

FALL 2026

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WHY PICK
ONE
HYBRID
BUILDING
TYPES

ROLLFORMING MAGAZINE SPECIAL SECTION

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STAY ANCHORED
CFS FOUNDATION
ATTACHMENTS

TRUSSES

THE BACKBONE OF EVERY BUILD

MULTI-FAMILY IS BOOMING
CFS IS LEADING THE CHARGE

Steel Market Watch:

Prices Stay High, Tariffs Keep Volatility in the Mix

Steel pricing remains elevated and volatile heading into fall 2026, with tariff policy the main driver. As of June 2026, U.S. hot-rolled coil (HRC) was trading around \$1,105–\$1,208 per metric ton, having broken above \$1,000/ton earlier in the year — a level not seen consistently in years. By comparison, Chinese HRC ran closer to \$429–\$474/ton and European HRC \$780–\$850/ton, underscoring how much U.S. trade policy is propping up domestic prices.

Federal Reserve data (FRED, sourced from BLS) confirms the trend: the Producer Price Index for Iron and Steel Mills and Ferroalloy Manufacturing jumped from 270.1 in March 2026 to 308.4 in July 2026 — a 14% rise in four months.

Tariffs are the clearest cause. Section 232 steel and aluminum duties rose from 25% to 50% in mid-2025, and an April 2026 rule extended tariffs to the full customs value of derivative steel products, not just embedded metal value. The effect on trade flows has been sharp: U.S. steel imports fell 26% by volume from January–May 2026 versus the same period last year, and lead times on some products stretched to six to eight months, a multiyear high.

What it means for builders: Lock in pricing during favorable windows, get quotes with clear Incoterms so landed cost (freight, duties, fees) is transparent, and build extra lead time into schedules given ongoing mill capacity constraints. **MB**

SOURCES & RESOURCES

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- Cato Institute, “Steel Prices Rise (Again) Amid Persistent US Tariffs”: cato.org/blog/steel-prices-rise-again-amid-persistent-us-tariffs
- Yansheng Steel, “Steel Prices: Complete Guide for Industrial Buyers in 2026”: yshsteel.com/steel-prices-guide-2026
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- Colony Construction, “2026 Steel Tariffs and What They Mean for Your Industrial Build Costs”: colonyconstruction.com/2026-steel-tariffs-industrial-build-costs



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Holding It All Up (Without Losing Your Cool)

Fall means harvest, football, and — if you're in this industry — cold-formed steel starting to feel like the only material that makes sense in a world that keeps throwing curveballs at builders. This issue is a bit of a structural biography of a project, from the bones on up.

We start with trusses, the unsung skeleton of every metal building, quietly doing the heavy lifting while everyone else admires the exterior. From there we go underground — sort of — with CFS foundation attachments, because a building is only as trustworthy as what it's standing on. Turns out there's drama to be had below grade, too.

Next we head into hybrid territory: buildings that blend CFS with other materials, proving that the industry's favorite framing material plays well with others. It's less "steel vs. everything" and more "steel and everything," which is honestly the more mature approach.

Naturally, none of this happens in a vacuum. Local codes and regulations show up like an uninvited but necessary guest at every project's table. We walk through what that means today, because "check with your local jurisdiction" is a sentence editors love writing and nobody loves reading — but here we go anyway.

And to close things out, we look at CFS design options for multifamily residential, because apparently CFS didn't get

the memo that it was supposed to stay in its agricultural and commercial lane. Multifamily is calling, and CFS is picking up.

So pour a coffee, settle in, and let's talk trusses, footings, hybrids, code books, and apartment buildings — proof that this industry never runs out of new ground to cover, even when it's the same steel doing it. As always, thanks for reading, and for building.

— Kathleen Riley



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Correction: In the Summer 2026 issue of Metal Builder, the photographer for the image featured on page 6 in the Go Big or Go Home article was inadvertently omitted. The photo credit should go to Schweiss Doors. (<https://www.bifold.com/>) We regret the error and are happy to set the record straight.



On the cover: Image Courtesy Schweiss Hydraulic and Bifold Doors - www.bifold.com

Holding It All Together

What Builders Need to Know About Trusses for Metal Buildings



Every metal building, from a backyard workshop to a mile-long distribution center, comes down to the same basic promise: the roof has to stay up. The framing member that makes good on that promise, more often than not, is a truss. Trusses take the loads a roof carries—its own weight, snow, wind, mechanical equipment, the occasional curious raccoon—and translate them into forces the frame and foundation are built to handle. Get the truss system right, and a building shrugs off a Midwest blizzard or a Gulf Coast gale without a second thought. Get it wrong, and no amount of good panel work will save the project.

For builders working in metal, the truss conversation has changed a great deal in the last generation. Wood truss shortages, rising lumber prices, and a steady stream of engineering advances in cold-formed and structural steel have pushed more post-frame, pole-barn, and pre-engineered building projects toward steel truss systems — either as red iron primary frames or as lighter cold-formed steel (CFS) trusses used in place of wood. This article walks through what a truss actually does, the systems available to

today's metal builder, and the questions worth asking before a project ever breaks ground.

WHAT A TRUSS ACTUALLY DOES

Strip away the jargon and a truss is simply a rigid framework of straight members — chords and webs — arranged into triangles. Triangles don't deform under load the way a four-sided shape will, which is why trusses have been the backbone of bridges, barns, and grandstands for well over a century. In a metal building, the top chord typically follows the roof slope, the bottom chord runs horizontal (or nearly so) to form the ceiling line, and the web members in between — verticals and diagonals — transfer load from the top chord down to the columns or side walls.

Every member in a properly engineered truss is doing one of two jobs: pushing (compression) or pulling (tension). Engineers size each member and each connection to handle its share of the load, whether that load comes from snow sitting on the roof, wind trying to lift the roof off, or the dead weight of the structure

itself. That's the technical heart of truss design, and it's also why truss engineering isn't a place to guess. Loads, spans, and connections must work together and satisfy the building code governing the job site.

FRAME SYSTEMS: RIGID FRAME, TRUSS FRAME, AND BAR JOIST

Not every metal building relies on the same structural approach, and the terminology can get confusing fast. Broadly, metal buildings use one of a few primary framing strategies:

- Rigid frame (clear-span) buildings use tapered or straight structural steel columns and rafters welded into a single continuous frame. This is the classic pre-engineered metal building (PEMB) approach and remains the standard for wide, column-free spans.
- Truss frame buildings replace the rafter portion of the frame with a separately engineered truss—often built from back-to-back cold-formed C-sections or angle members bolted through connector plates.

According to Simpson Steel, a truss-frame builder, the truss itself is a triangular structure built from red iron C-members bolted back to back through steel plates, distinct from the scissor-style truss sometimes used to replace a single beam.

- Open web steel joists (bar joists) are lightweight, parallel-chord steel trusses commonly used to support roof or floor decking between primary beams and columns, especially on commercial and light-industrial projects.
- Cold-formed steel (CFS) trusses use light-gauge, roll-formed steel members—the same general family of material as steel wall studs—engineered and fabricated specifically as a wood-truss replacement, most often for post-frame, agricultural, and residential-style metal buildings.

Each of these has its place. A distribution warehouse wants the wide-

open clear span of a rigid frame. A pole barn or agricultural building converting from wood construction is often the best fit for a CFS or angle-iron truss frame. Choosing between them comes down to span, budget, occupancy, and what the local truss or building supplier can deliver on schedule.

THE CASE FOR STEEL OVER WOOD

The shift toward steel trusses on post-frame and pole-barn projects has been driven as much by the supply chain as by engineering. Lumber price swings and the availability of wide, high-grade truss stock have made wood trusses a moving target for builders trying to hold a bid. Steel, by comparison, offers more predictable pricing and lead times, along with performance advantages that matter once the building is standing.

Builders who have made the switch describe the labor savings bluntly.

Part of that labor savings comes down to spacing. Wood trusses are typically installed on two-foot centers. In contrast, angle-iron and CFS steel trusses can often be spaced ten to twelve feet apart, cutting the number of trusses, posts, post bases, and concrete needed for a given building footprint. Fewer pieces to set means fewer hours on the lift and a faster path to a dried-in building.

Steel also solves problems wood can't. Cold-formed steel doesn't warp, twist, check, or rot, and it isn't a food source for termites or carpenter ants — all recurring headaches in wood-frame agricultural buildings. Because steel is non-combustible, CFS trusses maintain their properties through the life of the building in a way wood cannot, and properly protected steel assemblies can hold their integrity at high temperatures for extended periods, buying critical time in a fire event. For builders in wildfire-prone regions especially, roof assembly



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performance has become a bigger part of the sales conversation than it used to be.

INLINE VS. BACK-TO-BACK: HOW CFS TRUSSES ARE BUILT

Cold-formed steel trusses are generally fabricated one of two ways, and the choice affects everything from transportation to the job-site safety plan.

Inline Truss

- Members are formed and connected in a single plane, which keeps the truss easier to manufacture, transport, and set.
- Inline trusses tend to sit well on top of the wall line without needing temporary bracing during erection, which crews generally consider the safer option to install.

Back-to-Back Truss

- Two C-shaped members are nested or fastened back to back, requiring less tooling and often faster to produce.
- This method uses less material and can be engineered for longer spans. Still, the cut edges require more on-site care, and the truss typically needs bracing during erection until permanent sheathing or purlins are in place.

Neither approach is universally “better” — the right choice depends on span, budget, and the fabricator’s equipment. What matters for the builder is knowing which type is showing up on the truck, because bracing requirements and erection sequencing differ between the two.

ENGINEERING, LOADS, AND THE CODE CONVERSATION

A truss package is only as good as the loads it was designed for, and metal building framing in the United States is generally engineered against the Metal Building Systems Manual published by the Metal Building Manufacturers Association (MBMA), together with the loads specified in the International Building Code and ASCE 7. Primary frames, secondary members like purlins and girts, and the roof and wall cladding all work together as a single interdependent system — which is exactly why MBMA guidance stresses working with an

accredited, single-source manufacturer rather than mixing structural components from unrelated suppliers.

For the builder standing on site, that translates into a short list of questions worth asking before a truss package ever arrives:

- What ground snow load, wind speed, and exposure category was this truss package designed for, and does that match the actual job-site location?
- Is the truss spacing shown on the layout drawing what’s actually being shipped, and has the purlin or girt spec been coordinated to match?
- Who stamped the engineering, and is that engineer licensed in the state where the building will stand?
- What bracing is required during erection, and is it called out on the drawings rather than left to the crew’s judgment?

None of these questions are exotic. They’re the same due-diligence items a good builder already asks about any structural package — but truss systems, because they carry the entire roof load down to the foundation, are an especially expensive place to guess.

CHOOSING THE RIGHT SYSTEM FOR THE JOB

There’s no single “best” truss for a metal building; there’s only the best truss for the building in front of you. A few practical factors tend to drive the decision:

- Span and layout: wide, column-free interiors favor a rigid clear-span frame; standard bay spacing on an ag building often favors a CFS or angle-iron truss.
- Local supply and lead time: some regions have strong wood-truss suppliers and thin steel-truss capacity, or vice versa, and lead time can outweigh a modest cost difference.
- Fire, wind, and insurance considerations: non-combustible CFS framing is increasingly part of the sales conversation in wildfire-exposed regions and can affect insurance pricing.
- Labor and equipment on hand: wider

truss spacing and lighter-weight steel members can reduce crew size and time on the lift, which matters most for builders already stretched thin on skilled labor.

- Total installed cost, not just material cost: fewer trusses, fewer posts, and less concrete can offset a higher per-piece steel price.

Whatever system ends up on the layout drawing, the fundamentals don’t change: the truss has to be engineered for the actual loads the building will see, fabricated to the drawings, and erected with the bracing the engineer specified. Trusses rarely get the glamour of a striking façade or a slick door package, but they’re the reason everything above the wall line stays exactly where it’s supposed to be.

MB

RESOURCES

- Superior Trusses LLC – (717) 721-2411 – superiortrusses.net
- Buffalo River Truss LLC – (931) 589-2386 – buffalorivertruss.com
- Baumeister Equipment Sales LLC – (717) 443-0015 – truss component equipment (Jack Table, truss stacker, floor truss chord splicer)
- Eagle Metal Products – (800) 521-3245 – eaglemetal.com – connector plates and TrueBuild® truss design software
- Graber Post Buildings, Inc. – (800) 264-5013 – graberpost.com – engineered wood trusses up to 100’ clear span
- Rigidply Rafters – (717) 866-6581 – rigidply.com – glue-laminated posts and rafters
- APM Building Materials – (717) 677-6161 – apmbuildings.com – posts, trusses, and metal roofing
- SmartBuild Systems – (303) 579-6277 – smartbuildsystems.com – post-frame design software with truss layout and spacing tools
- FRAMECAD – framecad.com – cold-formed steel (CFS) truss systems
- Maze Nails – mazenails.com – fasteners for truss and post-frame construction

Best of Both Worlds

Building Hybrid Structures with Cold-Formed Steel

How pairing CFS with wood, timber, concrete, and masonry gives builders more ways to solve the same old problems—span, budget, code, and curb appeal.

For decades, the metal building conversation tended to sort itself into two camps: all-steel or not-steel-at-all. That line has been blurring for years, and in 2026 it's practically gone. Across barndominiums, agricultural buildings, mixed-use retail, and mid-rise housing, builders increasingly specify cold-formed steel (CFS) alongside wood framing, mass timber, concrete, and masonry in the same structure—not as a compromise, but as a deliberate strategy to get the best performance from each material.

Hybrid construction isn't new. What's changed is how mainstream it has become, and how much engineering and product development now supports it.

WHAT "HYBRID" ACTUALLY MEANS

In a hybrid steel building, cold-formed steel typically forms the primary structural frame—legs, trusses, or a load-bearing skeleton—while a second material fills envelope, interior, or secondary-framing roles. The most common version pairs a steel primary structure with wood-framed elements: wood girts and purlins attached to steel clips, wood interior partitions inside a steel shell, or steel trusses over a wood-framed lower level.

Industry resources describe this as a hybrid steel building that combines a steel primary structure with other materials such as wood framing, masonry, or concrete, often using steel for the central load-bearing system. In contrast, wood handles interior walls or exterior finishes.

Other hybrid pairings are gaining ground too. Cold-formed steel is increasingly combined with cross-laminated timber (CLT) and other mass-timber products in mid-rise projects, where CFS provides lateral bracing or infill framing between timber structural elements. In larger commercial or multi-story work, steel framing is often paired with concrete—steel studs and track set on a concrete podium, or steel infill framing supporting concrete

floor and roof assemblies.

WHY BUILDERS ARE MIXING SYSTEMS

Speed and Labor

One of the clearest incentives is schedule. CFS components arrive dimensionally consistent and pre-punched for utilities, which speeds framing regardless of what's built around it. Pairing steel with wood framing lets crews keep familiar wood-trade workflows for interior work — cutting, nailing, finish carpentry — while the steel skeleton carries the structural load. That division of labor can shorten the learning curve on a jobsite where not every trade is steel-fluent.

Cost and Material Efficiency

Steel framing costs have narrowed the historical price gap with wood in many markets, but material costs still swing with lumber and steel pricing cycles independently of each other. A hybrid approach gives builders and estimators a hedge: steel where its strength-to-weight ratio and span capability pay off, wood or other materials where they're more cost-effective or easier to finish.

Performance and Code

Steel doesn't burn, rot, warp or feed termites, which is a major reason it shows up as the structural backbone in hybrid systems even when other materials fill the envelope. Cold-formed steel buildings are engineered to meet wind, snow and seismic requirements under the International Building Code, and AISI S100 standards, and using steel for the primary frame gives designers a predictable, code-friendly structural baseline to build the rest of the assembly around.

Fire performance is also a growing driver on the mass-timber side of the hybrid conversation. Combustible mid-rise construction has drawn scrutiny after a string of high-profile fires in wood-framed buildings under construction, which is part of why cold-formed steel is being specified alongside timber and CLT products in taller, denser projects — steel picks up bracing, shafts and other roles where non-combustibility matters most.



SOURCES

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- MGT Enterprise, “Hybrid Metal Framing for Smarter, Sustainable Construction”: mgtenterprise.com
- BuildWay, “Are Cold-Formed Steel Buildings Still Worth It in 2026?”: buildway.com
- U.S. Department of Housing and Urban Development / NAHB Research Center, “Hybrid Wood and Steel Details — Builder’s Guide”: huduser.gov
- Steel Framing Industry Association (SFIA), including CFSEI technical resources: steelframing.org
- WoodWorks, “Understanding Mass Timber and Cold-Formed Steel Hybrid Construction”: woodworks.org

Design Flexibility

Wood framing inside a steel shell gives architects and homeowners a more familiar palette to work with — conventional trim, cabinetry attachment, and interior finishes — without giving up the steel structure’s clear-span capability and durability. That combination is a big part of why hybrid systems have become the go-to choice for barndominiums and other residential-style post-frame or steel buildings, where owners want steel’s strength but wood’s warmth.

WHERE ENGINEERING GETS REAL: MANAGING THE MIX

Combining materials means combining their quirks, and the engineering literature is blunt about where hybrid assemblies need extra attention:

- Differential movement. Steel and wood expand, contract, and respond to moisture at different rates. Connections between the two need slip joints, isolators, or engineered tolerances so the assembly can move without cracking finishes or loosening fasteners.
- Thermal bridging. Steel conducts heat roughly ten times faster than wood, so where steel framing members pass through the building envelope, the insulation strategy must account for that conductivity or risk condensation and energy loss.
- Fastening and connection design. Screws and plates connecting steel to wood or timber must be sized and placed to avoid splitting the wood member or overloading the steel — a detail that’s driven the development of dedicated hybrid connector hardware and published connection guides.
- Dissimilar-metal corrosion. Where aluminum components meet steel — trim, flashing, fasteners — isolators or buffer layers are needed to prevent galvanic corrosion between the two metals.

This is not guesswork territory. The U.S. Department of Hous-

ing and Urban Development and what’s now the Steel Framing Industry Association (SFIA) — formed when the Cold-Formed Steel Engineers Institute joined SFIA in 2023 — have published builder’s guides specifically cataloging tested hybrid wood-and-steel connection details, developed in response to the lack of standardized options for builders who wanted to mix the two materials.

WHERE HYBRID SYSTEMS ARE SHOWING UP

- Agricultural and light-industrial buildings that pair steel primary framing with wood girts and purlins for straightforward insulation and finish-out.
- Barndominiums and residential post-frame buildings, where steel provides the shell and clear span while wood interiors keep the look and feel conventional.
- Mixed-use and retail buildings that combine steel-framed structure with masonry or concrete facades to meet local design or zoning requirements.
- Mid-rise multifamily and commercial projects using CFS in combination with mass timber or concrete podiums, where steel handles bracing, infill framing, or upper-level structure.
- Modular and offsite construction, including bathroom pods and volumetric modules, where CFS’s dimensional precision pairs well with factory-finished non-steel components.

THE BOTTOM LINE

Hybrid construction isn’t a hedge against choosing steel — it’s steel doing the job it’s best at while another material does the same. For builders willing to manage the connection details, the payoff is a structure that can flex to meet budget, code, timeline, and aesthetic goals at once, which is likely why hybrid systems keep showing up more often on the drawing board. **MB**

RESOURCES

- Marion Manufacturing — marionmanufacturing.com
- Aztec Washer Company — aztecwasher.com
- Golden Rule Fasteners, Inc. — goldenrulefastenersinc.com
- Everlast Roofing, Inc. — everlastroofing.com
- SteelGrip SAMM, Inc. — steelgripsamm.com
- ASC Machine Tools, Inc. — ascmt.com
- Coil Spot — coilspot.com
- Red Dot Products — reddotproducts.com
- Acu-Form Equipment — acuformequipment.com
- Direct Metals, Inc. — directmetalsinc.com
- Creekside Manufacturing — creeksidemanufacturing.com
- American Garage Door Factory — americangaragedoorfactory.com
- Rib Runner Tools — ribrunnertools.com
- Grandura — grandura.com
- Stockade Buildings, Inc. — stockadebuildingsinc.com
- Cold Spring Metal — coldspringmetal.com
- Polesaver — polesaver.com

Building Smarter, Building Better

CFS Design Options for Multi-Family Residential



Cold-formed steel (CFS) is common in multi-family construction and offers clear advantages over traditional materials.

Cold-formed steel is not new; it has been used in commercial interior framing for decades. The industry now recognizes its structural potential, with designers, developers, and contractors selecting CFS as a primary system for buildings up to ten stories. The results are notable, and the economic benefits merit careful evaluation.

This issue examines CFS design options for multi-family construction. Before reviewing key systems and details, we clarify why CFS is a leading choice for efficiency, precision, sustainability, and speed. You will see how structural systems compare and gain insights to support your project discussions.

WHY CFS FOR MULTI-FAMILY? THE CASE IN PLAIN ENGLISH

Why select cold-formed steel over other systems? While wood, concrete, and

hot-rolled steel are viable options, CFS offers design flexibility, reduced weight, and faster construction, supporting project goals for efficiency, budget, and performance.

Precision That Wood Can't Match

CFS members are manufactured to precise dimensional tolerances, eliminating shrinkage, warping, and seasonal moisture movement. In multi-family buildings with repetitive unit layouts, this consistency enables faster installation, fewer coordination issues, and reduced rework. All trades benefit from stable framing, resulting in more predictable scheduling and project delivery.

Fire Resistance Built In

Steel is non-combustible. In buildings where code requires fire separation, CFS framing offers clear advantages. When combined with appropriate sheathing and insulation, CFS meets fire-resistance ratings required by the IBC for Type III and Type I buildings, which is especially beneficial in high-density designs.

Faster Scheduling

CFS framing can be prefabricated as panelized assemblies, which we will discuss in detail later. Panels constructed in a controlled environment and installed by a coordinated field crew can significantly reduce framing schedules compared to traditional methods. Faster schedules directly translate into cost savings when financing is involved.

Sustainability Credentials

Steel is the most recycled material globally. CFS typically contains at least 25% recycled content and is fully recyclable at the end of life. Using CFS can help developers earn LEED points and appeal to sustainability-focused tenants. Highlight these advantages in your marketing materials.

THE MAIN CFS STRUCTURAL SYSTEMS: A PRACTICAL OVERVIEW

CFS structural systems vary in suitability. Selecting the right system depends on project height, floor plate

size, local market, and objectives. This overview will help you identify the most appropriate system for your needs.

1. Load-Bearing CFS Wall Framing

This is the primary structural system for CFS multi-family construction. Load-bearing CFS walls use steel studs spaced at 16 or 24 inches on center to transfer vertical loads to the foundation. This code-compliant system works well for buildings up to four to six stories.

How it works: Gravity loads transfer from the floor sheathing through horizontal steel tracks to the steel stud framing below. Shear walls resist lateral loads from wind or earthquakes and are reinforced with structural panels, steel strapping, and specialized fasteners to prevent movement.

Where it works best: Suitable for low- to mid-rise buildings, garden-style apartments, townhomes, and affordable housing with strict budgets. Most general contractors and framers are familiar with this system, resulting in competitive bids and efficient execution.

Watch out for: Load-bearing CFS wall systems require close coordination between the structural engineer and architect. Bearing walls must align vertically throughout the building. Changes in unit layouts between floors increase complexity and cost because of transfer-framing requirements.

2. CFS Moment Frames

For open floor plans with fewer walls, such as ground-floor amenities, parking podiums, or lobbies, CFS moment frames provide lateral resistance without requiring shear walls in every bay. Moment frames rely on specialized beam-to-column connections for bending resistance rather than shear panels.

How it works: Rigid or semi-rigid connections between CFS columns (vertical steel members) and beams (horizontal steel members) create a frame designed to flex and absorb lateral forces. The AISI S400 standard, which is a set of guidelines from the American Iron and Steel Institute, defines the design and approval requirements for CFS lateral systems, including moment frames.

Where it works best: Ideal for mixed-use buildings requiring open ground floors or where wall flexibility is limited by shear wall placement.

Watch out for: CFS moment frame connections require specialized detailing and fabrication. Not all framing contractors have the necessary experience, so subcontractor qualifications matter more than with standard load-bearing systems.

3. CFS Structural Panels (Prefabricated / Panelized)

Panelization has become a significant advancement in CFS construction over the past decade. Instead of assembling walls on site, panelized CFS involves fabricating

wall sections, including headers, rough openings, and sometimes sheathing and insulation, in a factory. These panels are then shipped to the site for installation.

How it works: Specialized companies, known as design-build panelizers, use the project's digital BIM model to create shop drawings and fabricate panels in their facilities. This approach allows an entire apartment floor to be constructed and installed much faster than traditional stick framing.

Panelization is most effective for highly repetitive building designs, maximizing efficiency. It also benefits urban infill projects with limited site access due to its just-in-time delivery model.

Watch out for: Panelization requires early coordination among the architect, structural engineer, and panelizer. Changes after fabrication begin are costly. Early design discipline is essential, while late changes incur significant penalties.

4. CFS Over Podium Structures

Wood-over-podium and concrete-podium structures are common in multi-family development. CFS is a strong alternative for upper floors. A CFS-over-podium building combines a concrete or precast podium base with cold-formed steel framing above.

How it works: The concrete podium functions as a rigid diaphragm, providing lateral resistance for the structure. The CFS residential floors above are supported

At A Glance: CFS System Comparison

SYSTEM	TYPICAL HEIGHT	BEST FOR	KEY ADVANTAGE	KEY CHALLENGE
Load-Bearing Walls	2-6 stories	Garden-style, affordable housing	Familiar, competitive	Vertical alignment required
Moment Frames	2-6 stories	Open ground floors, mixed use	Design flexibility	Specialized connections
Panelized CFS	2-8 stories	Repetitive plans, tight sites	Speed, quality control	Early coordination critical
CFS over Podium	4-8 stories	Urban infill, mixed-use	Non-combustible above podium	Podium interface detailing
Hybrid CFS/HR Steel	8+ stories	High-rise, seismic zones	Scalable lateral system	Multi-trade coordination

by load-bearing walls and CFS floor framing systems, including open-web joists and deep-leg floor trusses spanning between the bearing walls.

Where it works best: Suitable for urban infill, transit-oriented development, and mixed-use projects requiring density and a commercial ground floor, in many markets, CFS-over-podium competes with wood-over-podium, offering superior fire and dimensional stability.

Watch out for: The connection between the concrete podium and the CFS above requires detailed attention, including waterproofing, lateral load transfer, and vertical load path. The design documents must thoroughly address this technical zone.

5. Hybrid CFS and Hot-Rolled Steel Systems

For taller buildings, typically eight stories or more, a hybrid approach is often optimal both structurally and economically. These systems use a hot-rolled steel or concrete core for lateral resistance, while CFS framing supports gravity loads in perimeter walls and interior partitions.

How it works: The hot-rolled core (a central structure made from thicker, hot-shaped steel) houses elevators, stairs, and vertical shafts, and acts as the primary lateral force-resisting system. Around this core, cold-formed steel (CFS) perimeter and corridor walls support gravity loads (weight from floors and roofs). Special connector elements join these walls to the core, helping transfer forces such as wind or earthquakes safely through the structure.

Where it works best: Recommended for mid- to high-rise residential buildings in seismic zones where a pure CFS lateral system is cost-prohibitive. It is also suitable for buildings with complex geometry where CFS-only layouts are inefficient.

Watch out for: Hybrid systems require close coordination between the hot-rolled steel fabricator and the CFS framing contractor. Connection details must be clearly documented in the construction documents to prevent omissions and job site conflicts.

THE BIM ADVANTAGE: WHY CFS AND DIGITAL COORDINATION ARE MADE FOR EACH OTHER

CFS manufacturers and panelizers have been among the most enthusiastic adopters of building information modeling in the construction industry. CFS is a dimensionally precise, repetitive, highly engineered product—exactly the kind of system that benefits most from digital coordination.

Modern CFS design software (products like FRAMECAD, Vertex BD, and proprietary panelizer platforms) can take a BIM model and generate fabrication files with minimal manual intervention. That data flows directly to roll-forming equipment, where CFS members are cut to exact lengths and punched with service penetrations before they ever leave the factory. The result is a level of precision that traditional framing methods can't approach.

For the design team, this means that investing in a well-coordinated BIM model early in the project has measurable downstream value. Clash detection between CFS framing and MEP systems can be resolved in the model before the first panel is fabricated — rather than in the field, where changes are slower and more expensive. Contractors who have embraced this workflow consistently report fewer RFIs and fewer field coordination conflicts.

If you're evaluating CFS for the first time, ask prospective panelizers and framing contractors about their BIM capabilities early in the process. The sophistication of their digital workflow is often a reliable proxy for the overall quality of their execution.

Contractors who invest in BIM coordination for CFS projects consistently report fewer RFIs, fewer field conflicts, and tighter schedules. Digital precision upstream pays dividends on the job site.

CODE COMPLIANCE AND ENGINEERING STANDARDS: WHAT YOU NEED TO KNOW

A well-developed set of standards, refined over decades, governs cold-formed steel design. For anyone working with

CFS for the first time, understanding the basic framework will help you ask the right questions of your structural engineer.

KEY CFS STANDARDS AT A GLANCE

- AISI S100 — North American Specification for the Design of Cold-Formed Steel Structural Members
- AISI S240 — North American Standard for Cold-Formed Steel Structural Framing
- AISI S400 — North American Standard for Seismic Design of Cold-Formed Steel Structural Systems
- AISI S202 — Code of Standard Practice for Cold-Formed Steel Structural Framing
- IBC Chapter 22 — Steel (references AISI standards by incorporation)

The American Iron and Steel Institute (AISI) publishes and maintains the primary CFS design standards. The S100 specification covers member design — how to size studs, tracks, and other individual members for the loads they'll carry. S240 addresses framing systems and connections in a broader assembly context. S400 specifically addresses seismic design, which has become increasingly important as CFS buildings are rising taller in high-seismic regions.

One development worth highlighting: the AISI standards committee has been actively expanding the pre-engineered prescriptive tables in S240, which allow framing contractors to select member sizes from tables without requiring a full engineering analysis for every wall. This makes CFS more accessible for straightforward projects and reduces the engineering cost burden on smaller jobs.

For projects in seismic design categories D, E, and F — essentially most of the Western U.S. — S400 governs the design of the lateral system. CFS special bolted moment frames (SBMFs) and CFS shear walls with specific sheathing configurations are among the tested, pre-qualified systems that satisfy S400 requirements. If your project is in a high-seismic zone and your structural engineer hasn't specifically designed CFS lateral systems before, make sure you're

comfortable with their CFS experience before proceeding.

COMMON PITFALLS (AND HOW TO AVOID THEM)

For all its advantages, CFS construction can trip up teams that are new to it. Here are the mistakes we see most often and how to prevent them.

Underestimating Coordination Requirements

CFS structural systems require tighter upfront coordination than many teams expect. Lock down load-bearing wall layouts before MEP rough-in. Panelized systems require a final design before fabrication begins. Projects that try to run CFS fabrication in parallel with an evolving design often pay for those changes in both dollars and schedule.

The fix: explicitly build coordination milestones into your project schedule. Assign clear responsibility for who owns the CFS BIM model and who has the authority to release fabrication. Don't start fabrication until the design is actually complete — not "pretty close."

Skimping on the Structural Engineer's CFS Experience

Not all structural engineers have the same level of CFS experience. In markets where wood framing dominates, some engineers design CFS projects infrequently and may not be up to date on the latest standards or detailing best practices. This can result in overly conservative designs that drive up material costs, or — worse — details that create field problems.

The fix: ask your structural engineer how many CFS multi-family projects they've completed in the past three years. Request references from similar project types and check them. The AISI website maintains a list of licensed engineers who have completed CFS-specific training, which can be a useful starting point.

Poor Subcontractor Selection

CFS framing, especially panelized and structural CFS, requires a contractor with specific equipment, skills, and quality control processes. Awarding the work to the lowest bidder without verifying their

CFS credentials is a common mistake that often surfaces during construction in the worst possible ways.

The fix: develop a short list of qualified CFS contractors in your market and invite only them to bid. For panelized work in particular, a site visit to the fabrication facility is worth the time. Ask to see their quality control documentation and their process for tracking panel installation in the field.

NEGLECTING THERMAL PERFORMANCE

Steel is a good conductor of heat, so CFS wall assemblies are susceptible to thermal bridging—the transfer of heat through the steel studs, which short-circuits the insulation in the cavity. In climate zones with stringent energy codes, a CFS wall without adequate continuous exterior insulation can fail to meet energy compliance requirements, even with full-cavity insulation.

The fix: involve your envelope consultant or energy modeler early. Continuous exterior insulation—typically rigid mineral wool or polyisocyanurate board—is the standard solution and must be accounted for in both the structural design and the exterior cladding attachment details.

LOOKING AHEAD: WHERE CFS IS GOING

The trajectory for CFS in multi-family residential is clearly upward. A few trends are worth watching as the market evolves.

- **Taller buildings:** As seismic design standards mature and hybrid systems become better understood, expect CFS to rise into the 10- to 15-story range in more markets. Combining CFS perimeter framing with a concrete or hot-rolled steel lateral core is a proven approach that will see wider adoption.
- **Modular and volumetric construction:** CFS is a natural partner for volumetric modular construction, where entire room modules are fabricated off-site and stacked on location. Several manufacturers now offer modular CFS systems that can achieve significant schedule compression for the right

project type.

- **Digital twin integration:** The precision of CFS fabrication data makes it an ideal candidate for digital twin applications, where a model captures as-built conditions and supports building operations and future renovations. Forward-thinking developers are beginning to view CFS's BIM-native characteristics as a long-term asset-management advantage.
- **Sustainability reporting:** As Environmental Product Declarations (EPDs) and whole-building lifecycle assessments become more prevalent in project requirements, CFS's high recycled content and recyclability will be increasingly documented and valued in the market.

THE BOTTOM LINE

Cold-formed steel isn't a niche choice for multi-family residential construction anymore. It's a mainstream structural option that deserves to be on the evaluation list for virtually any project in the three-to-twelve-story range. The systems are proven, the standards are mature, and the contractor base — while still developing in some markets — is growing.

What separates successful CFS projects from frustrating ones isn't the material — it's the preparation. Teams that invest in early coordination, select experienced engineers and contractors, and embrace the digital workflows that CFS enables consistently report strong results. Those who treat CFS as a drop-in replacement for wood framing without adjusting their process tend to encounter the pitfalls we've described.

The good news: the information, the standards, and the experienced practitioners are out there. If this article has you thinking more seriously about CFS for your next multi-family project, the next step is a conversation with a CFS structural engineer and a qualified framing contractor. Ask hard questions. Look at comparable projects. And then build something worth writing about. **MB**

For more information on CFS design resources, visit the American Iron and Steel Institute at steel.org

Anchoring Success

Foundation Attachment Systems for Cold-Formed Steel

VASILY ULYANOV-STOCK.ADOBE.COM

The connection between a cold-formed steel building and the ground beneath it rarely gets the spotlight — but get it wrong, and nothing else about the structure matters.

Cold-formed steel (CFS) has earned a permanent place in the metal building industry's toolkit. Roll-formed studs, tracks, and trusses go up fast, resist rot and insects, and give engineers a predictable, code-recognized material to design around. But every advantage CFS offers above grade depends on a detail that's easy to take for granted: how the building actually attaches to its foundation.

Foundation attachment is where load paths begin. Wind uplift on a roof, lateral shear from a windstorm, and the dead weight of the structure itself all have to travel down through the framing, through the bottom track, and into concrete, piers, or slab — without a weak link anywhere along the way. For builders and dealers working in cold-formed steel, understanding the attachment options — and when each one applies — is as important as understanding the framing itself.

WHERE THE LOAD PATH STARTS

In a typical CFS wall or floor system, the bottom track is the first structural element to touch the foundation. According to the Association of the Wall and Ceiling Industry's Cold-Formed Steel Framing Primer, first-floor framing can attach to a foundation or slab in several ways, and the right method depends on whether the connection is structural or non-structural. In non-structural applications, the bottom track is commonly fastened directly to a concrete slab with power-actuated fasteners (PAFs) shot through the track web, typically spaced 16 to 24 inches on

center. Structural applications—where the connection must resist real uplift, shear, or lateral load—call for engineered solutions that can include power-actuated fasteners rated for structural use, expansion anchors, screw anchors, or epoxy and adhesive anchor systems set into cast-in-place concrete.

None of these methods is inherently “correct” on its own. The Cold-Formed Steel Engineers Institute (CFSEI) makes that point directly in its technical literature, noting that the decision on a fastening system should weigh structural capacity, the type of concrete being fastened to, installation conditions, and cost—not habit or convenience.

MATCHING THE ANCHOR TO THE CONCRETE

Not all concrete is created equal, and that matters more than many builders realize. CFSEI Technical Note F502-18, “Attachment of Cold-Formed Steel (CFS) Framing to Precast, Post-Ten-

RESOURCES

For product selection and technical support on anchors, fasteners, and structural connectors for cold-formed steel and post-frame construction:

- Simpson Strong-Tie strong-tie.com - (800) 999-5099
- MiTek USA, Inc. mii.com - (800) 325-8075
- USP Structural Connectors uspconnectors.com - (800) 328-5934
- DEWALT / Powers Fasteners dewalt.com/anchors-fasteners - (800) 524-3244
- Hilti North America hilti.com - (800) 879-8000

sioned and Hollow-Core Concrete,” was developed specifically because standard anchorage assumptions don’t automatically transfer from a conventional cast-in-place slab to precast, post-tensioned, or hollow-core concrete components. The note walks engineers through anchorage options for each concrete type — including power-actuated fasteners, drop-in anchors, screw anchors, and expansion anchors — and provides worked design examples. So the selected anchor matches the substrate it’s going into.

For post-frame and metal building projects, that distinction shows up most often on slab-on-grade construction. Still, the same logic applies anywhere a builder is transitioning from steel framing to a concrete element the field crew didn’t pour and doesn’t fully know the history of. Post-tensioned slabs, in particular, carry embedded tendons that a poorly placed anchor can damage — another reason foundation plans, not field judgment alone, should govern anchor placement and depth.

ANCHOR TYPES AT A GLANCE

Builders moving between wood, cold-formed steel, and traditional post-frame construction often work with several anchor families in the same week. Each has a different installation method, holding mechanism, and place in the load path. The table below is a general-purpose reference, not a design tool — actual capacity always depends on concrete strength, embedment, edge distance, and the manufacturer’s tested values for the specific product installed.

CODES AND STANDARDS BEHIND THE CONNECTION

Cold-formed steel design and its connections in North America are governed by standards developed by the American Iron and Steel Institute (AISI), most notably the AISI S100 Cold-Formed Steel Design Manual and the S200-series framing standards. AISI S240, the North American Standard for Cold-Formed Steel Structural Framing, addresses lateral design directly, including uplift anchorage requirements at the ends of shear walls. These exact connections keep a building’s walls tied to its foundation when wind loads try to lift or slide them. Builders specifying or installing foundation anchors on engineered CFS structures should expect their plans to reference these standards, and any substitution of anchor type or spacing should go back through the engineer of record rather than being decided on site.

SIZING, SPACING, AND EMBEDMENT: WHAT THE BASELINE LOOKS LIKE

Every jurisdiction and every engineered plan will set its own final numbers. Still, it helps to know the baseline that prescriptive residential and light-frame codes start from before wind, seismic, or engineered loading pushes those numbers up. Under the International Residential Code’s general sill-plate anchorage provisions, the commonly referenced minimums are a 1/2-inch-diameter anchor bolt embedded at least 7 inches into the concrete, spaced no more than 6 feet apart, with a bolt located within 12 inches of each end of every plate section and at least two bolts

per plate. Those figures describe a baseline wood sill-plate condition — they are not a substitute for an engineered foundation plan on a post-frame or CFS structure, where uplift, shear, and bearing loads are typically higher and more concentrated than a prescriptive residential wall.

No single anchor is right for cold-formed steel. Load, code requirements, and the concrete on the other end of the connection all drive that decision.

— Summary of guidance, Association of the Wall and Ceiling Industry, Cold-Formed Steel Framing Primer

What carries over regardless of material is the logic behind the numbers: anchors work hardest at corners and plate ends, where uplift and shear concentrate, so those locations get anchors first and get checked twice. Concrete strength matters too — most residential-grade concrete falls in the 2,500 to 4,000 psi range, and anchor holding capacity is published against a specific compressive strength. Hence, an anchor rated for one mix isn’t automatically rated for another.

Note on prescriptive vs. engineered anchorage

Prescriptive spacing tables are a starting point for light, conventional construction. Once a structure is engineered — which is standard practice for most metal and post-frame commercial buildings — anchor type, diameter, embedment, and spacing are calculated from actual wind, seismic, and gravity loads and shown on the stamped plan. When the two disagree, the engineered plan governs.

INSTALLATION PRACTICES THAT PROTECT THE CONNECTION

An anchor is only as good as its installation, and a handful of field habits separate a connection that performs from one that becomes a callback. Drilling accuracy matters most with post-installed anchors: holes drilled too close to a concrete edge risk breaking out the substrate on installation or under load, and manufacturers publish minimum edge-distance and hole-depth specifications for exactly this reason. Never force anchors into an undersized or misaligned hole to make up for a layout error.

On cast-in-place bolts, a common and costly mistake is trimming a protruding bolt flush with the plate during framing. That extra thread length is there on purpose — it gives future retrofit hardware, hold-downs, or plate replacement somewhere to anchor. Once it’s cut off, that margin is gone for the life of the building.

Layout is easier to get right than to fix later. Wiring anchor bolts directly to the foundation’s rebar cage before the pour, or using a layout jig to hold spacing and plumb, keeps bolts positioned

accurately through concrete placement and vibration of concrete—a much cheaper fix than drilling and epoxying a replacement anchor after the fact.

Drilling too close to a concrete or masonry edge is one of the most common installation errors—it risks breaking out the substrate and compromising the anchor's holding power.

— Summary of field guidance, *Journal of Light Construction*, Anchors Field Guide

Corrosion Protection for Agricultural and Exposed Environments

Metal and post-frame buildings live in some of the harshest small-scale corrosion environments in construction—livestock confinement buildings, wash-down dairy parlors, fertilizer and chemical storage, and coastal or high-humidity regions all accelerate the breakdown of unprotected steel. Anchors and fasteners specified for these environments should carry coatings or base materials rated for the exposure, not simply the general mill-galvanized finish common on standard construction hardware. Hot-dip galvanizing to ASTM A153 is a common upgrade path for embedded and exposed anchor hardware, and stainless steel is worth the added cost in the most aggressive environments—direct manure or wash-down chemical contact, marine air, or applications where the anchor is effectively impossible to inspect or replace once the building is finished.

Corrosion at the foundation connection is particularly unforgiving because it's often hidden—behind base trim, under a bottom track, or embedded in concrete—and by the time it shows visible symptoms, section loss may already be affecting capacity. Specifying the right material up front is far cheaper than diagnosing a hidden connection failure ten or fifteen years into a building's life.

A FIELD CHECKLIST: COMMON MISTAKES WORTH AVOIDING

- No anchor within 12 inches of a plate end. This is one of the most frequently cited inspection issues, and it's exactly the spot where uplift and shear loads concentrate.
- Cutting bolts flush “to clean up the look.” Leave the extra thread length for future hardware, inspection, or retrofit connections.
- Substituting anchor type without checking the plan. A wedge anchor and an epoxy anchor are not interchangeable just because they fit the same hole diameter—their load ratings and appropriate applications differ.
- Assuming all concrete is the same. Verify actual field conditions—slab thickness, age, and cracking—before choosing between anchor types, especially for retrofit or addition work tying into existing concrete.
- Treating corrosion protection as optional. In agricultural and wash-down environments, the coating or base metal on an anchor is a structural decision, not a finish decision.

PRACTICAL CONSIDERATIONS FOR METAL AND POST-FRAME BUILDERS

Pulling the previous sections together, a few field realities are

worth keeping in mind on any project involving cold-formed steel and a concrete foundation:

- Match the anchor to the load, not just the track. A fastener sized for wind uplift resistance is a different animal than one holding a non-load-bearing partition track in place, even though both may look similar in a box on the truck.
- Corrosion resistance matters in agricultural and livestock buildings. Specify anchors and fasteners exposed to manure gases, wash-down chemicals, or high humidity with coatings or materials rated for that environment, not just general exterior use.
- Know the concrete before you install the anchor. Cast-in-place, precast, post-tensioned, and hollow-core slabs each carry different anchorage requirements and different risks of hitting embedded reinforcement or tendons.
- Follow the stamped plan. Once a foundation plan is engineered, anchor type, embedment depth, and spacing are part of that design—not a field decision.

Foundation attachment isn't the part of a metal building that draws attention at a ribbon-cutting. But it's the part doing the quiet, constant work of keeping everything above it exactly where it's supposed to be—through the next windstorm, the next heavy snow load, and every ordinary day in between. **MB**

SOURCES

For product selection and technical support on anchors, fasteners, and structural connectors for cold-formed steel and post-frame construction:

- Cold-Formed Steel Engineers Institute (CFSEI). “Attachment of Cold-Formed Steel (CFS) Framing to Precast, Post-Tensioned and Hollow-Core Concrete,” Technical Note F502-18, developed by Derek Putz, P.E., Matsen Ford Design Associates, Inc. February 2018. buildusingsteel.org
- American Iron and Steel Institute (AISI). Cold-Formed Steel Design Manual and AISI S240, North American Standard for Cold-Formed Steel Structural Framing (Lateral Design). steel.org
- Association of the Wall and Ceiling Industry (AWCI). Cold-Formed Steel Framing Primer: A Guide to Understanding and Application. awci.org
- Steel Market Development Institute / Build Using Steel. buildusingsteel.org
- Journal of Light Construction (JLC). “Foundations: Code Requirements for Placing Anchor Bolts” and “Anchors Field Guide.” jlconline.com
- International Code Council. International Residential Code (IRC), Section R403.1.6, Foundation Anchorage. icc-es.org / iccsafe.org



Working With Local Codes and Regulations

Model codes set the baseline, but the building department down the street writes the rules that actually govern your project. Here's how metal building contractors can navigate the gap between national standards and local enforcement — without blowing the schedule..

Every metal building is designed twice. First, it's engineered to a model code— most likely the International Building Code (IBC) — referencing structural standards like ASCE 7 for wind, snow, and seismic loads. Then it's designed again, in effect, by whatever version of that code your local jurisdiction has actually adopted, amended, or layered with its own requirements. The two designs are supposed to match. In practice, the gap between them is where change orders, failed inspections, and blown schedules tend to live.

For metal building contractors, understanding that gap isn't optional paperwork — it's part of the trade. The steel doesn't care what code applies to it. The building department does.

THE MODEL CODE ISN'T THE WHOLE CODE

The International Code Council develops the I-Codes, a coordinated family of model codes covering building, residential, mechanical, fire, energy, and more, on a three-year revision cycle. All fifty states have adopted some version of the I-Codes, and they remain the most widely used set of model construction codes in the country.

But “adopted” doesn't mean “adopted uniformly.” States and local jurisdictions frequently amend the base code — sometimes to reflect a specific regional hazard, sometimes for reasons that have nothing to do with engineering. One county may still be enforcing the 2018 IBC while the county next door has moved to 2021 or 2024. A jurisdiction that has adopted the current IBC may still layer on its own amendments for snow load, wind exposure, or energy performance.

That's why the design wind speed, ground snow load, and seismic design category baked into a metal building's engineering package have to be pulled from the specific jurisdiction where the building will sit — not assumed from the state, and not carried over from the last job, even one a few miles away. ASCE 7, the standard the IBC references for these values, is precise down to exposure category and site elevation. A building engineered for the wrong numbers is a structural liability wearing a stamped drawing.

ZONING AND BUILDING CODES ARE TWO DIFFERENT CONVERSATIONS

Contractors sometimes treat “getting the permit” as a single hurdle. It's two separate reviews that share a counter. Building codes govern how the structure is built — materials, structural capacity, fire resistance, egress, accessibility. Zoning governs where and what can be built — setbacks from property lines,

maximum height, allowable use, lot coverage, and, in many rural counties, whether an agricultural exemption applies in the first place.

A building can be engineered perfectly to code and still get rejected because it sits eighteen inches inside a required setback, or because the zoning district doesn't allow the intended use. Confirming zoning classification and any overlay restrictions — floodplain, easements, HOA covenants — before a design is finalized saves a resubmittal cycle that can run weeks.

BUILDING THE PERMIT PROCESS INTO THE SCHEDULE

Permit timelines vary enormously by jurisdiction — from a same-day counter permit in a small rural township to a multi-week plan review in a growing suburban county. The scope of what's required varies just as widely: a straightforward agricultural building might need only a building permit, while a commercial project can trigger separate electrical, mechanical, and plumbing permits, each with its own review queue.

A few habits keep that variability from becoming a surprise:

- Confirm the specific code edition and any local amendments in force before final engineering, not after the plans are drawn.
- Package a complete submission the first time — PE-stamped drawings, site plan, foundation details, and load criteria sheet — since incomplete applications are the most common cause of review delays.
- Call the building department directly for jobs outside your usual service area. Adoption schedules and amendment lists are public record, but they aren't always current on a jurisdiction's website.
- Build inspection touchpoints into the project calendar rather than treating them as a final step; foundation, framing, and final inspections must be scheduled and passed in sequence.

THE RELATIONSHIP WITH THE AHJ IS PART OF THE JOB

Experienced metal building contractors tend to describe their local building department less as an obstacle and more as a known quantity — a relationship built over multiple projects. Plan reviewers and inspectors in smaller jurisdictions often carry significant discretion in how they interpret ambiguous provisions, and a contractor with a track record of complete submissions and code-compliant work tends to get the benefit of the doubt that an unfamiliar out-of-town crew does not.

That guidance applies well beyond wind design. A local engineer or code consultant who already knows a jurisdiction's amendment history and the reviewer's known preferences can cut a lot of back-and-forth—particularly valuable for contractors bidding work outside their home territory.

WHERE CONTRACTORS GET TRIPPED UP

A few patterns show up repeatedly in code-related project delays: assuming a rural or agricultural building is exempt from

permitting without confirming it with the local jurisdiction; specifying loads from a neighboring county or a manufacturer's default rather than the actual site; treating an HOA or deed restriction as someone else's problem; and starting site work before the permit is actually in hand. None of these are engineering failures — they're process failures, and they're avoidable with the same discipline applied to the structural design itself.

THE BOTTOM LINE

Model codes exist so the industry isn't reinventing structural safety on every job. Local adoption and amendment exist because a building in coastal Florida and a building in interior Montana face genuinely different forces. Treating the local building department's requirements as the real spec — and the model code as the starting reference — is what keeps a well-engineered metal building from becoming a permitting casualty. **MB**

This article is intended as general industry information and does not substitute for site-specific guidance from a licensed engineer or your local Authority Having Jurisdiction (AHJ).

SOURCES & RESOURCES

- International Code Council (ICC) — The I-Codes Overview of the I-Codes, the state-by-state adoption map, and the code development process. (iccsafe.org)
- ICC — Find Your State's Adopted Codes. Jurisdiction-by-jurisdiction lookup for current adopted editions and amendments. (iccsafe.org/education/codes-adoption)
- Metal Building Manufacturers Association (MBMA) Publisher of the Metal Building Systems Manual, the industry-standard companion to ASCE 7 for applying design loads to pre-engineered metal building systems. (mbma.com)
- American Society of Civil Engineers — ASCE 7: The referenced standard for minimum design loads, including wind, snow, and seismic criteria used by the IBC. (asce7.org)
- Building Codes Assistance Project (BCAP) Independent resource for identifying which version of a model code is currently enforced in a given state or local jurisdiction. (bcap-energy.org)
- FEMA — Building Codes Save: A Nationwide Study. Federal analysis of loss avoidance from code-compliant construction across 18.1 million buildings. (fema.gov)
- Your Local Building Department: The final authority on code edition, amendments, zoning classification, and permit requirements for any specific site — always confirm directly before finalizing design. (Contact your county or municipal building/zoning office)