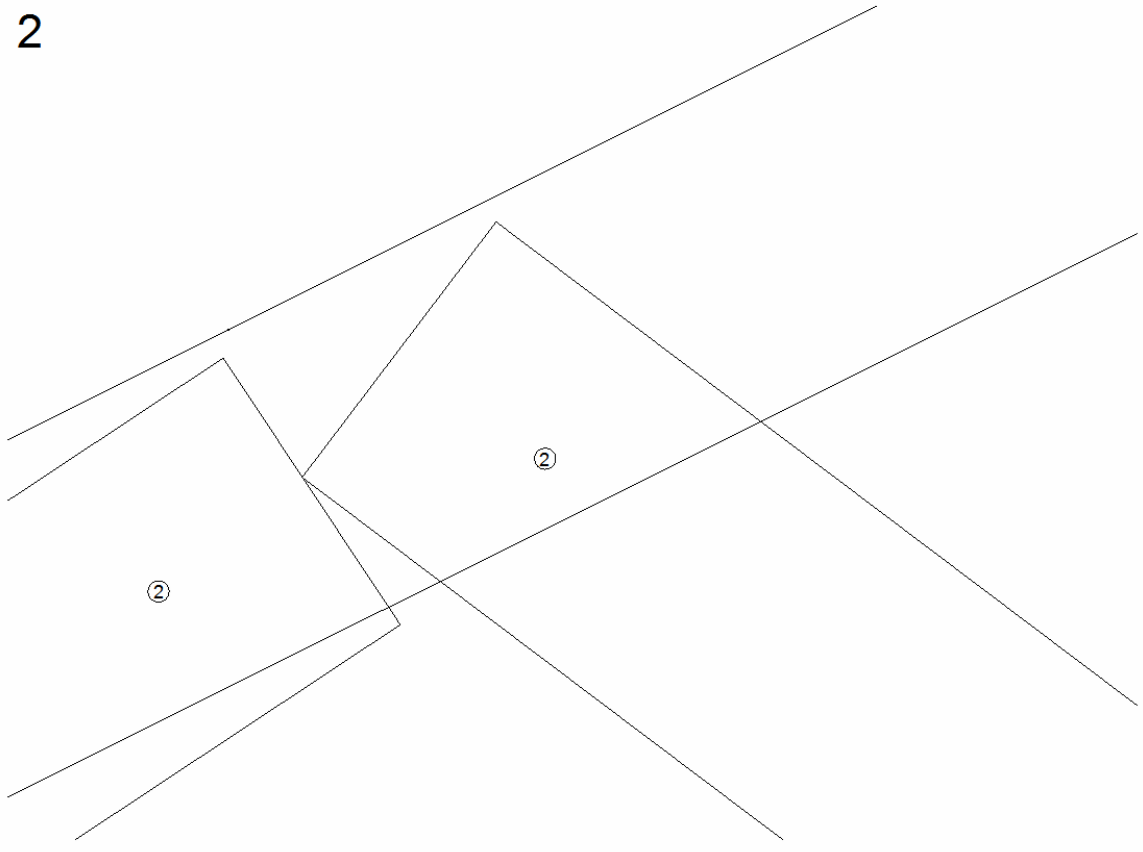


NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.



Appendix F: Single Page Joint Details (continued)

KEYMARK GLOBAL STEEL SYSTEMS

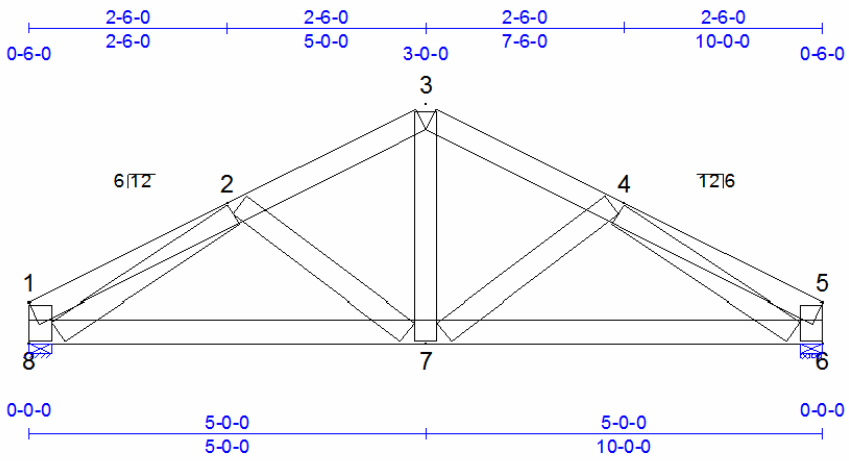
GS Build® System
GS Truss®
Version: 5.005 [Build 45]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

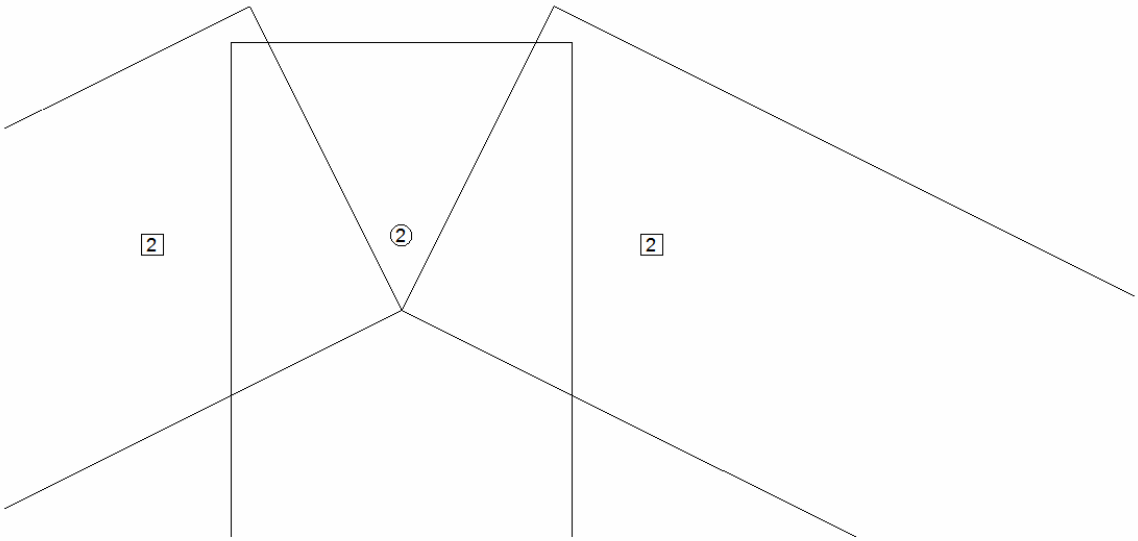
Truss:	Simple Truss
JobName:	House 4
Date:	3/12/2015 1:17:18 PM
System:	Cee 6.040
Page:	3 of 8
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.

3



Appendix F: Single Page Joint Details (continued)

KEYMARK GLOBAL STEEL SYSTEMS

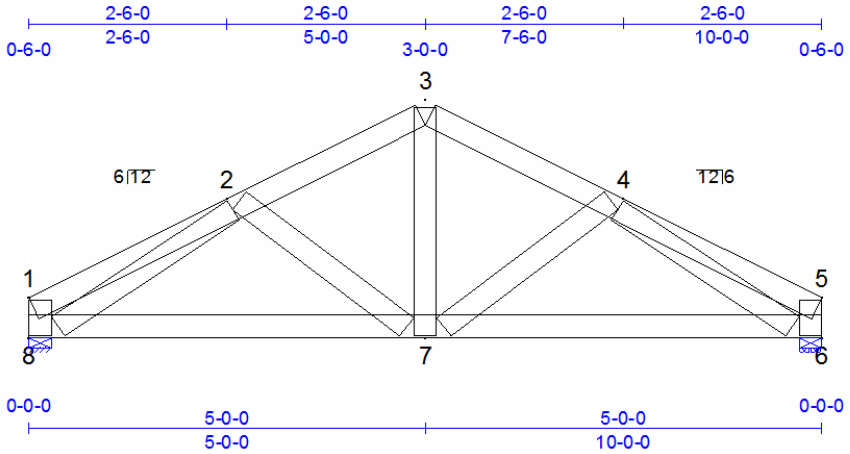
GS Build® System
GS Truss®
Version: 5.005 [Build 45]

Your Company Logo

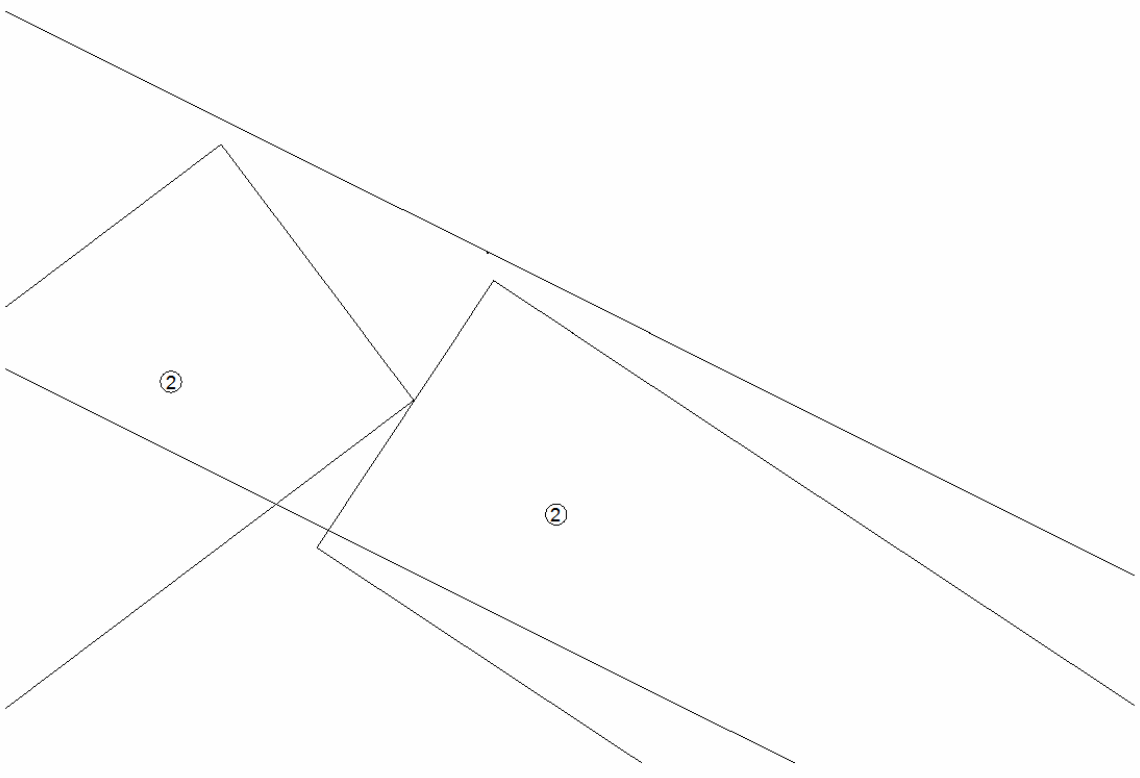
Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	3/12/2015 1:32:17 PM
System:	Cee 6.040
Page:	4 of 8
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.



Appendix F: Single Page Joint Details (continued)

KEYMARK GLOBAL STEEL SYSTEMS

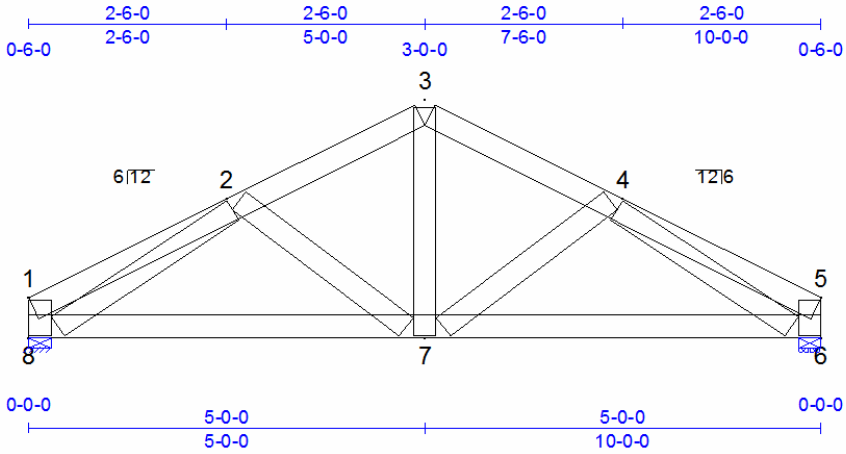
GS Build® System
GS Truss®
Version: 5.005 [Build 45]

Your Company Logo

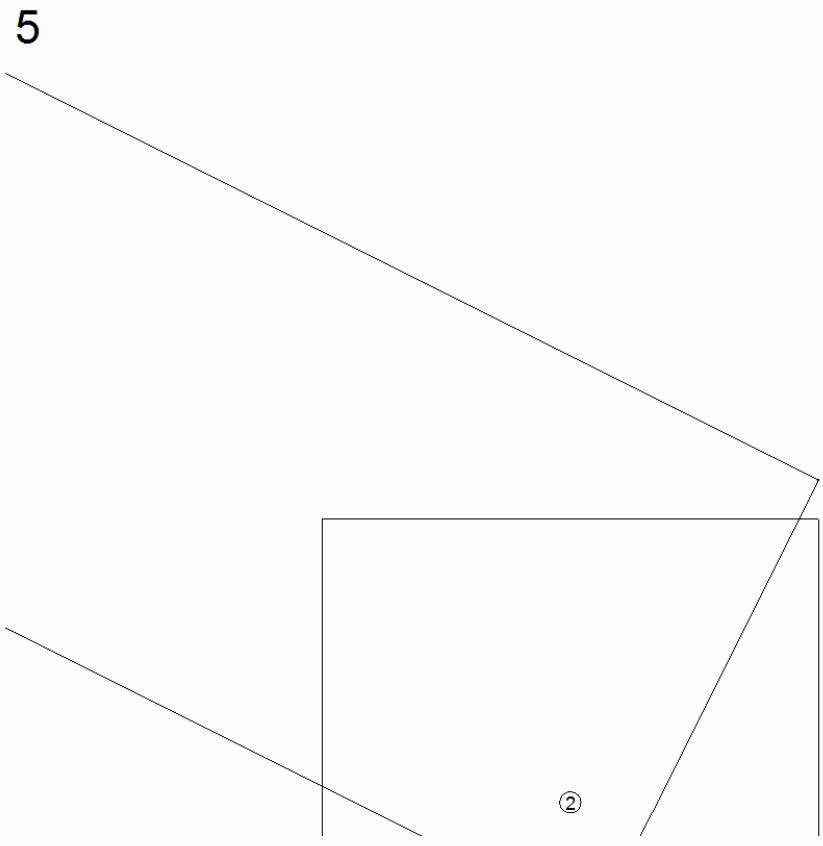
Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	3/12/2015 1:46:12 PM
System:	Cee 6.040
Page:	5 of 8
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.



Appendix F: Single Page Joint Details (continued)

KEYMARK GLOBAL STEEL SYSTEMS

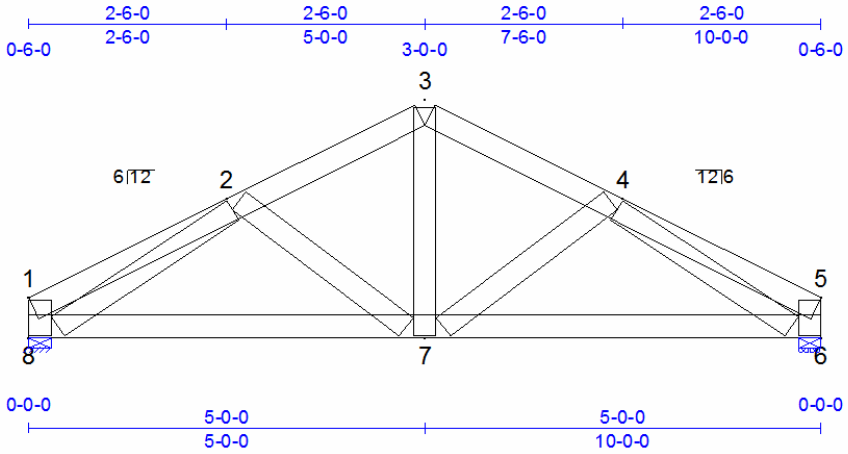
GS Build® System
GS Truss®
Version: 5.005 [Build 45]

Your Company Logo

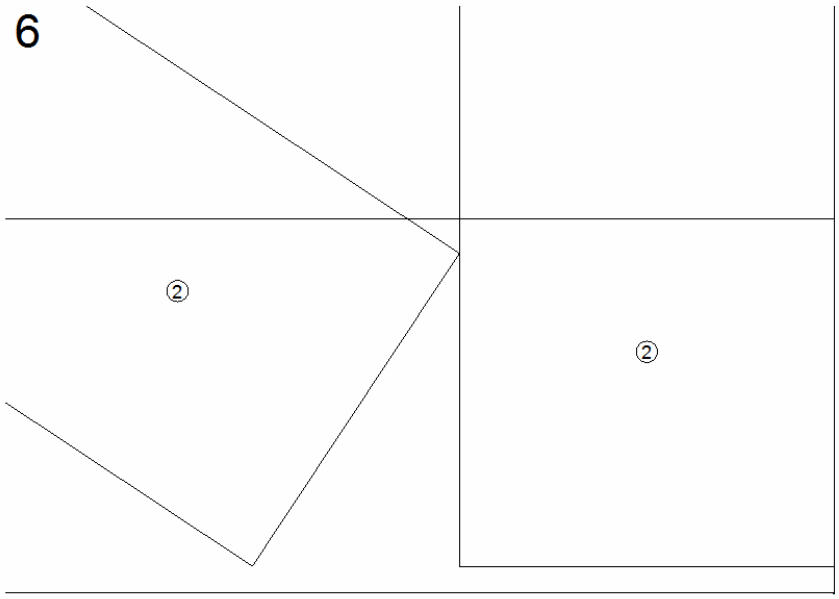
Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	3/12/2015 1:50:42 PM
System:	Cee 6.040
Page:	6 of 8
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.



Appendix F: Single Page Joint Details (continued)

KEYMARK GLOBAL STEEL SYSTEMS

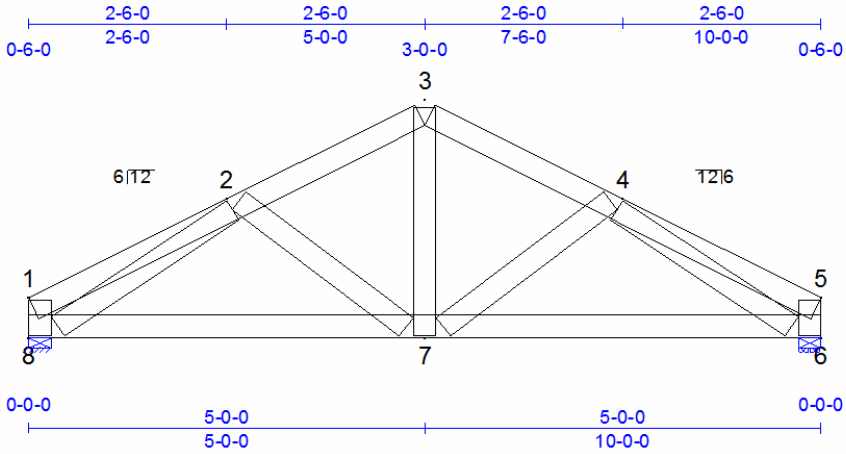
GS Build® System
GS Truss®
Version: 5.005 [Build 45]

Your Company Logo

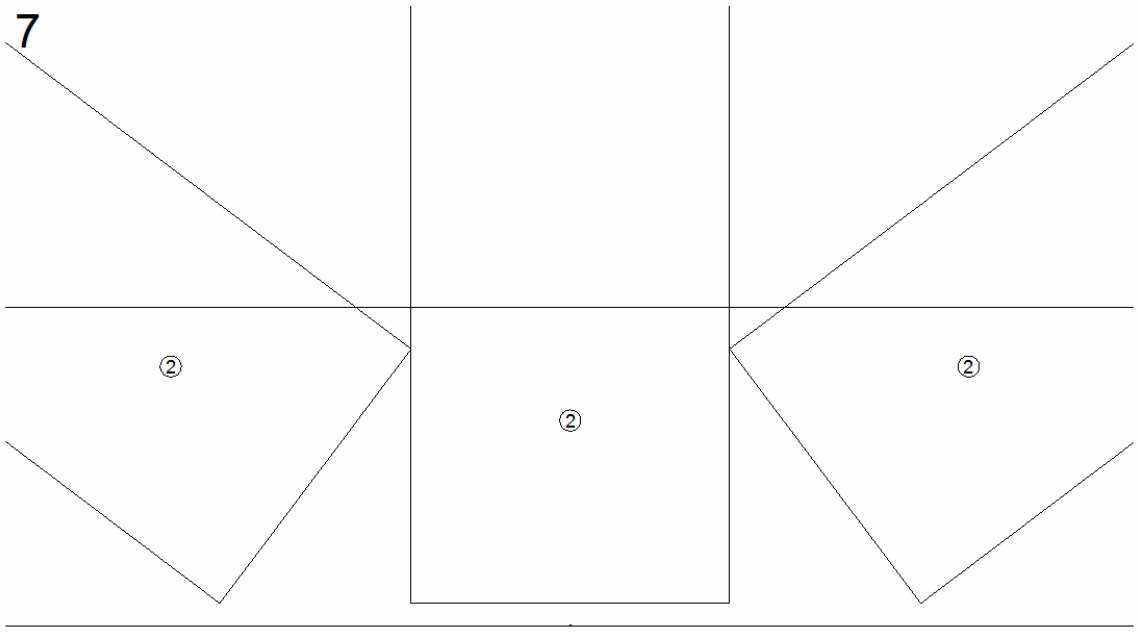
Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	3/12/2015 1:55:16 PM
System:	Cee 6.040
Page:	7 of 8
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.



Appendix F: Single Page Joint Details (continued)

KEYMARK GLOBAL STEEL SYSTEMS

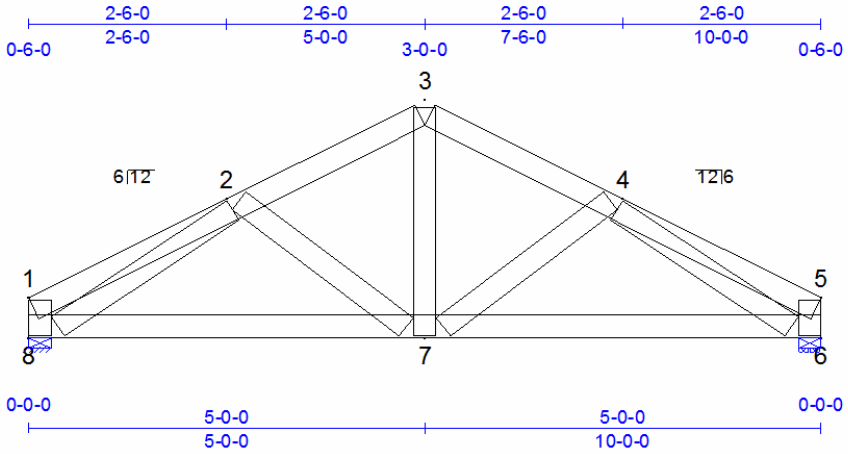
GS Build® System
GS Truss®
Version: 5.005 [Build 45]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

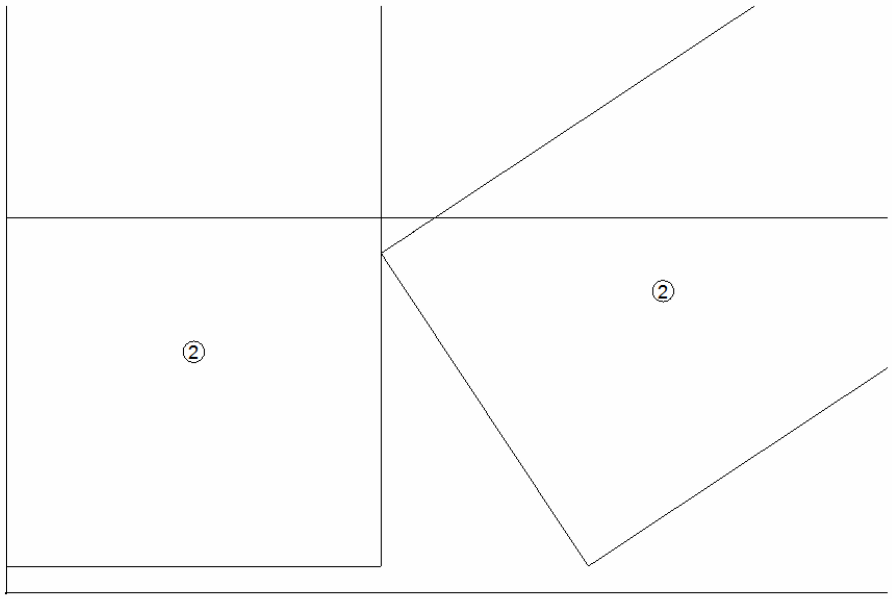
Truss:	Simple Truss
JobName:	House 4
Date:	3/12/2015 2:06:13 PM
System:	Cee 6.040
Page:	8 of 8
Report:	Joint Details

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



NOTE: Circles: Fastener count in webs; Squares: Fastener count in chords; Each value indicates the number of fasteners required.

8



APPENDIX G: PRICING REPORT

KEYMARK GLOBAL STEEL SYSTEMS

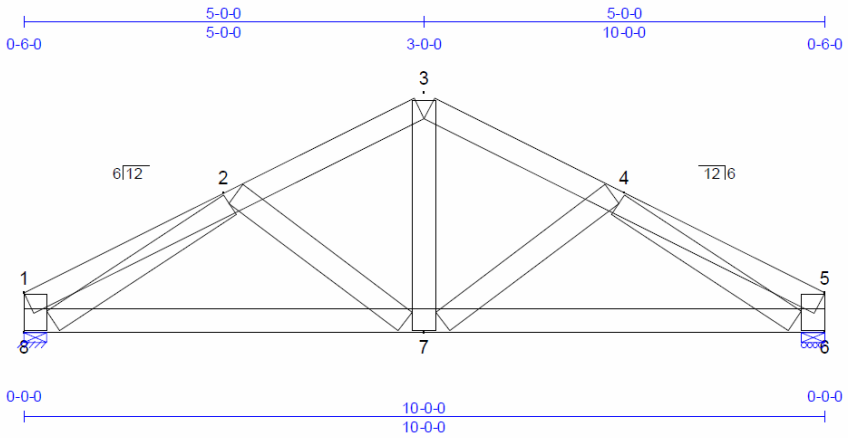
KeyBuild® System
KeyTruss®
Version: 5.001 [Build 741]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	8/5/2014 7:44:37 AM
System:	Cee 6.030
Page:	1 of 2
Report:	Pricing

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



Truss Pricing

Mbr Type	Length	Cost
Top Chord	10.89 ft	$ 111.06
Bottom Chord	10.00 ft	$ 102.00
Webs	14.37 ft	$ 146.61
Piece Total	35.26 ft	$ 359.67

Connection Materials	Quantity	Cost
#10 SDS (AISI)	32	$ 0.00
Total Cost of Connection Material		$ 0.00
Total Cost of Materials		$ 359.67

Labor Type	Cost
Saw Setup (Ave over 1 trusses)	$ 71.71
Saw Run	$ 62.00
Table Setup (Ave over 1 trusses)	$ 28.32
Table Run	$ 91.41
Total Labor	$ 253.44
Total Cost Per Ply	$ 613.11
Overhead (0 %)	$ 0.00
Total Price per Ply	$ 613.11

Labor Details

Saw Setup (Total SS / 1 truss)

Description	Quantity	Cost Per Unit	Cost
Length of Span	10.00 ft @	$ 1.0000 /ft	$ 10.00
Length of Span Over 10 ft Length	0.00 ft @	$ 1.0000 /ft	$ 0.00
Total Span Over 10 ft Length	0.00 ft @	$ 1.0000 /ft	$ 0.00
Max Width of the Truss	10.00 ft @	$ 1.0000 /ft	$ 10.00
Max Height of the Truss	2.93 ft @	$ 1.0000 /ft	$ 2.93
Qty of Trusses	1 @	$ 1.0000	$ 1.00
# of TC Pieces 3.5 in Wide	2 @	$ 1.0000	$ 2.00
Length of TC Pieces 3.5 in Wide	10.89 ft @	$ 1.0000 /ft	$ 10.89
# of BC Pieces 3.5 in Wide	1 @	$ 1.0000	$ 1.00
Length of BC Pieces 3.5 in Wide	10.00 ft @	$ 1.0000 /ft	$ 10.00
# of Chord Pieces 3.5 in Wide	3 @	$ 1.0000	$ 3.00
Length of Chord Pieces 3.5 in Wide	20.89 ft @	$ 1.0000 /ft	$ 20.89
# of Web Pieces 1.5 in Wide	0 @	$ 1.0000	$ 0.00
Length of Web Pieces 1.5 in Wide	0.00 ft @	$ 1.0000 /ft	$ 0.00
Total Saw Setup			$ 71.71

Appendix G: Pricing Report (continued)

KEYMARK GLOBAL STEEL SYSTEMS

KeyBuild® System
KeyTruss®
Version: 5.001 [Build 741]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss: Simple Truss
JobName: House 4
Date: 8/5/2014 7:44:37 AM
System: Cee 6.030
Page: 2 of 2
Report: Pricing

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs

Saw Run

Description	Quantity	Cost Per Unit	Cost
# of Square Cuts	20 @	$ 1.0000	$ 20.00
# of Angled Single Cuts	0 @	$ 1.0000	$ 0.00
# of Double Cuts	0 @	$ 1.0000	$ 0.00
Total # of Cuts	20 @	$ 1.0000	$ 20.00
# of Unique Angles	1 @	$ 1.0000	$ 1.00
# of Unique Lengths	5 @	$ 1.0000	$ 5.00
# of Plated Joints	0 @	$ 1.0000	$ 0.00
# of Pitch Break Joints	5 @	$ 1.0000	$ 5.00
# of Smooth Chord Joints	3 @	$ 1.0000	$ 3.00
# of Interior Joints	0 @	$ 1.0000	$ 0.00
Total # of Joints	8 @	$ 1.0000	$ 8.00
Total Saw Run			$ 62.00

Table Setup (Total TS / 1 truss)

Description	Quantity	Cost Per Unit	Cost
# of TC Pieces	2 @	$ 1.0000	$ 2.00
# of BC Pieces	1 @	$ 1.0000	$ 1.00
# of Chord Pieces	3 @	$ 1.0000	$ 3.00
# of Web Pieces	7 @	$ 1.0000	$ 7.00
Total # of Pieces	10 @	$ 1.0000	$ 10.00
# of Composite Pieces	0 @	$ 1.0000	$ 0.00
# of Pieces Shorter than 2 ft	2 @	$ 1.0000	$ 2.00
# Pieces Longer than 4 ft	3 @	$ 1.0000	$ 3.00
# of Pitch Break Joints with Gussets	0 @	$ 1.0000	$ 0.00
# of Smooth Chord Joints with Gussets	0 @	$ 1.0000	$ 0.00
# of Interior Joint Gusset Plates	0 @	$ 1.0000	$ 0.00
Total # of Plates	0 @	$ 1.0000	$ 0.00
# of Splice Joints	0 @	$ 1.0000	$ 0.00
# of Fasteners	32 @	$ 0.0100	$ 0.32
Total Table Setup			$ 28.32

Table Run

Description	Quantity	Cost Per Unit	Cost
Length of TC Pieces	10.89 ft @	$ 1.0000 /ft	$ 10.89
Length of BC Pieces	10.00 ft @	$ 1.0000 /ft	$ 10.00
Length of Chord Pieces	20.89 ft @	$ 1.0000 /ft	$ 20.89
Length of Web Pieces	14.37 ft @	$ 1.0000 /ft	$ 14.37
Total Length of Pieces	35.26 ft @	$ 1.0000 /ft	$ 35.26
Total Table Run			$ 91.41

Total Labor Cost $ 253.44

Material List

Material Desc	Wgt/Len	Cost/Len	Len/Truss	Total Len	Wgt/Truss	Total Wgt	Cost/Truss	Total Cost
350S162-43 (50 ksi)	1.14 plf	$ 10.2000 /ft	35.26 ft	35.26 ft	40.09 lbs	40.09 lbs	359.67	359.67
Totals					40.09 lbs	40.09 lbs	359.67	359.67

Connection List

Connection Desc	Qty/Truss	Total Qty	Wgt/Truss	Total Wgt	Cost/Truss	Total Cost
#10 SDS (AISI)	32	32	0.32 lbs	0.32 lbs	0.00	0.00
Totals			0.32 lbs	0.32 lbs	0.00	0.00

APPENDIX H: JIG SETTINGS

KEYMARK GLOBAL STEEL SYSTEMS

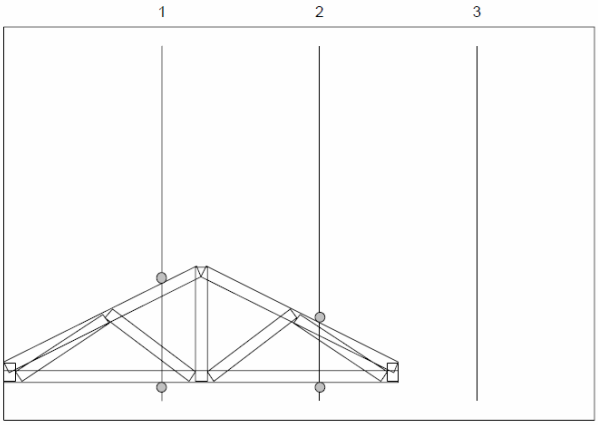
KeyBuild® System
KeyTruss®
Version: 5.001 [Build 741]

Your Company Logo

Your Company Name
1000 Sunset Blvd. Suite 100
AnyTown, USA 10101
(800) 555-0000 email@yourcompany

Truss:	Simple Truss
JobName:	House 4
Date:	8/5/2014 7:54:40 AM
System:	Cee 6.030
Page:	1 of 1
Report:	Jig Settings

SPAN	PITCH	QTY	OHL	OHR	PLYS	SPACING	WGT/PLY
10-0-0	6 /12	1	0-0-0	0-0-0	1	24 in	40.4 lbs



Presets:

X Offset:	1-0-0	Table Height:	10-0-0	Stop Diameter:	0-3-0
Y Offset:	1-0-0	Table to Rails:	0-6-0	Stop to Pointer:	0-3-0

Rail #	Location:	Top Chord:	Bottom Chord:
Table 1 Begin	1-0-0		
1	5-0-0	3-10-11	1-1-8
2	9-0-0	2-10-11	1-1-8
3	13-0-0		
Table 1 End	16-0-0		