Basic Wind Questions

Part 3

# GOOD CONNECTIONS®

**Truss Property** 

Manager

**FALL 2022** 







#### 2022 UPCOMING U.S. & CANADA HOLIDAY OFFICE CLOSURES

#### **U.S.**

Thanksgiving Thursday, November 24 Friday, November 25 Christmas Friday, December 23 Monday, December 26

#### CANADA

Thanksgiving Monday, October 10 Christmas

Tuesday, December 27

#### Boxing Day Monday, December 26

Floater Days Thursday, December 29 Friday, December 30

#### **2022 WEBINAR SCHEDULE**

- iCommand Tips & Tricks | September
- IntelliVIEW Suite Recent Features | October
- Understand Your Settings | November



## Webinars are held Register or log in here 11 AM - Noon

**11 AM – Noon** Eastern Time (Sessions and time are subject to change) If you have suggestions for a class or questions, please email us at <u>training@alpineitw.com</u>



#### **TABLE OF CONTENTS**

3	Observations
4	Industry News
5	New Organizational Appointments
6	BCMC 2022 Preview
9	Understanding Plate Tooth Count and Placement
13	Truss Property Manager with IntelliVIEW Suite 22.02
15	When Installed Correctly, Steel Joists Help Carry the Load
21	Basic Wind Questions – Part 3
21	Recovering a Hidden Dialog Window

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 <u>marketing@alpineitw.com</u>.

 $\ensuremath{\mathbb{C}}$  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<sup>®</sup> 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.

Over the past two years, a rapidly escalating housing market has generated a massive demand for components and the value they bring to the home building process. Although this demand—coupled with supply chain disruptions and labor availability issues—has challenged our industry, we have continued to find a way to deliver on our promises and support our customers.

Fueled by rising interest rates and uncertainty in the overall economy, indicators are pointing to a softening in the new construction sector. We all remember the crushing blow that was delivered to the construction industry following the sub-prime mortgage crisis. However, today feels much different. The market is signaling a modest slowdown, but there is still a strong need for affordable housing in North America. Even though interest rates are higher than they have been in recent years, they are still low in the context of historical borrowing rates.

Despite these challenges one thing always remains the same—the housing industry will find ways to adapt and deliver no matter what the circumstance. Time and time again, our industry, our customers, and our team have demonstrated resilience. The partnerships we have built together between Alpine<sup>®</sup> and our customers have

demonstrated the ability to continue to steer through challenging circumstances and come out stronger at the end. In the past few years we have all faced a tremendous number of obstacles—around supply chain, inflation, and labor availability, yet we've proven our ability to persevere as an industry. The next few years will be no different, and we'll find ways to continue to be successful.

As part of the upcoming BCMC show this year, we are looking forward to re-engaging with many familiar faces—as well as meeting new ones. Columbus has been a great city to host BCMC in the past years, and this year will be no different as we're expecting a successful show with a great turnout. Alpine's Customer Appreciation Event at the Columbus Zoo & Aquarium promises to be a memorable evening and a great opportunity for all of us to come together and celebrate another successful year in the industry.

As always, Alpine<sup>®</sup> will proudly continue to partner and support our customers to navigate successfully through the challenges thrown our way. Together, we'll evolve for the future. See you in Columbus!

Men Muft

#### **Housing Starts**

According to Reuters, U.S. homebuilding fell to the lowest level in nearly 1-1/2 years in July, weighed down by higher mortgage rates and prices for construction materials. Housing starts plunged 9.6% to a seasonally adjusted annual rate of 1.446 million units last month, the lowest level since February 2021. LEARN MORE

#### **BCMC 2022**

Visit Alpine® at **Booth #500** at the upcoming Building Component Manufacturers Conference 2022, held from Monday, September 12th to Friday, September 16th at the Greater Columbus Convention Center. Meet our experts and learn about our latest innovative offerings built for component manufacturers. **LEARN MORE** 

#### Labor & Material Shortages Lengthening Construction Cycle

According to SBCA, many Americans seeking to buy a newly constructed home are now playing the waiting game as supply-chain slowdowns and a lack of labor are adding more months before buyers can move in. **LEARN MORE** 

#### **IBS 2023**

Join Alpine<sup>®</sup> at **Booth #W1764** at the International Builders' 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** 



## You're Invited!

### **Hospitality Suite**

Tues. Sept. 13<sup>th</sup> | 5:00PM - 8:00PM Wed. Sept. 14<sup>th</sup> | 8:00PM - 12:00AM Thurs. Sept. 15<sup>th</sup> | 5:00PM - 12:00AM



Gallerie Bar Area Hilton Columbus Downtown 401 N High St, Columbus

Ask your Sales Rep. about the Customer Appreciation Event on Wednesday, Sept.  $14^{\rm th}$ 



#### NEW ORGANIZATIONAL APPOINTMENTS





#### Darshdeep Benipal

Darshdeep Benipal has joined the Structural Engineering's Canadian Support Group. Darsh will be designing wood trusses, truss repairs, and modifications for customers in Western Canada.

#### **Adrian Smith**

Joining the Equipment team from the Grand Prairie office as a Customer Service Representative, Adrian Smith will be responsible for customer care, product delivery, and order entry. She will also play a key role in accounts payable support.

#### **Raymundo Flores**

Raymundo Flores has joined the Sacramento office of Alpine's Structural Engineering team. In his new role, Raymundo will work with customers throughout the Western U.S.

#### **Thomas Rogers**

Thomas Rogers has joined the Equipment field service team as a Service/Repair Technician. Working remotely, Thomas will work with customers to help install and service Alpine<sup>®</sup> equipment.

#### IntelliVIEW SOFTWARE - 22.01 & 22.02 FEATURES

#### **Visualize Designs**

3D Viewer tool is available within the IntelliVIEW® Suite, displaying all the elements found within the building envelope and layout. A first-person viewpoint allows designers to review the components from within the model.



#### **STITCHER®**

Enhanced auto capture technology for fast and accurate results with version 2.0.

#### iPanel Stacker

Automatically organize, bundle, and stack panels for shipping and production.

IntelliSheets Create custom spreadsheets, job lists, track progress and share.

**Truss Property Manager** 

Identify and review trusses quickly

within layout.

#### **iPanel Subcomponents**

Easily create, manage, and save subcomponents to a central list.

#### **Parametric Design Capabilities**

Automatically size subcomponents and openings to design parameters, reducing list management.



## **BCMC 2022 PREVIEW**

#### Alpine's Latest IntelliVIEW Suite Release, Innovations, and Products

The Building Component Manufacturers Conference (BCMC) will be kicking-off in Columbus, Ohio on September 12<sup>th</sup> and we are pleased to be exhibiting in Booth #500. BCMC offers component manufacturers (CMs) a platform to see the latest software and equipment demonstrations, network with industry experts, and explore educational opportunities. We will be showcasing innovative products to help make CMs more competitive and profitable.

"Alpine® strives to form value-added partnerships with our customers by providing best-in-class software solutions for management, design, engineering, and manufacturing. We continue to focus on providing new and enhanced software features to maximize productivity and efficiency. With the IntelliVIEW® Suite 22.01 and 22.02 Versions, we are thrilled to be unveiling tools such as IntelliSheets and Truss Properties Manager—productivity-enhancers that give you flexible control of your data in ways that work best for your business," said Rick Tilelli, Alpine's Director of Software Development. "This version also includes an exciting Walkthrough Mode in our enhanced 3D Viewer, and a new subcomponent engine to make wall panel design easier."

#### 2D TO 3D SEAMLESSLY

STITCHER® is an innovative tool which significantly reduces the time a designer must spend entering the building envelope. The automatic selection and measurement tools help analyze the varying styles of a builder's plan, identify the building envelope, and automatically capture the walls, openings, and fixtures. The latest STITCHER release enables roof plane capture in addition to walls, saving even more building input time while increasing designer accuracy. IntelliVIEW° Suite

### $\langle \langle \rangle$

#### 22.01 & 22.02 FEATURES

#### iCommand<sup>®</sup> IntelliSheets

New tool to create custom job lists, track progress, and share live reports.

#### Enhanced 3D Viewer

Now available within the IntelliVIEW Suite, displaying all the elements in the building envelope and layout.

#### Walkthrough Mode

A realistic, first-person perspective allowing designers to study components from within the model.

#### **Truss Properties Manager**

Create table views to quickly review the most relevant truss properties in layouts.

#### Panel Stacker

Automatically organizes, bundles, and stacks panels in a specific sequence for production and shipping.

#### iPanel Subcomponents

Easily create, manage, and save subcomponents to a central list.

#### Parametric Design Capabilities

Intuitive creation of parametric wall componenents and subcomponents.



Enhanced 3D Viewer

#### **NEW WAYS TO VIEW YOUR DATA**

Take business management data to a new level with iCommand® IntelliSheets. It's a new, improved tool to create custom job lists, track progress, and share live reports easily with different users – all from within the IntelliVIEW Suite. Select the most relevant columns, setup sophisticated conditional formatting rules, and create summations to view your data in a convenient and actionable format.

#### **VISUALIZE DESIGNS**

Step through a building model with the new Walkthrough Mode in the enhanced 3D Viewer. Experience a realistic, first-person perspective from within the model, while analyzing specific trusses, walls, and members. 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. An interactive 3D model can also be viewed and shared in the Alpine Portal with key stakeholders.

#### WALL PANEL PRODUCTIVITY

Alpine continues to deliver new iPanel functionality to make panel design easier and more flexible. iPanel 22.02 is no exception. "As our industry increasingly shifts towards offsite construction methods, Alpine has focused on providing our customers with best-in-class software solutions to support this growing trend. Alpine's iPanel software is the result of a continuous partnership with wall panel fabricators and world-class software innovation. iPanel provides powerful, best-in-class tools for wall panel design and fabrication including robust openings management, power editing tools, and our latest features: a subcomponent engine with parametric capabilities and our new banding/bundling module—the Panel Stacker!" added Rick Tilelli.

The new subcomponent engine reduces management and configuration time associated with subcomponents while simplifying the creation and modification process. The Stacker adds a new interface to the bundling process, giving designers all the information they need to group panels efficiently. These tools add to an already robust software package which fits neatly into the Alpine



AutoSet Plus Table

software ecosystem. "iPanel has complete integration with the IntelliVIEW® Software and eShop, allowing panel and truss designers to collaborate and share information while providing integrated management of the panel fabrication process," said Rick Tilelli.

#### **ALPINE EQUIPMENT**

Alpine is an industry leader in computer-controlled truss cutting and assembly systems. "Our equipment is engineered to guarantee CMs high performance, quality-driven results," stated Vennor Hackshaw, Business Unit Manager at Alpine. "As the industry shifts to automation to improve production capacity and combat labor shortages, we will continue to work with CMs to enhance our technology. This year we'll showcase and provide LIVE demos of the Alpine® Linear Saw and AutoSet Plus tables at BCMC."

#### ALPINE LINEAR SAW (ALS) 4.0

The ALS takes cutting to the next level by reducing labor—increasing production and the bottom

line. No other saw in the market has the same impact on modern truss production. Designed for production efficiency, the ALS 4.0 requires only one sawyer for operation, and features an optional automated infeed system, beveling capability, and wall panel marking. See it in action! Several scheduled demonstrations will be provided.

#### **AUTOSET PLUS TABLE**

The AutoSet Plus represents the latest in truss table automation-improving production time. With set up in less than 25 seconds, this computer-controlled jigging system is engineered to be efficient and accurate. The automated steel pucks provide workers with the ability to keep a consistent pace throughout the day, with higher accuracy and reduced employee fatigue.

Visit us at BCMC in Booth #500 or contact info@alpineitw.com for a private software demonstration.

## UNDERSTANDING PLATE TOOTH COUNT AND PLACEMENT

Russell Tangren, PE Engineering Team Lead

Imagine a third-party truss inspector is in the yard checking truss plates as part of quality control. The plate placement diagram indicates the web needs twenty-five teeth; however, the inspector counts twenty. Even though the shop positioned the plates as designed, is the plate placement correct?

In short, yes. The size and placement are acceptable. The inspector is seeing the rounding done by the software. Alpine® software will engineer plates by the coverage of the plate on each wood member as well as the plate's angle. The Plate Placement Diagram is produced by the software and will highlight the expected number of teeth for each member covered, as required by TPI. Note that this number is rounded to the lowest whole tooth. The diagram will also include additional placement considerations for quality control.

#### PLATE PLACEMENT & TEETH – THE TECHNICAL ANSWER

#### Counting teeth on the end or edge of members

The teeth on the end and edges of the connected members should be included. The Alpine Software adjusts for some "dead zones" at the ends and edges of the members, these dead areas are accounted for in the plate size.

Understanding the end and edge distances, the ES Report (ESR1118) has two values for plates, "net" and "gross". On the next page, Table 1 illustrates how the net capacity per square inch of plate is larger than the gross capacity. It is important to remember the capacities given in this table are on a per square inch of covered wood. The gross area omits the end

## For best practice, print the Plate Placement Diagram for the inspector. This will help the inspector determine the quality of the placement. Printing the Plate Placement Diagram:

- 1. Go to Settings > Job Settings
- 2. Click on the Plating Tab
- 3. Click the checkbox next to "Calculate Plate Placement Polygons" located near the bottom of the right column
- 4. Click on the Eng. Output Tab
- 5. Click on the Deselect All button at the bottom
- 6. Click the checkbox for the "Plate Plot Per Page" and "Joint QC Details"

Plate Plots
** Joints Only     Tooth Counts
Locate plates by      Slots      Dimensions
For Joints with JSI>= 0
☑ Joint QC Details For Joints with JSI>= 0.65

- 7. Click OK at the bottom
- 8. FastTrack and save the truss
- 9. Open Output Processor
- 10. Drag your truss over the Eng. Output Icon
- 11. Print in a PDF file format. (Make sure to check the appropriate boxes for Eng. Output to reduce the file size).

TW BCG	TPI AREA BASIS	LUMBER <sup>2</sup>	HYDRAU	JLIC-PLAT	TEN EMBE JES <sup>3</sup>	SINGLE-PASS ROLLER EMBEDMENT VALUES <sup>3</sup>					
PLATE			AA	EA	AE	EE	AA	EA	AE	EE	
WAVE -		S. Pine	206	158	163	170	179	143	142	153	
	GROSS AREA	Doug. Fir-Larch	206	156	145	153	179	141	126	138	
	edge distances)	Hem-Fir	164	109	106	124	134	96.7	86.5	110	
		SPF	159	109	106	118	130	96.7	86.5	105	
		S. Pine	275	195	163	170	239	177	142	153	
	NET AREA	Doug. Fir-Larch	275	195	145	153	239	177	126	138	
	(1/2 end & 0 edge distances)	Hem-Fir	208	134	106	124	170	119	86.5	110	
		SPF	208	130	106	118	170	115	86.5	105	

Table 1 from Alpine's Acceptance Report outlining the capacities of Alpine's connector plates and products (ICC Evaluation Service revised January 2021).

and edge distances. This reduces the capacity of the entire plate to account for losses in the dead zone.

To illustrate, a 1.5x3 plate holding a compression web to a chord. The web is DF-L. The plate is in the AA orientation on the web. The plate is centered on the web/chord joint. Per Table 1, the gross capacity is 206Psi/plate. The available area for the gross capacity is 1.5"x1.5" or 2.25 in<sup>2</sup>. To calculate the plate's tooth holding capacity, the equation is 2.25 in<sup>2</sup> x 206Psi = 463.5 lbs.

When using the Net Area Method, the tooth holding capacity is not reduced, and the end distances are removed from the available plate area (see orange areas in Figure 2). For example, 6x6 Plate on a 2x4 the covered area would be 3.5" wide by 2.5" long. The table shows the end distance for wave plates is ½". The National Design Standard (NDS) addresses this information as well as specify the fastener (plate teeth) capacity reduction due to distance from the

ends of members. Whereas the gross area uses a reduced per-tooth capacity over the entire covered area.



Figure 1. Orange area is available wood for plate capacity using the net plating values. Gray is end and edge distances. Please refer to TPI for additional information.

## How the software accounts for the end and edge distances of the connected members

Founded on extensive research, the IntelliVIEW® Software calculates the capacity of plates based on the area of the member covered and angle of the plate. This produces a capacity per square inch of coverage area. The software then uses this capacity per square inch to calculate the





Figure 2. Plate in the nominal position with 60 teeth into the chord.

Figure 3. Plate as built, with a ¼" shift down results in 70 teeth into the chord.

minimum plate area. Understanding how many teeth per square inch there are in the plates and using the covered area, the software calculates the number of teeth in the member.

For example, two webs and a bottom chord being joined by a 3x5 plate, the IntelliVIEW Software calculates that each web needs 2.80 in<sup>2</sup> of plate coverage to be able to transfer the loads, and 6 in<sup>2</sup> in the chord. The C<sub>o</sub> factor would allow the shop to have a placement tolerance of ¼". The plate is centered where all three members touch. In this location the chord will have a Gross Plate Area of 7.5 in<sup>2</sup>. With the <sup>1</sup>/<sub>4</sub>" placement tolerance, the Gross Area in the bottom chord becomes 1.25"x5", 6.25in<sup>2</sup>. Alpine's wave plate has 8 teeth per square inch. The number of teeth in the chord is calculated:  $1.5 \times 5 \times 8 = 60$  nominal teeth, Figure 2. If the shop shifted the plate down, the Gross Area = 70 teeth (Figure 3). If the plate were shifted up, the Gross Area = 50 teeth.

Alpine engineers thoroughly tested the design of each connector plate type. The results are expressed as capacity per square inch of plate into the wood member. The IntelliVIEW® Software calculates the smallest feasible plate for each joint. After many checks are performed and the smallest plate is determined, the software analyzes the area of coverage (in square inches) and multiplies that area by eight to report the number of whole teeth required. This calculation sometimes will result in a perfectly acceptable plate location, but the number of teeth may not match the reported number due to rounding. If the plate is located as noted on the Plate Placement Diagram, the joint will be sufficient to transfer the expected loads regardless of the number of teeth present.

For more information or questions, please contact your Alpine® Structural Engineer.

#### **REFERENCE(S)**

- TPI = ANSI/TPI 1 2014 Truss Plate Institute
- NDS = National Design Standard 2015 edition, National Design Specification for Wood Construction ANSI/AWC Approval date September 30, 2014
- ESR1118 = ICC-ES Evaluation Report ESR-1118 https://icc-es.org/report-listing/esr-1118/

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

Drive your truss plant into a sustainable future. House of Design 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 Systems | Automated Roof Truss Systems | Roof Member Preplate Station



BUILD MORE. alpineITW.com | 800.521.9790

## TRUSS PROPERTY MANAGER WITH INTELLIVIEW SUITE 22.02

John Croll Solutions Delivery Manager

The Truss Property Manager makes it easier for designers to review the trusses in the job and confirm they are designed as expected.

Truss designers must consider a variety of factors when creating designs. They are expected to work quickly to produce low-cost and highly accurate jobs per their customers' requirements. Alpine's IntelliVIEW<sup>®</sup> Software has enabled efficient truss designing for decades, and with the new Truss Property Manager (TPM) this task is even more achievable.

#### **EASILY REVIEW TRUSSES**

TPM is a dockable window within iModel which hosts a table containing all the trusses in the layout, along with their corresponding properties. The tool makes it easier for designers to review the trusses in the job and confirm they are designed as expected. For example, the table shows the loading applied to each truss, truss type, chord size, quantity, and relevant dimensions such as height, span, heel height, overhang, and more.

The user can sort, filter, and group by any field in the table to make the search and review functions as efficient as possible. They can also add conditional formatting to easily highlight values that need attention. The table is also interactive with the layout. If more information is needed about a section of the building or an individual truss, the user can click on a truss to view it and highlight it in the layout for

a colum header here: ype: Status Iz U U U U U U U U U U U U U U U U U U U	to group by that or abel Status Ind 11 [D] 14 [D] 15 [D] 16 [D] 17 [D] 17 [D] 18 [D] 19 [D] 12 [D] 11 [D] 12 [D] 13 [D] 14 [D] 15 [D] 15 [D] 16 [D] 16 [D]	Aum           Wind Load Standard           ASCE 702           ASCE 702           ASCE 702           ASCE 701           ASCE 702           ASCE 710           ASCE 710	Wind Speed           90.00           90.00           90.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00	ASCE Building Exposure C C C C C C C C C C C C C C C	ASCE Wind Usage Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	Building Code IBC 2012 IBC 2012	Load Duration 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15	B
Type         Status         Li           Image: Constraint of the state of the st	abel         Status Ind           '1         [D]           '12         [E]           '13         [D]           '14         [D]           '5         [D]           '6         [D]           '79         [D]           '10         [D]           '12         [D]           '13         [D]           '14         [D]           '15         [D]           '16         [D]           '17         [D]	Wind Load Standard           ASCE 7-02           ASCE 7-02           ASCE 7-02           ASCE 7-10           ASCE 7-10	Wind Speed           90.00           90.00           90.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00           120.00	ASCE Bulking Exposure C C C C C C C C C C C C C C C C C C C	ASCE Wind Usage Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	Building Code IBC 2012 IBC 2012	Load Duration 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15	8
	[D]           112         [E]           ''3         [D]           ''3         [D]           ''5         [D]           ''5         [D]           ''6         [D]           ''8         [D]           ''10         [D]           ''12         [D]           ''13         [D]           ''14         [D]           ''15         [D]           ''16         [D]	ASCE 7-02 ASCE 7-02 ASCE 7-02 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	90.00 90.00 90.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00	C C C C C C C C C C C C C C C C C C C	Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	IBC 2012 IBC 2012	1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15	
	412         [E]           '3         [D]           '4         [D]           '5         [D]           '6         [D]           '8         [D]           '9         [D]           '12         [D]           '13         [D]           '14         [D]           '15         [D]           '15         [D]           '16         [D]	ASCE 7-02 ASCE 7-02 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	90.00 90.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00	C C C C C C C C C C C C C C C C C C C	Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	IBC 2021 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012	1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15	
•••••••         ••••         ••••         ••••           ••••••         •••••         ••••         ••••           •••••         •••••         ••••         ••••           •••••         ••••         ••••         ••••           ••••         ••••         ••••         ••••           ••••         ••••         ••••         ••••           ••••         ••••         ••••         ••••           ••••         ••••         ••••         ••••           ••••         ••••         ••••         ••••           ••••         ••••         ••••         ••••           ••••         ••••         ••••         ••••	(3)         (b)           (4)         (b)           (5)         (b)           (5)         (b)           (7)         (b)	ASCE 7-02 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	90.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00	c c c c c c c c c c c c c c c c c c c	Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012	1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15	
•••         ••	'4         [D]           '5         [D]           '6         [D]           '8         [D]           '10         [D]           '11         [D]           '12         [D]           '14         [D]           '15         [D]           '16         [D]	ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	120.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00	C C C C C C C C C	Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012	1.15 1.15 1.15 1.15 1.15 1.15 1.15	
Image: Constraint of the second sec	[D]           6         [D]           76         [D]           78         [D]           79         [D]           710         [D]           712         [D]           713         [D]           714         [D]           715         [D]           716         [D]	ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	120.00 120.00 120.00 120.00 120.00 120.00 120.00 120.00	с с с с с	Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012	1.15 1.15 1.15 1.15 1.15 1.15	
	ID         ID           78         ID           79         ID           110         ID           112         ID           113         ID           114         ID           115         ID           116         ID	ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	120.00 120.00 120.00 120.00 120.00 120.00	с с с с с	Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	IBC 2012 IBC 2012 IBC 2012 IBC 2012 IBC 2012	1.15 1.15 1.15 1.15	
	ID         ID           19         ID         ID           110         ID         ID           112         ID         ID           113         ID         ID           114         ID         ID           115         ID         ID           116         ID         ID	ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	120.00 120.00 120.00 120.00 120.00	с с с с	Residential-CAT II Residential-CAT II Residential-CAT II Residential-CAT II	IBC 2012 IBC 2012 IBC 2012 IBC 2012	1.15 1.15 1.15	
	'10         [D]           '11         [D]           '12         [D]           '13         [D]           '14         [D]           '15         [D]           '16         [D]           '17         [D]	ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	120.00 120.00 120.00 120.00	C C C	Residential-CAT II Residential-CAT II Residential-CAT II	IBC 2012 IBC 2012	1.15	
	10         [D]           112         [D]           113         [D]           114         [D]           115         [D]           116         [D]           117         [D]	ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	120.00 120.00 120.00	C C	Residential-CAT II Residential-CAT II	IBC 2012	1.15	
	12         [D]           13         [D]           14         [D]           15         [D]           16         [D]           17         [D]	ASCE 7-10 ASCE 7-10 ASCE 7-10 ASCE 7-10	120.00	c	Residential-CAT II	TRC 2012		
	113 [D] 114 [D] 115 [D] 116 [D] 117 [D]	ASCE 7-10 ASCE 7-10 ASCE 7-10	120.00	C		IDC 2012	1.15	
	14 [D] 15 [D] 16 [D] 17 [D]	ASCE 7-10 ASCE 7-10	120.00		Residential-CAT II	IBC 2012	1.15	
▲ ✓ T: ▲ ✓ T: ▲ ✓ T: ▲ ✓ T:	15 [D] 16 [D] 17 [D]	ASCE 7-10	120.00	с	Residential-CAT II	IBC 2012	1.15	
▲ ✓ T: ▲ ✓ T: ▲ ✓ T:	16 [D]		120.00	с	Residential-CAT II	IBC 2012	1.15	
▲ ✓ T: ▲ ✓ T:	[17 [D]	ASCE 7-10	120.00	С	Residential-CAT II	IBC 2012	1.15	
🔺 🖌 T		ASCE 7-10	120.00	с	Residential-CAT II	IBC 2012	1.15	
	[18 [D]	ASCE 7-10	120.00	с	Residential-CAT II	IBC 2012	1.15	
Physical Properties	Truss Loading W	Vind Loading on Trusses						_
iss Editor T3 - 30' Flo	oor Truss T3 (3)							
			<b>∧</b> ★   <b>№</b>					
* * * *			- ~ *					
Filter Bearings	× (0,0,4)	3575 24515 4151		Load Case No Load	Case Selected	<u> </u>		

Dockable window to easily review trusses and their properties.

further investigation.

#### FAST AND ACCURATE DESIGNS

By making the truss design and review process more efficient, Alpine® is helping customers reduce errors and turn around jobs more quickly. TPM helps highlight potential errors in the layout by presenting clear and actional information to the designer. It also reduces the time required to review trusses and avoid costly mistakes. This powerful tool is useful for all jobs, especially those

																Truss Editor T2 - 20								
	headerh	here to or	au by that col	-											D			× • 0						
					100	Tanad Linter						Math	Inc. 1			Select Filter descine		CED	1276 141010		i inte	and included	ana Garantan	
	19	-	EV.	Tea	4	4	4			6	0	1.01					112			_				-
	78	- 2	10	Tes	2		0		0	2	0		1											
	16	- 5	81	Tes	2		1		1	0	0			16										
	15	4	101	Tes	2		1		- 1	0	0		1	15		1.000				\$ . 2812				
	re.	4	19	res	112	26	28		28	0	0					1 10	2812 28	0,,200,,2	P12_1_2012	1	2812 3	2812_12812	in second	
	13	4	10	Tes	3	1	1			0	0		1	13										
•	1.25	1	80	Same Observe		-										The second second	<u> </u>	ベホ	~ ~ ~	177	* *		× *	
٠	717	1	(D)	Lang Tel													XIX	X	××,	K X	X	XIX	×4	
•	T36	1	\$26													- +								
•	T15	-	800	Orag a toka	ut header I	here to graup	by that colum									2								
•	T]4	1	50	Type	Status	Status Ind	In Leyour	1.6	od 🕶 Ta	a Qhy	Level L Qty		tr Le	el 1 Qty	Level 4 Qty	Leve -	- http://	- 28		1 mg .	1-1-1	-  - <sup> </sup> - -	287 -	
	110	1.5	20		1	01	Yes	19	19	6		0		0	6	1 P 2	** ***	He H	H 54, +	Priv	4 1+ 24	~ ~	H.H	
2	112	1.5	845		1	(H)	Tes	19	1 19	2		0		0	2									
	11	15	10	-	1	(P)	Yes	TS	1 75	2		1		1	0									
	#12		87	-	1	(1)	Yei	15	1 15	2				1	0						-			
		-	101		×	14	Yes			112	26	2		28	0	_					Bay			
					×	12	Tei	13	1 13	3	1	1		1	0						•	_		-
					1.5	Mo	d Loading or	Trusse	6										• ×					
					- 5	- 0	lasat Table												*					
				1 2	- 5	1													0					
					- 2														-					
							1000 0		10	10	4000 3.0		120.00	7,0,4	Chard David	Antibular Call	INC NO.	Loop Log Search	100					
					1			з.		241	1000 710		120.00			Antiburge CAT II	Inc. Mark		- 31					
					1			5	15	11	4508.3.0		120.00		6	Descented ( at 1)	10/ 3/42	1.15						
				-	1		-	5	15	24	ASCE 2-1		120.00		c	Reportal-CAT []	IRC 2012	1.15		1 1	1 1		1 H	
				63	0		-	÷	14	(14)	ASCE 7-3	0	120.00		c	Repdental-CK7 E	IBC 2012	1.15						
							-	4	12	10	ASICE 7-0	2	90.00		c	Resdental-CK7 E	IBC 2012	1.15	1					
								× .	T18	(0)	ASCE 7-1	6	120.00		c	Resdential CAT II	IBC 2012	1.15	3					
						_		٧.	717	(11)	ASCE 7-1	0	120.00		c	Residential-CAT II	IBC 2012	1.15	3					
								× .	T16	(0)	ASCE 7-1	0	120.00		с	Residential CAT II	18C 2012	5.15	3				0 0	
								× .	T15	(11)	ASCE 2-1	0	120.00		c	Residential-CAT II	18C 2012	1.15	2				0 0	
							-	٠.	114	321	4808 7-1	0	120.00		¢	Resdental-CAT II	IBC 2012	3.15						
								٠.	713	20	ASCE 7-3	0	120.00		¢	Residential CAT II	IBC 2012	1.15	2					
								٠.	112	35	AGOL 7-1	0	120.00		c	Resdential CAT II	BC 2012	1.15	2					
								٠.	718	006	ASCE 7-1		120.00		0	Reidertal CAT II	BC 2012	1.15	2					
							-	<u>*</u>	13	245	AGGE 7-0	4	20.00			Heseental-CAT II	INC 2012	1.15		1		-	-	
							60	0	M12	10	ADCE / O		70.00		c	RESOURCE CAT IS	ibc avei	1.15			_			
																			100					

Customized views for improved designer flexibility.

with a wide variety of truss profiles and loading conditions.

#### SAVE TIME WITH CUSTOMIZATIONS

Alpine® has recently developed value-added features to TPM that optimize the user experience. The tool can be customized to show only the columns each designer requires, and any filtering/sorting is saved for the next time it is opened. This saves the user time to achieve their preferred view and allows flexibility based on designer preferences.

Each user is able to save up to three different TPM views, with a unique customization for each window. The data from TPM can also be exported to an external text file or spreadsheet. All of this adds up to be a useful and customizable tool that makes the truss design process better.

#### **NEW HANGER MANAGER TOOL**

Paired with TPM is the Hanger Manager, which presents a similar interface for reviewing all hangers in the layout. This is a separate window, ensuring the required hardware associated with the job is available before producing and shipping it.

To learn more about how the Truss Property Manager can improve your design process, please contact info@alpineitw.com.

#### eSHOP 8.1 RELEASE



Supports Alpine & 3rd Party equipment (XML, LMP, Vector file format)

**Dashboard** works seamlessly with roof, floor, and wall stations

#### **Reduce manual entry** with

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

## WHEN INSTALLED CORRECTLY, STEEL JOISTS HELP CARRY THE LOAD

**Mark Robins** 

Senior Editor, Metal Construction News

Article courtesy of Metal Construction News

Steel joists are open-web, lightweight steel trusses consisting of parallel chords and a triangulated web system, proportioned to span between bearing points.

Steel joists provide direct support for the roof or floor deck, and transfer the load imposed on the deck to the structural frame's beams and columns. Typically comprised of hot-rolled or cold-formed steel (CFS) with yield strength of 50 ksi, steel joists are designed and constructed in accordance with standards developed by the Steel Joist Institute (SJI).

Many factors must be considered during the handling and installation of joists. These can include the size of the joists, the sheer quantity of joists, the height and reach of available equipment, and the need for temporary bracing. "Some joist installs have special requirements, such as requiring the application of loads to the joists before the bottom cords can be tied in," says Trent Tyler, field service technician, Chief Buildings, Grand Island, Neb. "Certified welders must be at the ready when connections require a final weld in lieu of a bolted connection. Strict adherence to the manufacturer's prescribed installation method is necessary to assure that it is structurally sound. When welding is required a verification process must also be in place to inspect welds and document all work is correct per plans and specs."



Photo courtesy of Alpine TrusSteel

Steel joist installations are primarily driven by the stability of the joist and its specific use in the overall structure. Joseph Voigt, PE, sales engineer at New Millennium Building Systems, Hope, Ark., explains OSHA 1926.757 must be followed when installing steel joists and the Steel Joist Institute's Technical Digest 9, "Handling and Erection of Steel Joists and Joist Girders," is an excellent resource for any steel erector.



Photo courtesy of Alpine TrusSteel

#### **JOIST GIRDERS**

Joist girders are primary structural members that are normally supported by columns but can also be supported by other structural elements. "They must be installed one at a time and the manufacturer is required to design the joist girder to be installed without the need for bridging during erection," Voigt says. "The bottom chords of joist girders extend past a vertical stabilizer plate at the column to help prevent overturning. Attachment of the bottom chord to the stabilizer plate should not be made unless specified on the joist placement plans or the contract documents."

#### **COLUMN JOISTS**

Joists bearing at steel columns that are not already framed in two directions are referred to as column joists, tie-joists, strut joists or OC joists. "Column joists must be field-bolted to the column to provide stability to the column during erection," Voigt says.



Photo courtesy of Cascade Manufacturing Co.

"When spanning over 60 feet, column joists must be set in tandem with an adjacent joist with all bridging installed unless an alternate method of erection is used that provides the same stability and is included in the site-specific erection plan (see OSHA 1926.752(e)). Where constructability doesn't allow a joist to be installed directly at the column, an alternate means of stabilizing the column joists shall be installed on both sides near the column (see OSHA 1926.757(a)(2))."



Photo courtesy of Cascade Manufacturing Co.

#### SHORT SPAN JOISTS-K-SERIES

"Short span joists can be landed in bundles if they do not require erection bridging (see OSHA 1926.757(d))," Voigt says. "All joists in the bundle must be oriented with the top chord up and tagends at the same end of the bundle. The joists in the bundle must also be the same length and they cannot be staggered lengthwise in the bundle. Joist bundles cannot be lifted by attachment to joist web members or bundle straps. Installers should land bundles on the structure near the center of the bay, ensure adequate bearing of the joists, and hold the cables clear from the bundle when releasing them so they don't get caught in the bundle."

#### BOLT-UP STYLE JOIST VERSUS TYPICAL WELD SEAT

Cory Baxter, president of Cory Enterprises Inc., Davidsonville, Md., explains joists with bolted seats can be erected while structural steel erection is taking place and will aide in plumbing and stabilizing of bays. "Joists with welded only seats need to wait until a bay is plumb and stabilized with guy wires before they should be erected. Depending on the bearing condition you may have, some joists at the SJI minimum of 2 1/2 inches of bearing are at a center beam line condition. This can create a dangerous condition if the joists have been set and structural steel needs to be moved to get columns plumb. An important note is all joists over 40 feet per OSHA are required to have slotted seats for erection bolts. This can be avoided/ worked around if the joists are being welded in place before the hoisting cables are removed and done one at a time."

#### JOIST HANDLING AND BRIDGING

According to Tyler, handling of bar joists is usually best when left in the bundles provided by the manufacturer as long as possible. "This will allow for safe storage and efficient movement around the job site. Granted there will be exception to this and breaking apart the bundles is always inevitable. It is always a best practice to always set bundles of joists on blocking for two reasons: to keep them clean and out of the dirt and to allow rigging to be attached without complications when install time comes. If possible, locate the bundles as convenient as you can for your hoisting of them into place. Most times a crane is used to place joists, but sometimes some form



Photo courtesy of Chief Buildings

of a telehandler or rough terrain fork lift is needed because of low overhead clearance issues or other site-specific conditions. Many criteria must be considered at every job site to be able to move and lift joists in a safe manner. Every job site will be unique."

In terms of actual joist spacing, Tim Liescheidt, PE, managing member of Advant Steel LLC, Midland, N.C., explains that designers will use the joist's published capacity to determine spacing required. "Normally red iron joists will be spaced further apart than a comparable CFS joist. For a project that requires red iron joists at 6 feet off center for instance, when it is converted to CFS might be required to be spaced 4 feet oc.

Spacing of the supporting structural element is critical because the support member is designed for a specific tributary area. If the support member spacing results in an area carried that is greater than what the member is designed for then the member cannot act as intended."

Joists should be secured at both ends before being released from rigging on either a full install or some other means of temporary bracing. After the joists are in place next comes the bridging for them and



Photo courtesy of New Millennium Building Systems



Photo courtesy of New Millennium Building Systems

it runs in the webs horizontally. This bridging ties one joist to the next and provides a means to set spacing, provide racking stability, and it keeps them in the proper position vertically.

Some joists require bolted diagonal erection bridging to ensure the joists remain stable during erection. "Erection bridging requirements vary by joist size and span, and the joist placement plans will indicate where it's required. OSHA 1926.757(c)(3) provides a table for erection bridging requirements for standard joists up to and including 60 ft. spans," Voigt says. "There are specific erection bridging requirements based on other span increments for joists longer than 60 feet, all outlined in OSHA 1926.757(d). Projects that require diagonal bridging may have several different bridging lengths due to joist spacing and joist depth differences, so organizing the bridging prior to erection will lead to a more efficient installation."



Photo courtesy of O'Donnell Metal Deck

"Bolted bridging is by far the guickest and safest for a project," explains Nick Weiss, senior project manager, O'Donnell Metal Deck, Elkridge, Md. "It can be installed before hoisting cables are released and will stabilize joist for bundles of decking to be set on. If there is additional welded horizontal, X, or uplift bridging it can be installed as decking crewing is working in another area on the job. Joists should also be plumb before bridging is tightened or welded in place. If not, this can create unintended lateral loads on the joists which could cause it to fail under a snow load, uplift, rooftop unit or other roof loads. From a supplier standpoint, bolted bridging is more expensive than traditional welded bridging due to the extra engineering, material, and fabrication time. So, it's a tradeoff like most things in construction but it can be a useful thing to know about when looking at a new project."

Liescheidt contends the construction industry is recognizing CFS Trusses are a viable alternative to bar joists in flat roof and floor applications. "Inquires and requests for budgeting have increased significantly but a smaller number of projects have actually been through redesign replacing red iron joists with CFS trusses. I have had conversations with many engineers where they are now specifying CFS trusses on new projects. Moving forward it seems CFS trusses will be another viable option for flat roof jobs where, prior to 2021, they were not. Using CFS trusses in flat roof applications also opens the opportunity for a non-combustible board to be used in place of metal deck. This can be a very appealing option to a building owner because standard metal deck has, in some cases, more than quadrupled in price. With the price and availability issues of red iron bar joists over the last year, as well as the development of the light gauge bar joist by Advant, the idea of using CFS trusses in flat roof applications is no longer a far-fetched idea, rather it is a cost-effective option with a much shorter lead time that can be used to keep a project moving!"

#### THE RISE OF CFS TRUSSES

CFS trusses historically have been utilized for pitched roof applications and floor trusses on mid-rise construction projects. Installing CFS trusses in joist type applications is common. The one major difference between steel joist and CFS truss installation is the attachment of the metal deck to the top chords.

"CFS trusses have always been a viable replacement product for steel joists yet historically the price point was not favorable due to the larger joist manufacturers being owned by steel producing mills," says David C. Dunbar, PE, TrusSteel national sales manager, Alpine TrusSteel, Orlando, Fla. "Then, in 2021 the demand for large warehouses and mega-retail distribution centers caused lead times for joists to approach and even exceed one year. Simultaneously, the price of steel rising by two to three times from prepandemic levels has made CFS trusses a competitive replacement product in most standard (K-Series, LH-Series) joist applications. Many steel joist applications have the deck attached via puddle welds which is acceptable due to the steel thickness of the chord material. Installing CFS trusses as a replacement for joists is not affected by the physical properties of the building. Delivering a detailed truss placement plan as part of the job-site package is another standard industry practice. Streamlined connection details for the truss to structure have recently been developed for ease of installation."

CFS trusses are lighter than bar joist and therefore may be easier to handle in the field. "They offer a wide range of joist bearing conditions that can be custom tailored to the specific project: top chord bearing, bottom chord bearing, mid chord bearing, plus options to weld or mechanically fasten connections," says Tim Noonan, president, Cascade Manufacturing Co., Cascade, Iowa. "The best application for CFS trusses as an alternate to bar joist are in spans of 60 feet or less. Depending on the span, CFS trusses will likely need more depth to accomplish the same span/spacing/load capabilities as bar joists, but involving a CFS truss designer up front can result in the optimal design for the particular application."

Liescheidt contends the construction industry is recognizing CFS Trusses are a viable alternative to bar joists in flat roof and floor applications. "Inquires and requests for budgeting have increased significantly but a smaller number of projects have actually been through redesign replacing red iron joists with CFS trusses. I have had conversations with many engineers where they are now specifying CFS trusses on new projects. Moving forward it seems CFS trusses will be another viable option for flat roof jobs where, prior to 2021, they were not. Using CFS trusses in flat roof applications also opens the opportunity for a non-combustible board to be used in place of metal deck. This can be a very appealing option to a building owner because standard metal deck has, in some cases, more than quadrupled in price.

With the price and availability issues of red iron bar joists over the last year, as well as the development of the light gauge bar joist by Advant, the idea of using CFS trusses in flat roof applications is no longer a far-fetched idea, rather it is a cost-effective option with a much shorter lead time that can be used to keep a project moving!"



Diagram courtesy of Chief Buildings

## WHY DO RISK CATEGORIES MATTER WITH WIND PRESSURES?

In the event of a building failure, the **risk categories** refer to the risk to human life.

**Risk Category I** has a low risk to human life, such as a barn. **Risk Category III** could impose a higher risk to human life, like a hospital. **Risk Category IV** is an essential facility and would pose a substantial hazard to the community, such as a hazardous waste or a chemical facility.

**Risk Category II** are all structures that do not fall under Risk Category I, III, or IV. Most often these are residential structures. The risk category that the structure falls in will determine which basic wind speed map would be used to find the correct wind speed and to calculate wind pressures, uplift reactions, and uplift connections. The higher the risk category, the higher the wind speed map.

The risk category should be clearly stated in the construction documents. If it isn't, contact the building designer.

William H. Krick P.E., Chief Engineer

## **RECOVERING A HIDDEN DIALOG WINDOW**

Clicking on an icon expecting the dialog window to open. Instead, nothing happens. This can happen for a few reasons, but is usually due to a multiple monitor setup.

#### How to Recover the Hidden Dialogue Window:

1. With the application active, select Shift + ALT + Spacebar.

For example: If the "Save Truss" dialog is missing, first click on the "Save" icon to activate the dialog window.

- 2. A dialog window will appear (refer to image).
- 3. Select the "Move" option. At this point, note that the cursor changes to a "Move" cursor.

Select Shift + ALT + Spacebar to view the dialog box

4. Use the arrow keys to move the window. Select any of the arrow keys from the

ø	<u>R</u> estore	
	Move	
	<u>S</u> ize	
_	Mi <u>n</u> imize	
	Ma <u>x</u> imize	
x	Close	Alt+F4
	nView Options	>

keyboard and the dialog window will move to the cursor allowing access to the dialog window once again. Next, click anywhere to place the window.

For software support, please contact our Help Desk team at 866.237.2878 or helpdesk@alpineitw.com

# 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.



BUILD MORE. alpineITW.com | 800.521.9790