GOOD CONNECTIONS®

SPRING 2022



Checking Trusses at Bearing Locations for Out-of-Plane Buckling



Basic Wind Questions - Part 2





2022 UPCOMING U.S. & CANADA HOLIDAY OFFICE CLOSURES

U.S.

Memorial Day Monday, May 30 **Independence Day** Monday, July 4 Labor Day Monday, September 5

CANADA

Good Friday Friday, April 15 **Victoria Day** Monday, May 23 **Canada Day** Friday, July 1

Civic Holiday Monday, August 1 Labour Day Monday, September 5

2022 WEBINAR SCHEDULE

- STITCHER Best Practices | April 22 •
 - Attic Truss Introduction | May 20
- Floor Truss Tips and Tricks | June 24





All software training webinars are held 11 AM - 12 PM (EST)

(Sessions and time are subject to change)

If you have suggestions for a class or questions, please email us at training@alpineitw.com



TABLE OF CONTENTS



Publishers Note:

Good Connections® is published by Alpine® for its customers, associates, builders, architects, building officials, and other professionals interested in the building components industry.

At Alpine, "Good Connections" refers to the quality products and services we offer as well as the connections we have with our customers and the components they provide to the building industry.

We appreciate story ideas, project photos, and other suggestions that you have to make this an even better publication. For more information, contact marketing@alpineitw.com.

©2022 Alpine, a division of ITW Building Components Group Inc.

OBSERVATIONS



Kevin Kraft Vice President & General Manager

Kevin Kraft is the Vice President and General Manager responsible for overseeing the Alpine[®] business for ITW. Previously he was the Engineering Director for ITW's Residential Construction Design Center in Lake Forest, Illinois. He led the research and development of innovative fastener and connector systems for the wood-to-wood construction market. He has also served as Research & Development Manager at the ITW Innovation Center in Glenview, Illinois.

It's a promising start to 2022. Despite the pressures of rising costs, supply chain constraints, and ongoing labor issues, the housing market remains strong. As your partner through the highs and lows, Alpine® has diligently worked to ensure that our customers are positioned to succeed. We've worked with our suppliers to secure the best possible pricing on raw materials and logistics to limit the impact of inflationary pricing. We also maintain strong relationships with our suppliers which have assisted with mitigating supply chain disruptions. In addition, we have launched several new tools within our software and support to assist our customers in being more effective on each of their jobs.

The latest software releases for the IntelliVIEW® Suite (22.01) and eShop (8.01) include improvements and new features to 3D Viewer, Alpine Portal, Truss Properties Manager, and Panel Stacker to support our customers in delivering their business results. We continue to focus our efforts on reliability and stability within our core software. Contact your software consultant or sales representative for more information on the releases. In February, as part of our ongoing commitment to provide quality educational experiences, an enhanced Alpine Academy was launched. It is a powerful educational platform designed to provide comprehensive software tutorials, training webinars, industry resources, and software release guides—as well as other useful tips and tricks for Alpine customers. It features a streamlined, modern design, an improved user experience, intuitive navigation, and guided access for new and experienced designer training. Alpine Academy is a complement to the exceptional support that is provided with our training and software consultant team!

With a strong start and a lot more to come through the year, I am optimistic to see Alpine[®] continuing to lead and support as trusted partners in the industry, ready with innovative solutions for our customers' needs.

Men Auft

UNDUSTRY NEWS

February 2022 Housing Starts

According to Bloomberg, new U.S. home construction rebounded in February, suggesting builders had greater success navigating material and labor constraints in the month. Residential starts increased 6.8% last month to a 1.77 million annualized rate. LEARN MORE

Construction Gains 31,000 Jobs in February

According to NAHB, job growth accelerated in February 2022. Total nonfarm payroll employment increased by 678,000 in February, and the unemployment rate edged down to 3.8%. LEARN MORE

SBCA Open Quarterly Meeting

SBCA's second quarter Open Quarterly Meeting (OQM) will be held from Monday, May 16th to Wednesday, May 18th in Williamsburg, Virginia. There will be opportunities to network and learn about the latest industry trends. **LEARN MORE**

BCMC 2022

Building Component Manufacturers Conference 2022 will be held from Monday, September 12th to Friday, September 16th at the Greater Columbus Convention Center. Visit Alpine® at BCMC to explore our latest exciting innovations built for component manufacturers.

IBS 2023

Visit Alpine[®] at booth #W1764 at the International Builder's Show 2023 by the National Association of Home Builders from Tuesday, January 31st to Thursday, February 2nd at the Las Vegas Convention Center, Nevada. **LEARN MORE**



BCMC 2022 | September 12 – 16 | Greater Columbus Convention Center



Pro Football Hall of Fame running back, businessman and entrepreneur Emmitt Smith is the 2022 BCMC Keynote Speaker.

NEW ORGANIZATIONAL APPOINTMENTS



Joey Maxwell

Joey Maxwell has joined Alpine[®] as a Help Desk Analyst, based out of the Earth City office. Joey brings over 12 years of experience, specializing in customer support and information technology. Currently, he is responsible for providing software support.



Gary Mueller

Gary Mueller has joined as a Help Desk Analyst, bringing over 24 years of experience and expertise to Alpine. In this role, Gary is responsible for providing customers with software support.



Sean Sohns

Based out of Texas, Sean Sohns has joined Alpine as a Software Consultant. In this role, Sean will be serving Alpine customers in the Texas region for technical support.



James Christensen

James Christensen has joined Alpine as a Software Consultant and is based out of Minnesota. In his new role, James will be responsible for providing customers with technical support.

IntelliVIEW SOFTWARE - 22.01 NEW FEATURES



3D Viewer Enhancements

New tools for an improved experience with visibility and navigation in the IntelliVIEW[®] Suite & Alpine[®] Portal.



Improved labeling & modify functions for better CAD performance.

Panel Stacker

Organize, bundle, and stack wall panels from within the cloud based Alpine Portal window.



Truss Property Manager New features and improvements for a better design experience.

STITCHER

Enhanced auto capture technology for fast and accurate results.

3D Openings in Layout Streamlined input and revamped visibility control functions.

MODERNIZED 3D VIEWER TOOL HELPS COMPONENT DESIGNERS VISUALIZE AND ANALYZE DESIGNS

Cathy Hill Alpine Product Owner

Visual tools are essential throughout the different phases of design and construction. Today, 3D models play a major role in construction projects, as they help improve productivity. Component manufacturing is no exception. The **3D Viewer Tool** was developed and modernized to help component designers quickly visualize complex 2D designs and share the interactive 3D model with key stakeholders. The tool improves collaboration while effectively resolving potential costly design issues in the field.

VISUALIZE & ANALYZE COMPONENT DESIGNS

The 3D Viewer tool in the IntelliVIEW Suite and Alpine® Portal helps designers get a closer look at the building elements within a design. The 3D model displays all the elements found within the building envelope and component layout, providing a better perspective of the project. The 3D model is an actual representation of the different roof, floor, and panel components. Designers have several different perspectives to select from to help validate the component's design, visually inspecting each component and the interactions to quickly ensure all the pieces are in the right position.

IMPROVED COLLABORATION & COMMUNICATION

An interactive 3D model can also be viewed and shared in the Alpine Portal with key stakeholders. This is essential as it allows anyone with web access from any device to easily view the model, eliminating the need to install additional applications. This improves collaboration between builders, architects,



Truss interactions can be examined by walking through the model.

sales, estimators, and homeowners to effectively resolve potential issues. Regardless of their level of experience with Alpine Software, stakeholders are provided full access to the model and perspectives. They can toggle through the visibility of the different elements, view individual trusses, or snap 3D dimensions as needed. Component manufacturers can align expectations with customers.



Focus on each or multiple components and planes for a visual inspection with the Section Tool.

NEW FEATURES

The latest IntelliVIEW[®] Suite Version 22.01 provides the same tools and access to the 3D Viewer within iModel, iPanel, and the Alpine[®] Portal.

The **Walkthrough Mode** changes the perspective of the building to a realistic, first-person (fixed point of view) perspective. The tool provides the designer the ability to study components from a first-person view from within the model.

The **Section Tool** provides designers the ability to cut sections of the model from all sides to examine the interaction within the components. It allows the user to focus on each or multiple components and planes for a visual inspection.

The **Multi Select Tool** is an expansion to the single select tool allowing for the selection and isolation of multiple elements in the model. This provides the designer the ability to study detailed interactions of selected elements.



The truss framing details can be examined and measured while in isolate mode.

3D visualization plays a significant part in component design, as it enables designers to express their ideas and designs clearly to stakeholders. The 3D Viewer is an essential tool for component designers at all levels to validate designs and ensure projects align with expectations. For more information on the 3D Viewer or a demonstration, please contact info@alpineitw.com.

Improve Plant Production. Maximize Labor. Automate Your Truss Manufacturing.

Drive your truss plant into a sustainable future. House of Design, an ABB Robotics integration company, and Alpine, an ITW Company, have teamed together to bring you the latest in robotic solutions. Solutions that increase your plant's production throughput while helping solve labor concerns and improve employee safety. Contact your local Alpine Sales Representative to learn more.

Automated Floor Truss System | Automated Roof Truss System | Roof Member Preplate Station



We've Got Every Angle Covered.

alpineitw.com | 800.521.9790



ALPINE ACADEMY LAUNCH ANNOUNCEMENT

New learning management platform with an improved user experience

We are please to announce the launch of Alpine Academy on a new Learning Management System (LMS). The new site, launched Wednesday, February 23, 2022, is a powerful educational tool designed to provide comprehensive software tutorials, training webinars, industry resources, software release guides, as well as other useful tips and tricks for customers. It features a streamlined, modern design, an improved user experience, intuitive navigation, and guided access to new designer training.

"We are committed to providing our customers with quality educational experiences. The new streamlined design of Alpine Academy is the latest addition to our commitment. New designers or seasoned professionals starting out on our software will find helpful tools to build skills that improve their process and quality of work. The site allows users to easily manage their educational journey with a simplified user interface and quick access to additional resources," said Martin Hauge, Alpine Training Manager.

A BETTER TRAINING EXPERIENCE

The new easy-to-use interface provides customers access to new designer training as well as continuing education

opportunities. The LMS will automatically save progress on courses and webinars while tucking them neatly away in the course history for reference. Users will also have the ability to bookmark lessons, webinars, and InsideVIEW information for quick access.

MORE UPGRADES TO COME

We're not finished—yet. The site will continue to grow with new features, courses, and enhancements over the coming months.

Alpine Academy provides an easy-to-use learning platform for new designers and continuing education, as well as information on software updates. Check out the **Getting Started Video** for a quick overview. Customers interested in training—or simply interested in exploring the new site—please visit **https://www.alpineacademyitw.com**. New accounts will take 24 hours to register. If you are already an Alpine Academy user and have logged in within the last two years, your account is ready! Simply login using the same credentials.

We hope you like the changes!



New AlpineAcademyITW.com Learn at your convenience

IntelliVIEW Manage. Design. Build.

The industry's most powerful integrated component design, engineering, and management software for steel and wood-framed structures.

iCommand
Manage projects, customers, materials and pricing

iModel

Design truss layouts and profiles

 iDesign
Optimize material usage and engineer trusses

iPanel

Design wall layouts, panelize, bundle, break and stack

eShop

Manage component production, labor and efficiencies

The IntelliVIEW suite is a fully integrated software solution for the layout and design of a building's rough framing elements—including roof and floor trusses, wall panels, solid sawn, EWP, construction hardware, sheathing and various ancillaries.

The IntelliVIEW suite provides the industry's most complete analysis of the design, cost information and bill of materials—promoting increased profits by reducing plate and lumber use.

Ask those who know. They'll tell you about the people at Alpine who make a difference.

BUSINESS & DESIGN SOFTWARE | CONNECTOR PLATES EQUIPMENT | ENGINEERING SERVICES & SUPPORT



Building Partnerships

Call 800-521-9790 or visit www.alpineitw.com for complete information

CHECKING TRUSSES AT BEARING LOCATIONS FOR OUT-OF-PLANE BUCKLING

David Rothweiler, P.E. Engineering Team Lead Bruce Feldmann, P.E. Senior Engineer

Every truss design is evaluated for numerous criteria to determine if it is structurally sound. One of those checks is the capacity of the truss to resist buckling at a bearing location. This article focuses on checking out-of-plane buckling when a truss member is loaded in compression perpendicular to grain and Alpine's solutions for trusses that fail the check.

WHAT CHANGED AND WHAT FACTORS IMPACT THE NEW CHECK

The reference standard for the wood truss industry, ANSI/ TPI 1-2014, introduced a check for truss members at reaction points for compression perpendicular to grain that may cause cross-grain buckling. These checks are typically applied at heel joints and interior bearing locations. The check addresses the potential for out-of-plane buckling at the bearing location when the heel joint or chord member is not restrained from buckling sideways. Without appropriate lateral restraint, the heel or chord member could buckle under load.

The main variables involved in the check are the width, depth, and stiffness of the members at the bearing location. When checking a heel joint, the depth is the deepest point measured from the bearing to the center line of the top chord. At an interior bearing location, the



depth of the chord is used in the check. The stiffness is measured by modulus of elasticity (E value). A heel joint having a top chord member, bottom chord member, and slider, will use the lowest E value of all the truss members at the heel. Increasing the width or number of truss plies, reducing the depth as measured for this check, or using lumber with an increased E value will increase the compression perpendicular to grain capacity.

OPTIONS FOR MEETING THE BUCKLING CHECK

When a multi-ply truss is being analyzed, additional plyto-ply nailing of the truss members at the bearing location will give the truss an increased width for the purposes of the TPI check. This enhanced nailing will increase the compression perpendicular to grain capacity and may eliminate the need for restraint blocking. Single-ply and multi-ply trusses that are supported by hangers at the bearing location are not checked for the TPI buckling requirement. The hanger pocket flanges will provide the necessary out-of-plane restraint.

ALPINE'S SOLUTIONS FOR FAILED TRUSS CHECKS

For trusses that fail the TPI cross-grain buckling check, there are three solutions Alpine[®] engineered. Each of these three options are available on the Alpine Blocking Reinforcement Detail.

End view of truss heel buckling at a bearing.

OPTION 1 – BLOCKING BETWEEN TRUSSES

Step 1: Apply blocking by using 2x stress-graded lumber attached perpendicular to and between trusses at the heel or interior bearing. Blocking is to be sized based on the blocking note which is located on the Alpine truss design drawing. Blocking shall be placed on both sides of truss requiring reinforcement and sized to fit tight between trusses. See Figure 1.

Step 2: Attach blocking at each end to trusses with three equally spaced 0.131"x3" nails driven through truss members into end of block, or two equally spaced 0.131"x3" nails toe-nailed through block into truss members.

OPTION 2- SCAB REINFORCEMENT

Step 1: Attach a vertical scab using 2x4 stress-graded lumber to one side of the truss at the bearing. The scab shall be the full truss depth at the heel. See Figure 2.

Step 2: Attach with two equally spaced staggered rows of 0.131"x3" nails at 4" on center.

A vertical scab is not a replacement or substitution for bearing block requirements that are specified on the Alpine Truss Design Drawing.

OPTION 3 – TRUSS ATTACHMENT TO WALL SHEATHING

For truss heel heights between 9.25" and 15.25" and where the outside edge of truss heel aligns with the outside face of the wall studs below, wood structural panel sheathing extending above the top plate shall be fastened to truss with five 0.131"x2.5" nails into each end of truss members. The nail quantities are divided proportionately between the contacted truss members. The sheathing depth above the wall plate must meet or exceed the blocking reinforcement depth as specified on the Alpine Truss Design Drawing. Sheathing shall be attached to the wall in accordance with IRC2018 R602.3 and IBC2018 2403.6. See Figure 3.



Figure 1. Blocking between trusses.



Figure 2. Scab reinforcement.



Figure 3. Truss attachment to wall sheathing.

Contact your Alpine® Structural Engineer for additional information about out-of-plane buckling.

REFERENCE(S)

- 1. ANSI/TPI 1 2014 Section 7.3.8
- 2. International Building Code (IBC) Section 2403.6
- 3. International Residential Code (IRC) Section R602.3
- 4. All images are created internally by the authors

THE DIFFERENT TYPES OF EXPOSURE AND WHAT IT MEANS

Exposure refers to the terrain around the building structure—ASCE refers to it as the ground surface roughness. This ground surface roughness considers the topography, vegetation, and other buildings that are around the building structure.

There are three (3) different types of exposures as described in ASCE 7: Exposure

B, C, and D. Exposure B is typically in suburban or urban areas with mostly single-family dwellings, Exposure C is more open grasslands with scattered obstruction, and Exposure D is on the shoreline with wind flowing over large bodies of water. Just think: with more obstructions in the way, wind gusts will be interrupted; with open areas, wind gusts build in strength. Thus, structures in an Exposure D area will tend to have higher wind pressures than structures in an Exposure B area.

These exposure designations should be provided in the construction documents. If they are not, contact the Building Designer.

William H. Krick P.E., Chief Engineer

eSHOP 8.1 | NOW AVAILABLE



Read and Simplify Drawings With Ease

Improved control over the size and visibility of a drawing's dimensions and text

Pull Workflow Enhancements

Empower teams to control their workflow to maximize time and remove bottlenecks at the stations

New Barcode Scanners

Reduce manual entry with the use of a simple barcode to quickly load or pull jobs with a single scan

Pre-Slice Floor Trusses Automatically

Automatically schedule splicing when scheduling floor truss to a table