

# *Beauty* and the Beam

a salute to metal building architecture

**MBMA**  
METAL BUILDING MANUFACTURERS ASSOCIATION®  
Research | Leadership | Education

2019 Annual Report



# CONTENTS

**3**

## **CHAIRMAN'S MESSAGE**

MBMA Influences Students, Faculty, Research & Market Share

**7**

## **MANAGEMENT PERSPECTIVE**

Our 2020 Vision: Educate | Innovate | Elevate

**9**

## **ARCHITECT'S PERSPECTIVE**

Metal Building Systems Provide Framework for Intriguing, Inventive Architectural Design

**13**

## **MBMA: VOLUNTEERS MAKE US STRONG**

Over 500 People Help MBMA Achieve Great Goals

**14**

## **TOGETHER WE DO MORE**

A Summary of 2019 Committee Accomplishments

**15**

## **ACCREDITATION COMMITTEE**

Raising the Bar on Accreditation

**17**

## **COMMUNICATIONS COMMITTEE**

Promoting the Architectural & Aesthetic Appeal of Metal Buildings

**19**

## **EDUCATION COMMITTEE**

MBMA Educational Program Expansion Provides Valuable Resources





Lux Row Distillery • Bardstown, KY

**21**

**ENERGY COMMITTEE**

Enhancing Energy Codes & Educating Members, Builders, Architects & Specifiers

**23**

**FIRE & INSURANCE COMMITTEE**

Safe, Code Compliant, Resilient & Insurable Metal Buildings

**25**

**SAFETY COMMITTEE**

For Profit's Sake, Think Safety

**27**

**SUSTAINABILITY COMMITTEE**

Providing the Design Community with Industrywide Sustainability Resources

**29**

**TECHNICAL COMMITTEE**

Research Initiatives Add Value & Impact Costs & Codes

**33**

**ANATOMY OF A METAL BUILDING**

Building Attributes That Make These Structures so Popular

**35**

**EDUCATIONAL & TECHNICAL RESOURCES**

Technical Manuals, Videos, Webinars, Research Reports & More

**37**

**MBMA MEMBER MANUFACTURING FACILITIES**

Metal Building Manufacturing Plants Across North America

**39**

**MBMA MEMBERS**

A Listing of Companies That Make MBMA Strong

# CHAIRMAN'S MESSAGE



Ron Ambrosius, MBMA Chairman

## MBMA Influences Students, Faculty, Research & Market Share

In this small space, I can only give you a sampling of all the good things that have happened at MBMA in 2019. So, here's the short story ...



Top: Lux Row Distillery • Bardstovwn, KY Bottom: Hangar Delta • Aurora, CO

We all know that finding tomorrow's talented leaders in the building industry is a concern shared by us all. To influence young people, we developed a dozen short videos that explain some of the career opportunities in the metal building industry. Use them, share them and take them straight to the classrooms of America. All 12 are on our YouTube channel at [youtube.com/MBMAmedia](https://youtube.com/MBMAmedia).

Architects are not only curious about metal buildings, they're taking our course in record numbers. Earlier this year, MBMA's continuing education course, "Sustainable Metal Buildings," was recognized by Architectural Record magazine for being the fastest-moving CEU course of 2018. Share it with the architects in your world. It's online at <http://ow.ly/1DLo50wSZez>.

MBMA hosted its first-ever architecture faculty workshop. The day-and-a-half event included presentations from architects and educators and featured both a field trip to a beautiful brewery, with a metal building providing a dramatic entry to the facility, and a visit to a metal building manufacturing plant. As one professor explained, "The workshop was valuable because it provided multiple opportunities to build enthusiasm for what the future of metal buildings could be."

In its never-ending commitment to always improve and enhance the knowledge base for the metal building industry, MBMA successfully updated four of its technical manuals this past year, including its flagship publication, the *Metal Building Systems Manual*. First published in 1959, this internationally recognized reference manual is a primary resource for the metal building industry. All MBMA technical manuals are available on demand at [www.techstreet.com](http://www.techstreet.com).

The vibrance of the metal building industry is inspiring and MBMA is proud to take the lead in providing the leadership, research and educational resources to keep the industry growing. Be sure to read the committee reports found throughout this publication. I think you'll be amazed at the quality and quantity of activities underway to help the metal building industry thrive.

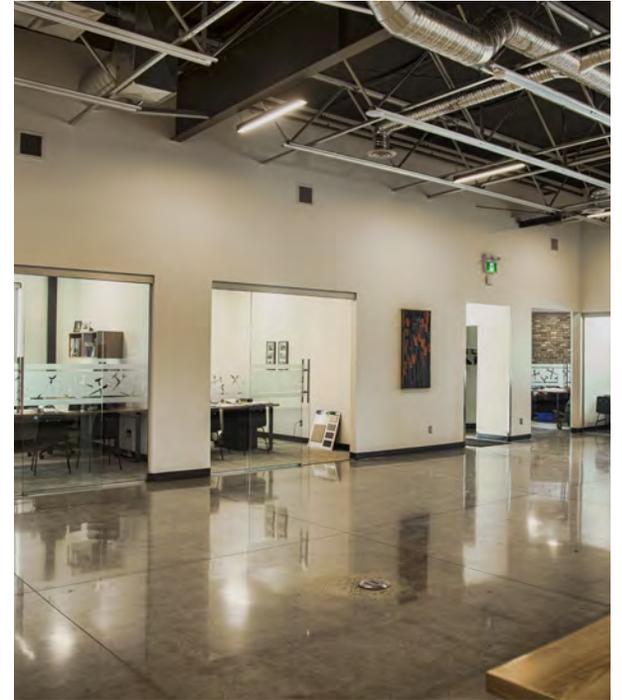


## ABOUT MBMA

Founded in 1956, the Metal Building Manufacturers Association (MBMA) serves manufacturers and suppliers as it works to promote the metal building systems industry. For over 60 years its membership has supplied high-quality buildings for use in commercial, retail, office, industrial, institutional and other end uses. The association provides a wealth of useful information on its website, [MBMA.com](http://MBMA.com), for anyone who works with or is interested in metal building systems. Resources include technical materials, research reports and design guides.



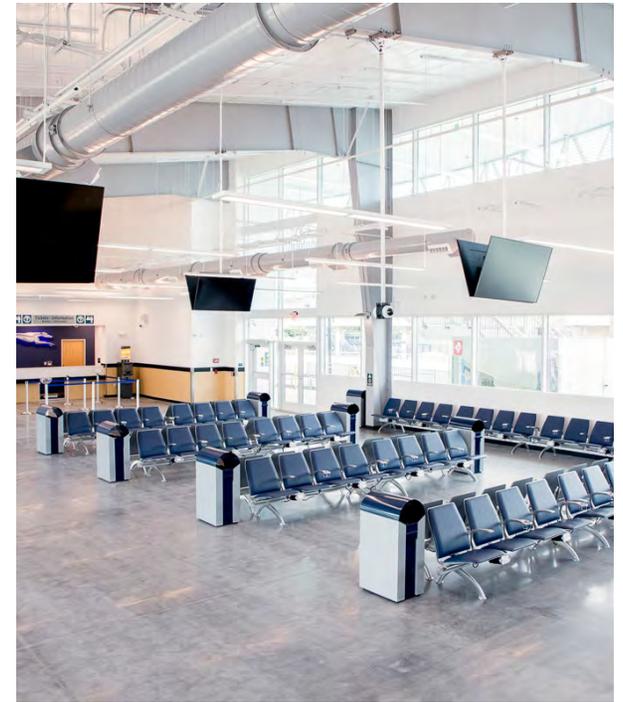
Con-Tech Headquarters • Saskatoon, Saskatchewan, Canada



**PROJECT NOTES:** The 16-ft-high, single-story Con-Tech office building provides large volumes of space and is highlighted with natural wood tones, polished concrete, large glass partitions and tumbled brick to mimic the modernization of an old warehouse space. The exterior of the metal building system is finished with texture clad, silver corrugated and composite panels.



Greyhound Megabus Terminal • Jacksonville, FL



**PROJECT NOTES:** This sleek and attractive Greyhound/Megabus terminal in Jacksonville, FL, features a metal building system designed to achieve Silver certification from USGBC's Leadership in Energy and Environmental Design (LEED) program. The building features insulated metal panels in multiple profiles, applied both vertically and horizontally and a column-free, wide-open interior.

# Our 2020 Vision: Educate | Innovate | Elevate



Tony Bouquot, MBMA General Manager



Port of Chelan County Cashmere Mill District • Cashmere, WA

**This year has been a time of great growth for MBMA. We've not only grown in size, but also in stature. Our organization is highly respected and we're proud to be invited to speak to groups across the nation.**

Just this past October, Lee Shoemaker and I spoke to building code officials at an International Code Council event. Being able to educate and inform code officials is one of the many ways we are influencing the perception of metal buildings. I've also had the privilege of sharing knowledge at events

hosted by the Metal Building Contractors & Erectors Association, the National Coil Coating Association and the American Iron and Steel Institute, to name a few.

Much of the energy fueling our growth is a result of the perception survey we funded this past year. The survey gathered deeply valuable intel from almost 1,000 design professionals. Their insights have helped us understand the underlying assumptions that help and hinder the metal building marketplace. The survey results are leading us to develop new initiatives.

One such initiative is the founding of an MBMA Architecture Committee. This resource will help us put emphasis on the role of the architect in designing to maximize metal building value. Architects wield much authority over clients' decisions about the methods and materials used in each project. Through the committee we will be able to bring more attention to the architectural community and provide architects with

One initiative is the founding of an MBMA Architecture Committee. This resource will help us put emphasis on the role of the architect in designing to maximize metal building value.

the tools they need to fully understand the attributes and opportunities that metal building systems provide.

We are also grateful that the MBMA members are committed to funding ongoing research into metal building products, processes and perceptions. The association currently has 25 research projects underway, representing over a half-million dollars in investment. This research not only contributes to the industry knowledge base, but allows us to provide a body of knowledge to benefit the entire metal building industry.

If your firm is not yet an MBMA member, call me and let's talk. There are so many reasons to get involved and to help evolve this industry.

## MBMA MANAGEMENT

MBMA has been managed by Thomas Associates, Inc. (TAI) since 1956. TAI is one of the longest-running success stories among association management firms in the United States. It has an extensive and diverse technical team that can support the codes, standards and research goals of its various client associations. Such synergy allows it to expand research capabilities and bring in human resources that enhance the technical strength of MBMA.

General Manager

- Tony P. Bouquot

Director of Research and Engineering

- W. Lee Shoemaker, Ph.D., PE

Senior Staff Engineer

- Vincent E. Sagan, PE

Account Executive

- Jennifer M. Oblock

Client Services Administrator

- Joanne F. Jelinek

# Metal Building Systems Provide Framework for Intriguing, Inventive Architectural Design

My path to learn about metal building systems began by first being interested in metal exterior surfaces. I have used metal panels to clad various building designs due to their functional qualities such as durability, light weight, ability to reflect heat, and low long-term maintenance requirements. I also appreciate the aesthetic qualities of metal; I enjoy the reflective qualities of metal, allowing shadows and light to play across the surfaces of a building.



## Functional, Adaptable Office Space

My firm designed an office building in Bellaire, Texas, that expresses the steel structure of the metal building system on both the exterior and interior of the building. I worked with the metal building supplier to extend the roof structure so that deep overhangs of the standing seam roof could protect the glass storefront system from glare. Other exterior walls are clad with structural clay tile, which provides texture and



Round Valley office building • Bellaire, TX  
Photo by Charles Smith, FAIA

smaller-scale elements. The interior office space includes rectangular gypsum board “cloud” ceilings that hang from the purlins between the beams, allowing data and electrical services to be routed as needed for tenants while providing a reflective surface for the artificial lighting. When the project won a Texas Society of Architects Design Award the jury commented, “There is a consistency in design with regards to massing, relationship of parts, and detailing in the building.”

### Signature Home Designs Enhanced with MBS Structural Features

Metal building systems are often cost-effective ways to allow for large uninterrupted volumes that connect to the preferred open floor plans of many types of buildings, from retail to residential. For one unique home that my firm designed, a simple rectangular

building stretches the depth of the site with a garage and shed separating two exterior courtyards. A void defines a covered outdoor space that allows breezes to flow through the site and visually separates the front house portion from the shop space at the rear. We were also able to work with the metal girt placement to provide a large horizontal window without adding additional steel to the project costs.

### School Provides Experiential Spaces: In & Out

The expedient construction time frame of metal building systems can also be a further advantage. My firm collaborated with Natalye Appel + Associates Architects and Energy Architecture on the newly completed School of the Woods High School in Houston, a facility that also utilizes a metal building system. The design embraces Montessori curriculum and has large gathering spaces inside and large covered learning spaces outside, allowing students a variety of spatial experiences. The large-volume, column-free interior allowed by the metal building system supports the learning environment by providing layout versatility while bringing abundant natural light and reducing the sound levels within the space.

### A Solution for Virtually Any Project

I have enjoyed seeing other metal buildings designed by architects and am encouraged by the creative freedom the system allows. The new

Saint Arnold Brewing Company in Houston designed by Natalye Appel + Associates Architects is a great example that clearly embraces the construction methodology of metal building systems as it showcases frame elements, a variety of metal surfaces, and defines multiple spatial experiences in and around the building. Metal building systems can be utilized for many building types due to their ability to enclose large volumes of space with an efficient use of steel—often saving clients both time and money—while not compromising the architect’s ability to provide well-proportioned spaces that satisfy client needs and delight the occupants.

### About the Author

Donna Kacmar, FAIA is a principal at Architect Works, PLLC in Houston, Texas. She also is a Professor at the University of Houston Gerald D. Hines College of Architecture and Design.



Donna Kacmar, FAIA

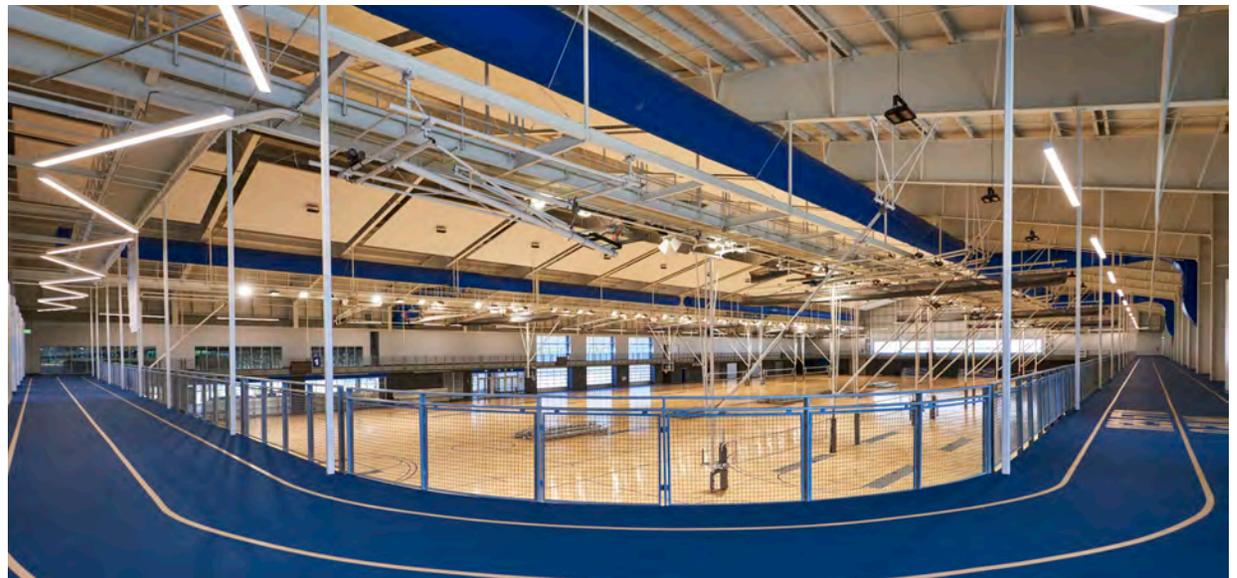


**PROJECT NOTES:** The Bentley University Bentley Arena incorporates a clear-span metal building system with two-story conventional structures on each end and a mezzanine in between. Tapered columns with minimal depth to the mezzanine level allow needed clearance for arena amenities. It is the first stand-alone ice arena in the U.S. to earn LEED Platinum certification and the first LEED-certified building on Bentley's campus. The building was designed by Architectural Resources Cambridge (ARC) and includes an array of 1,400 solar panels intended to provide 40% of the building's energy needs. Natural daylighting flows through energy-efficient clerestory windows that are supplemented by high-efficiency LED lighting. "The arena embodies the goals and aspirations of the university to be a national leader in sustainability," says Philip Laird, president of ARC.



Bentley University, Bentley Arena • Waltham, MA

**PROJECT NOTES:** An \$80 million sports complex in the Birmingham, Alabama, suburb of Hoover is expected to provide an economic impact of about \$33 million annually by its fifth anniversary. "In my opinion, a metal building system is the best way structurally to build a complex like this," says Jeff Dixon, project manager at Dunn Building Company, LLC. "I think the benefit of a metal building versus another type of building is the speed. I would say building a metal building saved the city a couple of months on the project." Dixon believes that using a metal building solution also saved the city about 10% in cost over conventional construction. "Anytime you have a building that looks like the Finley Center, it shows metal buildings are a lot more than just warehouses. You can do these big complicated projects and it really shows the flexibility of a metal building system."



Hoover Met Complex, The Finley Center • Hoover, AL

# MBMA: VOLUNTEERS MAKE US STRONG

**MBMA THANKS 500+ COMMITTEE VOLUNTEERS:** Jeff Adams - Jerrod Adams - Jeramy Albert - Jeff Alexander - Jon Amann - Ron Ambrosius - Arne Anderson  
Michael Anderson - Mike Anderson - Morrie Anderson - Greg Andrews - Curtis Archibald - Jennifer Archibald - Ed Armer - Leann Arnold - Roland Augspurger - Cynthia Ayotte - Michael Bailey  
Dale Baker - Robert Baker - John Balazs - Jacob Ball - Vanessa Banks - Craig Banning - Mike Barnes - Scott Barrett - Robin Bartlett - Chris Barton - Aaron Batchellor - Bill Beals - Duane Becker  
Spencer Becker - Steve Becker - Jim Beckham - Shawn Beears - Kyle Beebe - Kevin Beishline - Amanda Bennett - Ronald Bennett - Russell Benton - David Bergholz - Chris Biguenet - Christopher  
Bingham - Brian Birch - Eric Blanscett - Tom Boal - Andrew Bonde - Mel Booker - Jorge Borghes - Bruce Bortree - Lawrence Bower - Pat Bradshaw - Don Bratcher - David Brown - Leland Brown  
Steve Browning - Jill Buckley - Jim Buffenbarger - Christopher Bufkin - Steve Burley - Steve Butler - Mark Carlisle - Todd Carlson - Jeff Carmean - Andrew Carpenter - Jerry Carr - Stephen Carr  
Gil Casey - Jeremy Childs - Dana Christensen - Kylee Clark - Delmar J. Clark, Jr. - Kent Clauson - Roy Clay - Kyle Cobbley - Stephen Colby - Dustin Cole - Chris Conley - Don Conrad - Arnold  
Corbin - Shawn Cornett - Roger Cox - Bill Cralley - Ryan Crist - Gary Cummings - Steve Curry - Brad Curtis - Chris Curtis - Jodi Datema - Paul Day - Simon De Brito - Nan Dean - Paul  
Deffenbaugh - Scott DeHaan - Gerardo DeLeon - Mark Detwiler - Patti DeWalt - Edward Di Cesare - Dylan DiGregorio - Scott Douglas - Jon Downey - Bill Downs - Jeff Doyle - Andrea  
Duckworth - George Dunning - David E. Durham - Robyn Edmonds - Craig Edwards - Greg Effland - Jason Ehlers - JoAnn Elijah - Chad Elliott - Christopher Ellison - Justin Elper - Bob Elsasser  
Josh Fairchild - Chris Falin - Shawn Farneman - Bonnie Fater - Jeff Feaster - Will Feland - Bob Fiset - Ken Fisher - Stacey Fisher - Cinthya Fonte - Terry Ford - Jim Foster - Shaunda Fowler - Ron  
Fox - Dan Frans - Jason Freidenberger - Robert Fryar - Ben Furlough - Dennis Gach - Dan Gao - Kelly Garbin - Darin Gardner - Jerry Gaston - Kenneth Gaul - John Gelms - Mike George - Mike  
Glynn - Mark Goble - Andrew Goldberg - Claudia Gomez - Michael Gong - Fernando Gonzalez - Scott Gosselin - Joel Grace - Dustin Graef - Theresa Grape - Don Green - Terry Green - Wayne  
Gregory - Jim Grimm - Larry Gumpert - Ralph Gutierrez - Chuck Haba - Dustin Haddock - Rob Haddock - Steve Haic - Tom Haic - Rahim Hakimi - Donna Haney - Cory Hann - Scott Hanna  
Todd Harbour - Steve Harper - Kim Harrell - Rodney Harris - William Hart - Paul Hartgrove - Paula Harvey - Dan Hatcher - Katie Hatcher - Eric Haugen - Amy Hawkins - Rick Haws - Cindy  
Hayden - Brandon Hays - Brad Heffelmire - Steve Heil - Mark Hendrixson - Jason Henrichs - Trey Herren - Mike Herrin - Ben Hicks - Alec Highnam - Donna Hise - Bob Hodges - Frank Hogan  
Ron Holder - Nik Holley - Heather Hollis - Rodney Holmes - Karl D. Houser - Paul Howell - Mike Howser - Jim Hruby - Rich Huber - Allen Hurtz - Scott Hutchings - Jesus Ibanez - Elyse Inglese  
Doug Irbe - Barry Ivy - Ryan Jackson - Andy Jaworski - Ryan Jenkins - Rohena Jhensen - Beau Johnson - Dave Johnson - Dennis Johnson - Kevin Johnson - Lucretia Johnson - Tori Johnson  
Jane Johnston - Jason Johnston - Brian Jones - Cathy Jones - Christopher Jones - Dean T. Jorgenson - Craig Joss - Barry Judd - Dennis Kaczmarek - Russell Karnis - Otto Kasten - Troy Kaylor  
Lisa Keegan - Bart Kelley - Neil Kerr - Dan Kile - Ray Kimble - Brandon King - Daniel King - Jeff King - Lorell Kline - Craig Klingler - Joshua Knadler - Fred Koetting - Steve Kosir - Myron Kottwitz  
David Koubek - Edward Krusec - Leon Kuehn - Luke Ladd - Mike Ladd - Tim Lane - Jim Lang - Todd Langelaan - Joe Lanning - Cole Larsen - Ed Lash - John Lawrence - John Paul Lawrence  
Jordan Lax - Andy Lee - Delaina Lee - Brad Leggett - Carl Lewis - Richard Ley - Bill Li - Ping Liang - Rick Liberty - Joe Lieber - Rae Limerick - Steve Linch - Keith Lindemulder - Chris Lingard  
Brad Little - Russ Livermore - Tim Logue - Jaime Lopez - Pam Lowry - Luke Lucyk - E. B. Ludwig, III - Robert Lytle - Steve Mabee - Doug Maclam - Bryon Magill - Kent Makishi - Kim Manson  
Igor Marinovic - Jim Marks - Vern Marshall - Marty Martin - Scott Martin - Woody Martin - Eric Masterson - Jim Mathis - David Mazak - Zack McCain - Loni McCarron - Lonnie McCarron  
Richard McClure - Art McCullough - Curt McCullough - Darren McGonigle - PJ McHugh - Don McKinnis - Candy McNamee - Jacob McQuainb - Keith Medick - Joey Meggs - Rachel Mercado  
Cam Michael - Santiago Millan - Duane Miller - Eric Miller - Ron Miller - Charles Mills - Nathan Mimms - Scott Moffatt - Rob Montoya - Joe Moore - Michael Moore - Elvia Mora - Zachary  
Morris - Tanner Moy - Tom Mukavetz - Charles Mullaley - Mike Mulligan - Shashank Mundrathi - Kevin Murphy - Mike Murphy - Robert Mushinski - Jeff Myers - Jessica Navascues - Karen Nebe  
Dale Nelson - Andy Newell - Mike Newton - Leo Neyer - Brian Ng - Ken Nichols - Matthew T. Nichols - Alfred Nkunga - Rodney Noblett - Corey Norris - Rocky Norton - Patricio Nungaray  
Matt Oakes - Craig Oberg - David Oksnee - Jonathan O'Leary - Michelle Olivier - Kristin Olson-Mesick - Chris Orr - Jeff Orris - Jose Ortega - John O'Sullivan - Joe Otten - Stephen Owen - Mike  
Pack - Jennifer Parks - Chris Parmele - Marty Parsons - Greg Pasley - Cooper Patrick - Robert Patterson - Ryan Peck - Kenny Perez - Steve Perritt - Ronnie Peters - Bob Peterson - Carl Petrat  
Laura Phelan - David Phelps - Greg Pirtle - Coy Poret - Mark Porto - Mike Pugach - James Punzel - Tim Puyleart - Irving Pylate - Bob Quint - Phil Raimondo - Randy Ramskugler - Bernie Reed  
Ronald Reed - Herb Reffert - Stanley Reid - Tom Reilly - Stephen J. Reiners - Kevin Reinheimer - Robert Reyes - Brian Ribic - Chris Richards - Jonathan Rider - Charlene Riegger - Don Riley  
Chuck Rimsky - Hal Robbins - Richard Roberts - Brad Robeson - Ricky Rodriguez - Michael Roeder - Bob Rollason - Frank Rosales - John Roscoe - Dave Rosenberg - Michael A. Rosenberry  
Brandy Roton - Roy F. Rudolph - Rodger A. Russ - David Rutherford - Ed Sabre - John Samaro - Max Sargent - Anne Savage - Britney Savell - Gabe Savelly - Amy Schmidt - Tim Schrock - Tim  
Schwartz - Tommy Scruggs - Keith Self - Nick Sharp - Dave Shaw - Wayne Shaw - Keith Shedd - Brian Shelton - Kendall Short - Bob Siktberg - Colton Simmons - Barry Sims - Scott Siverly  
Brian Smallwood - Dave Smigel - Joan Smigel - Carlie Smith - Eric Smith - Jason Smith - Jeanie Smith - Jennifer Smith - Judson Smith - Mark Smith - Mike Smith - Bob Smola - Mike Snelling  
Donnie Snow - Scott Spalding - Tanya Spears - Mark Specht - Jeff Spradley - Nancy Springer - Joe Stager - Grant Stahl - John Stahl - John Stark - Richard G. Starks, Jr. - Dirk Stauffer - Carsten  
Steiner - Bob Stenzel - Joeline Stevens - Heather Stiles - Matt Stone - Amanda Storer - Roger Story - Jack Sturdivant - Christopher Stutsman - Tammie Stutts - Steve Sukup - Erin Sullivan  
Prabhayya Swamy - Dan Sweeney - Randy Tackett - Craig Taliacich - Michael Teems - Kathleen Tell - Larry Tennant - Ralph Tenuta - Stephanie Theis - Nick Thompson - Philip Thompson - Tula  
Thompson - Vinay Thottunkal - Robert Tiffin - Jim Tils - Brad Tinney - Brant Tirello - David Tomchak - Buzz Tompkins - Corey Tompkins - Ivan Traver - Rich Trice - Christa Trostle - Charlotte  
Tyner - Mark Ubl - Adam Ugliuzza - John Underwood - Smokey Underwood - Pramod Vadrevu - Mark Van Dyken - Randy Varble - Peter Viens - Joey Viselli - Cheryl Wade - Craig Wagner  
Carl Walker - Zachary I. Walker - Fred Walnut - Jeff Walsh - Greg Warsop - Christian Watkins - Dennis Watson - Samantha Watson - Russell Watts - David Weatherford - Shane Weathers - Mark  
Weaver - Randy Webb - Teisen Webb - Jerod Webber - Mary Weber - Steve Weber - Amanda Welch - Ken Welch - Travis Wendt - Jon Wensman - Alexis West - Dena Whitaker - Chad Wieberg  
Deb Wiese - Kasi Wilburn - Jason Williams - Rick Williamson - Jim Wilson - Jon Woehrer - Steve Wright - Tom Wrigley - Travis Yetter - Wes Young - Rene Zamarripa - Ming Zhu

# Together *We Do More*



## RESEARCH

- Metal Roof Hail Damage
- Seismic Behavior of Metal Buildings
- Bolted Endplate Connections
- Wind Loads on Metal Buildings
- Load Requirements for Wireless-Controlled Cranes
- Rod Brace-to-Web Connection Anchorage
- Frame Knee Panel Zone
- Optimized Cold-Formed Steel Design Using Direct Strength Method

## LEADERSHIP

- Completed industry perception survey of ~1,000 individuals
- 25 research projects underway, representing over a half-million dollars in investment
- MBMA Building Systems members have a combined 94 facilities accredited under IAS AC472

## EDUCATION

- Held first Architecture Faculty Workshop
- Distributed free MBMA-NAIMA Acoustics Brochure

- Published free MBMA case studies – Distilleries and Breweries; Retail & Wholesale
- Released “Metal Building Systems 101” webinar video and presenter’s PowerPoint deck
- Released 12 career video commercials aimed at a youthful audience

## MEDIA

- Over 110 article placements
- Increased social media presence with over 375 posts across Twitter and LinkedIn.
- Released 14 new videos on YouTube
- Launched the Get More with Metal blog on MBMA.com. Ongoing posts include articles, news releases, video launches, reports, case studies and news from around the industry.

# ACCREDITATION COMMITTEE



Raising  
the Bar on  
Accreditation

Top: ABF Freight • Elkhart, IN Bottom: Jogue, Inc. • Plymouth, MI



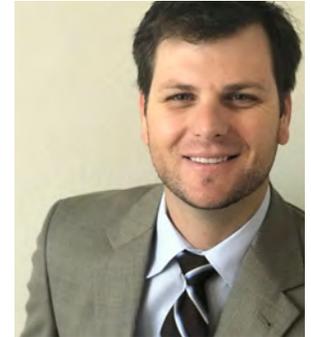
## **MBMA is recognized as the industry leader when it comes to comprehensive quality assurance programs for metal building systems.**

IAS's AC472 accreditation adds value for the end customer and differentiates the metal building system (MBS) industry from many other forms of construction. MBMA's 44 Building Systems members have a combined 94 facilities that are accredited under IAS AC472, the Accreditation Criteria

for Inspection Program for Manufacturers of Metal Building Systems. AC472 is based on the requirements of Chapter 17 of the International Building Code and provides code officials with a means to approve the inspection program of MBS manufacturers. The program also benefits building owners, contractors and developers.

In preparation for the September 2019 IAS hearing, members of the MBMA Accreditation Committee reviewed the comments and concerns of MBMA members regarding AC472. We then worked with IAS to determine if any revisions were warranted. MBMA and IAS will make it a priority to work together in 2020 to strengthen the program by providing improved direction to the independent auditors who perform the in-plant inspections. We will also evaluate the current non-destructive testing endorsement criteria and propose changes to ensure the program best serves MBMA members.

MBMA's commitment to quality does not end at our members' factory doors. We continue to work closely with the Metal Building Contractors & Erectors Association (MBCEA) to support the expanding adoption of AC478, the Accreditation Criteria for Inspection Practices of Metal Building Assemblers. For the 2019 revision cycle, MBCEA proposed



Tanner Moyer, Committee Chairman

changes to AC478 aimed at increasing participation in the program. MBMA publicly supported those changes at the September IAS meeting. Those changes were accepted and will now be part of the AC478 criteria.

In closing, I want to say that it has been an honor to represent MBMA as committee chair this past year and I look forward to working with you all again in the coming year. Also, many thanks to those who gave their time and talents to ensure the success of our objectives for this committee. We could not do any of it without you. Thanks, and here's to another great year.

# COMMUNICATIONS COMMITTEE



## Promoting the Architectural & Aesthetic Appeal of Metal Buildings



MBMA's Communications Committee is comprised of 39 professionals who work behind the scenes to build mainstream appreciation of metal building technology. We use many vehicles to share the MBMA story. This past year, we created some important items that are available for everyone reading this message to use.

Our mandate for future endeavors, based on the results of the MBMA Perception Survey, is to use our communications skills to influence and inform architects and other design professionals. So please download and share the wealth of resources we have created. Here are just some of the materials we've developed this year.

**Videos**

- MBS 101: A 20-minute program to help audiences learn about the history of metal buildings; discover the benefits that systems construction can provide over other forms of construction; learn about the latest in energy-efficient insulation systems for metal buildings; and learn about the low environmental impact of metal buildings and their sustainability attributes.
- Career Commercials: Aimed at a youthful audience, we created 12 videos, each a minute long, to introduce specific job options in the industry. The actors are real-world metal building company employees.

**Brochures**

- Metal Building Case Studies – Breweries & Distilleries: A 12-page report featuring six

attractive and efficient facilities in the booming spirits market.

- Acoustics Brochure: This informative 26-page document shows detailed descriptions of techniques and materials and cost-effective solutions to reduce sound transmission in metal buildings.

Before year-end, we will release additional resources for you to download and use. They include:

- MBS 101: The PowerPoint: This 20+ slide presentation provides a resource that can be shown in classrooms, at lunch & learn sessions, in meetings with architects, to educate your employees ... and so much more. The



Brian Shelton, Committee Chairman

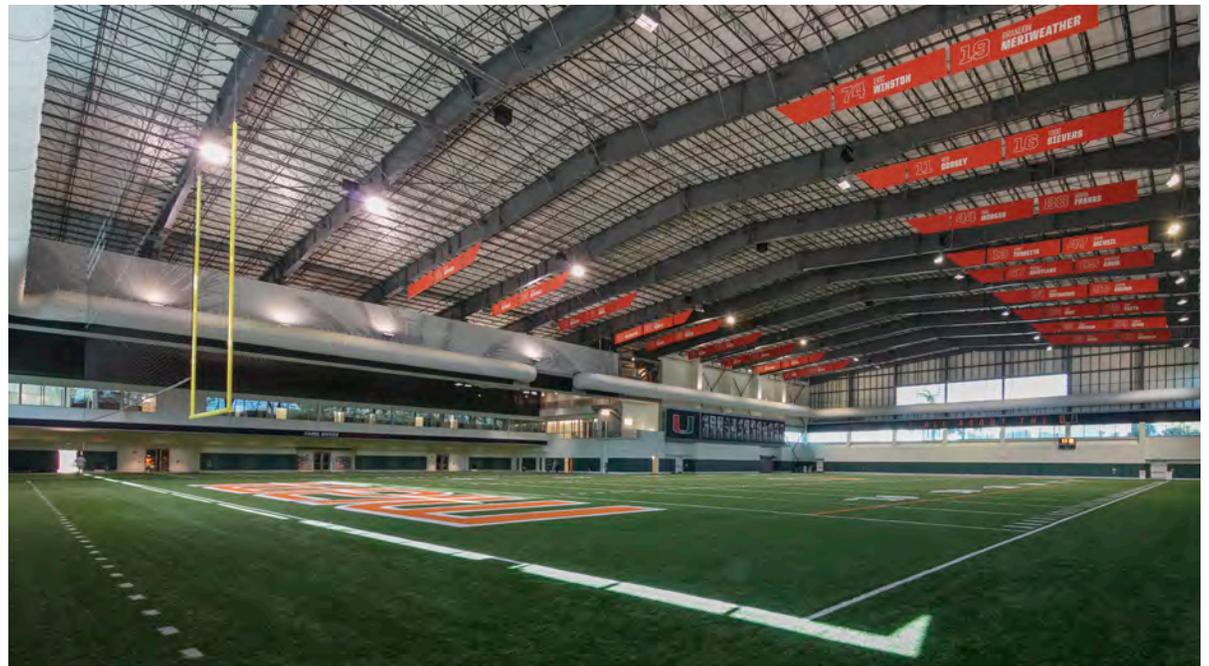
presentation comes with a full script, written in plain English, to make the program easy for you to present and for your audience to grasp.

- Metal Building Case Studies – Retail & Wholesale: This 10-page brochure focuses on eight retail corporations that depend on metal buildings. Interviews range from Costco to small family-owned specialty stores.

These are just a few of the items we've created this year. We hope you will enjoy them. Materials can be downloaded at <http://blog.mbma.com>. Videos can be viewed and shared on YouTube. Simply type MBMA Media into the search bar.

# EDUCATION COMMITTEE

## MBMA Educational Program Expansion Provides Valuable Resources



**The MBMA Education Committee oversees one of the core functions of the association: teaching current and future engineers, architects and other design professionals about the use and benefits of metal building systems. Below are a few of our 2019 accomplishments.**

### **Architectural Faculty Workshop**

A workshop was held in August to acquaint architectural faculty with metal building systems and to explore possible inclusion of metal building materials into the architectural curriculum. Various alternatives were explored including the concept of a design competition, which will be implemented in 2020.

### **Online Architectural Continuing Education Course**

We are expanding on the success of last year's award-winning course on sustainability. Our committee launched a new effort to create a course on creative metal building design alternatives aimed at confronting

some of the common misperceptions of our product. The following AIA courses from MBMA are available online from Architectural Record:

1. Specifying a Metal Building System
2. Life Cost Assessment/Sustainability of Metal Buildings
3. Creative Metal Building Design Alternatives – *launched December 2019!*

### **Capstone Course**

The committee, through Dr. Lee Shoemaker, will continue to promote and support engineering capstone courses to universities throughout the U.S.

### **YouTube Videos**

Twelve educational videos and a dozen webinars are now available at [www.youtube.com/MBMAmedia](http://www.youtube.com/MBMAmedia). Members frequently use these resources in their own educational and communication programs.

### **MBMA Design Seminar – Recorded Presentations**

Design seminar presentations were recorded and made available to metal building engineers. These help to educate and inform engineers who cannot attend the MBMA Technical Committee meetings. For

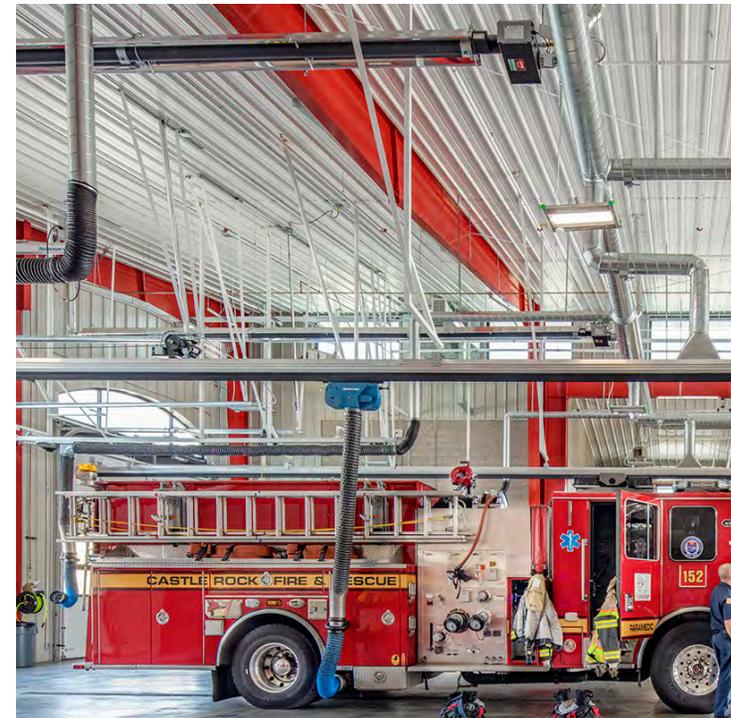


John Underwood, Committee Chairman

more information on how to access these recordings, contact MBMA staff at [mbma@mbma.com](mailto:mbma@mbma.com)

Moving forward in 2020, the MBMA Education Committee will continue efforts in all of these areas. We will create additional CEU courses, develop and implement an architectural metal building design competition, enhance the university capstone program and continue to create and distribute educational content via YouTube and other social media platforms.

# ENERGY COMMITTEE



Enhancing Energy Codes  
& Educating Members,  
Builders, Architects  
& Specifiers

The Energy Committee encourages fair and equitable treatment of metal building systems by energy code officials, standards, testing and rating organizations and other governmental and non-governmental groups.



Castle Rock Fire Station #152 • Castle Rock, CO

### 2019 Achievements

The MBMA Energy Committee monitored and participated in the energy codes and standards process. This year, over 280 proposed changes to the International Energy Conservation Code (IECC) were reviewed and addressed. In addition, we participated in the development of the 2021 edition of the ASHRAE Standard 90.1.

With the assistance of the Metal Buildings Contractors & Erectors Association and the

North American Insulation Manufacturers Association, MBMA conducted whole building air infiltration tests. The energy codes are considering the option of making air infiltration requirements more stringent for all buildings and in some cases requiring whole building testing. The tests we are conducting will establish a baseline for the performance of metal buildings and will help us identify critical components that can impact their air leakage performance. So far, the tests have demonstrated that existing insulation systems and installation methods can meet and exceed the current energy codes requirements for whole building testing.

Our second major project is the hygrothermal analysis of energy-efficient roof and wall assemblies that are being implemented to meet more stringent energy code requirements. This project will develop guidelines and best-practice suggestions to minimize condensation risk in buildings that are heavily insulated and where air leakage has been reduced.

We also held the biennial Energy/Sustainability Committee Workshop and meeting on Nov. 6-7 in Dallas, Texas. Presenters addressed the status of the projects described above as well as other forward-thinking topics.



Rick Haws, PE, Committee Chairman

### 2020 Goals

We will continue to keep a strong presence in the IECC and ASHRAE 90.1 code bodies and work with our industry partners. We will publish air infiltration and hygrothermal research data in a user-friendly way to ensure our members can take full advantage of our research.

## Safe, Code Compliant, Resilient & Insurable Metal Buildings



**The mission of the Fire and Insurance Committee is to promote the use of metal building systems in the non-residential construction industry, encouraging fair and equitable treatment of metal building systems by maintaining a leadership role as an authority in fire ratings, fire code compliance and insurance.**

### **2019 Achievements**

The Fire & Insurance Committee's 2019 achievements reduced barriers and created new opportunities for metal buildings.

1. We performed an engineering study of an optional ceiling hanger wire connection for a fire-resistance rated roof-ceiling assembly that allows for simpler installation of highly insulated roof systems.
2. We performed another engineering study on the effects of a greater amount of roof insulation on the head-of-wall continuity joint assemblies

where fire-rated walls meet fire-rated or non-fire-rated roof decks.

3. Our committee developed a flyer informing architects and building officials of fire protection alternatives for metal building frames. It is available for free download at [mbma.com/blog](http://mbma.com/blog).
4. We also assisted in adding fire testing exceptions for photovoltaic systems on metal roofing systems to UL Standard 2703, which will be referenced in the 2021 International Building Code.
5. Our committee completed two projects addressing hail damage on metal roof



panels and developed a definition of functional damage. We also assisted the Insurance Institute for Business & Home Safety (IBHS) with its study on the effects of hail impact on metal roofing systems.

6. We completed a white paper that details how insurance companies address hail damage coverage for commercial buildings throughout the United States.
7. We updated the MBMA Insurance Bulletins to reflect building code changes and standard industry practices. These bulletins are available for download in the insurance section of mbma.com.



Andy Jaworski, PE, Committee Chairman



Quality Subaru • Wallingford, CT

### 2020 Goals

Our committee will build upon our 2019 achievements and continue to reach out to design professionals and building officials to help them understand that metal buildings are designed and constructed to be safe, code compliant, resilient and insurable. Our plans include:

- Developing a new non-rated head-of-wall continuity joint assembly where a fire-rated wall meets a fire-rated or non-fire-rated roof deck but does not

extend into the cavity between the secondary roof framing members and disturb the insulation system.

- Publishing hail resistance Insurance Bulletins for metal roofing systems outlining recent research.
- Working with the Communications Committee to educate the design and construction industry about the updated MBMA Fire Resistance Design Guide for Metal Building Systems, updated Insurance Bulletins and changes to MBMA fire-resistance rated assemblies.

# SAFETY COMMITTEE



For Profit's  
Sake, Think  
Safety



Newmar Service Center • Nappanee, IN

**The MBMA Safety Committee is helping to make the metal building industry a leader in safe workplace practices by conducting an annual safety workshop, safety webinars and a safety awards program. We strongly encourage all member companies to not just have representation on the Safety Committee, but to actively participate.**

### **Annual Safety Workshop**

The Safety Committee held a valuable and productive Safety Workshop on Sept. 17-18 in San Antonio, Texas. Roundtable discussions allowed attendees to share successful safety practices as well as safety challenges, for which other attendees offered solutions. Through this free exchange of ideas, the committee accomplished the following:

- Developed a toolkit of best-practice information on safe truck loading for metal building systems manufacturers.
- Formed a Training Subcommittee to

determine which plant-specific topics to develop into training tools.

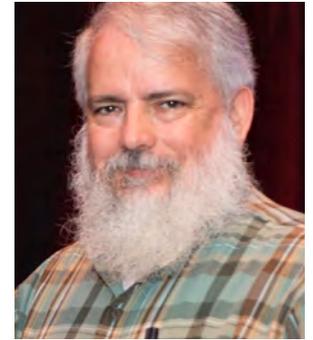
- Formed a Webinar Task Group to plan a series of future webinars that will share even more best practices to foster a culture of safety for the industry.
- Held the first-ever expert safety panel to motivate attendees to improve their safety programs and culture.

### **Safety Webinars**

The Safety Committee presented three excellent webinars this year on Crane Operator Certification, Changing Safety Behaviors and Safety Incentive Programs. These webinars can be viewed in each member's workplace and attendees are encouraged to have further discussions following the webinar about what can be applied in their specific workplace.

### **Safety Awards**

MBMA presents annual safety awards that recognize member plants with zero recordable injuries or with incident rates significantly below the industry average. I'm pleased to report that three MBMA member plants received a Superior Safety Award and four plants were recognized with a Safety Performance Award. Additionally, 22



David Weatherford, Committee Chairman

Associate member plants were recognized for having achieved a zero-incident rate.

As I stated during the MBMA spring meeting: as the committee chairman, my goal for the MBMA Safety Committee is to assure that every team member at every location of every member company goes home safely every day.

# SUSTAINABILITY COMMITTEE

## Providing the Design Community With Industrywide Sustainability Resources

**The Sustainability Committee provides leadership, research and education that increases the prominence and usage of metal building systems as the premier solution for performance, aesthetics and sustainability in building construction.**

### **2019 Achievements**

In 2019, the Sustainability Committee prepared for the required update to the metal building systems Life Cycle Inventory

(LCI) data contained in the National Renewable Energy Laboratory (NREL) database. The committee met at the MBMA Energy/Sustainability Workshop and formulated a plan of action for meeting the update requirements by the December 2020 deadline.

Additionally, the committee monitored all energy and sustainability-related codes, standards and rating systems on behalf of all MBMA members. It also worked to ensure that all of MBMA's sustainability resources remain current.





Windsor High School Farm • Windsor, VA

### Resources

MBMA provides numerous resources to assist the design community with sustainability.

They include:

- LCI data for use in Life Cycle Assessment software
- Environmental Product Declarations
- Athena Impact Estimator software data for metal building systems
- STC and OITC acoustical test data for metal building systems
- Educational videos and webinars available on the MBMA YouTube channel
- An award-winning AIA continuing education course on the sustainable benefits of metal buildings.

These resources and more are available on the MBMA website at [MBMA.com](http://MBMA.com) and our YouTube channel at [YouTube.com/MBMAmedia](http://YouTube.com/MBMAmedia).



John Underwood, Committee Chairman

### 2020 Goals

In 2020, the Sustainability Committee will complete a major update to the metal building systems LCI data for the NREL database. This investment reflects a significant commitment by MBMA and its members in the future of sustainable design for metal building systems.

# TECHNICAL COMMITTEE



## Research Initiatives Add Value & Impact Costs & Codes

Through the work of over 100 volunteers overseeing 18 active research projects, MBMA's Technical Committee is committed to advancing metal building systems design to ensure safe, resilient and code compliant structures. The following are highlights of our work in 2019.

Top: Costco Wholesale • Lindavista, Mexico Bottom: Cash Wise Foods • Fargo, ND



Coborn's Marketplace • Isanti, MN

## Enhancing Resiliency of Metal Building Systems

Many of the projects completed in 2019 enhance the resiliency of metal building systems when they are subjected to seismic and wind events.

### Seismic Behavior of Metal Buildings

To withstand maximum-considered earthquake ground motions, structural systems must be capable of supporting loads beyond the initial limit state without collapsing. An incredible level of effort from researchers and Technical Committee members led to successfully justifying

current seismic design practices using very conservative definitions of collapse. The project has resulted in a peer-reviewed systematic plan that utilizes a high-fidelity finite element model augmented with a series of single degree of freedom models that reduce computation complexity. Further work is planned to refine conservatism in the work to date and incorporate a greater variety of common metal building frame systems into the model over the coming year. The Technical Committee is eager to continue building on these successes, and seeing the results incorporated into engineering standards and the building code.

## SSR Diaphragm Research

The objective of this project was to develop a method to evaluate standing seam roof (SSR) in-plane strength and stiffness values. The SSR on a metal building is commonly not recognized for its inherent bracing capabilities. Our work expanded member bracing options for rafters when using SSRs by more accurately capturing true system behavior and reducing redundant framing costs.



Mark Detwiler, PE Committee Chairman

## Resilient Connections Between Hard Walls and Steel Frames in Metal Buildings

This National Science Foundation project complements MBMA's seismic research. Dr. Justin Marshall at Auburn University evaluated the demand on hard wall and steel frame connections that have been identified as an issue in some earthquake investigations in other countries. Testing is now complete on a prototype attachment that was fine-tuned using finite element analysis. Incorporating these connections in metal buildings could result in less damage during a seismic event.

## Directionality Factor

The directionality factor takes into account the fact that storm wind maximum pressures and the building aerodynamic coefficients both vary in orientation, and it is unlikely that the maximum storm wind flow direction will align with the worst-case direction for building loading. Our research examined the directionality factor for both component and cladding loads and main wind force resisting loads determined in ASCE 7. The project results suggest there should be a reduction of the directionality factors for all buildings, including metal buildings and reducing design wind loads and unnecessary conservatism. This is now being considered for a change to ASCE 7.

## Educate Design Professionals on Code Compliant Metal Building Systems

The MBMA publications library is one of our most valuable assets. The Technical Committee is tasked with keeping it updated to the latest codes and standards. Our efforts in 2019 resulted in:

- 2018 Metal Building Systems Manual – Updated to reflect changes based on the 2018 IBC/2016 ASCE 7.
- New Seismic Design Guide – A practical and comprehensive resource for the seismic design of metal building systems that is compliant with the requirements of the 2015 International Building Code.



Cole Academy • Lansing, MI

- Updated AISC Design Guide 25, Frame Design Using Web-Tapered Members – This second edition has fewer limitations and incorporates code changes and recent research, increasing the design options for rigid frames in metal building systems.
- AISC Design Guide 35, Steel-Framed Storm Shelters – A steel industry collaboration that provides options for storm shelters that meet tornado design requirements.

Other projects completed in 2019 that assist design professionals include:

- Crane Impact Load Requirements – Currently, ASCE 7 and other standards require a higher live-load vertical impact factor for remotely radio-operated cranes and cab-operated cranes than for pendant-operated

cranes. There are advantages of a wireless remote-operated crane, especially with respect to safety. This project evaluated the alternatives and determined this “penalty” for wireless remote-operated cranes is not justified. A proposal is being considered to revise ASCE 7 based on the industry-recognized crane class.

- Direct Strength Examples – For this project, the Technical Committee developed a method that employs the results of the finite strip analysis-based Direct Strength Method in the design optimization programs used for metal building systems. Utilizing the strength gains without the large time penalty of finite strip analysis is an enormous benefit to the entire industry and could provide a model approach that is expandable to the design methodology of other structural systems.

## Goals for 2020

The Technical Committee plans to build upon its achievements in 2019 through the following projects that will help make metal buildings even more resilient:

- Seismic Behavior
  - Evaluating Additional Archetypes to Develop Seismic Design Parameters for Moment Frames
  - Tension-Only X-Brace Roof Truss Diaphragm
  - Wall Diaphragm
  - Field Measurements to Validate Approximate Period
- Wind Effects
  - Endbay Load Path
  - Wind Load Cases for SSR Systems
  - Effective Area Continuous Members

Other projects are planned that should serve to increase metal building structural efficiency and/or integrate the latest state of knowledge:

- Lateral Torsional Buckling Tests
- Column Torsional Bracing
- Flange Brace Design Guide
- Bolted End Plate Connections with PJP Groove Welds

Finally, MBMA continues to monitor the building code development process, ensuring appropriate code requirements for metal



Demmel, Inc. • Flatrock, NC

building systems, as well as participating on ASCE 7 subcommittees and other material design specification committees.

The Technical Committee wishes to acknowledge each of its members for freely giving their time and effort to push the industry to greater heights. It is an honor to work with such selfless people who can compete in the marketplace and still work together for the good of the industry.



Top: SBMC West Waterfront • Seattle, WA  
 Bottom: Mercedes Medical, Inc. • Bradenton, FL

# ANATOMY OF A METAL BUILDING

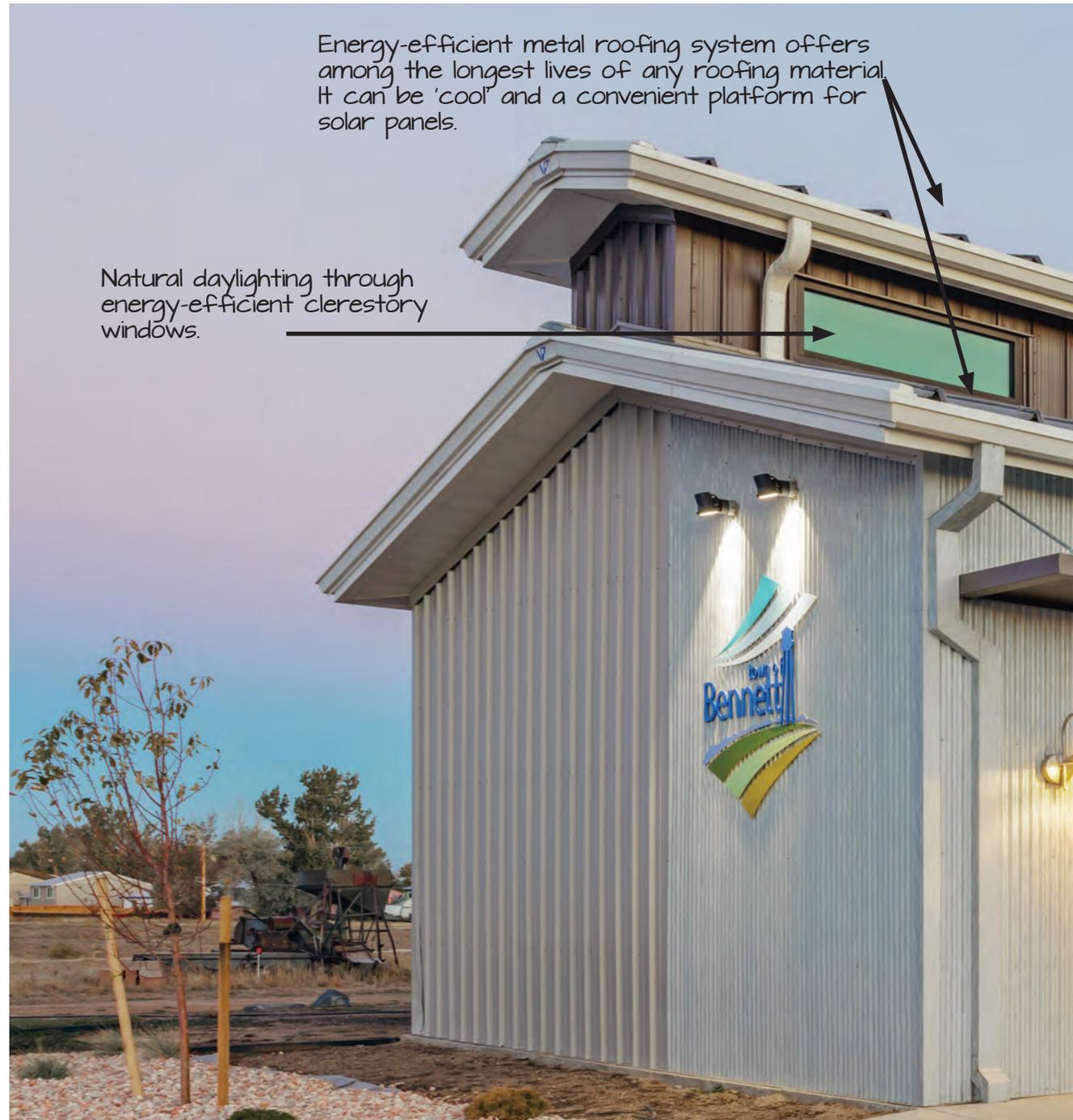
A metal building system is a custom-engineered steel solution that optimizes and integrates steel framing, roofing and walls. It is the most popular low-rise commercial building solution in America.

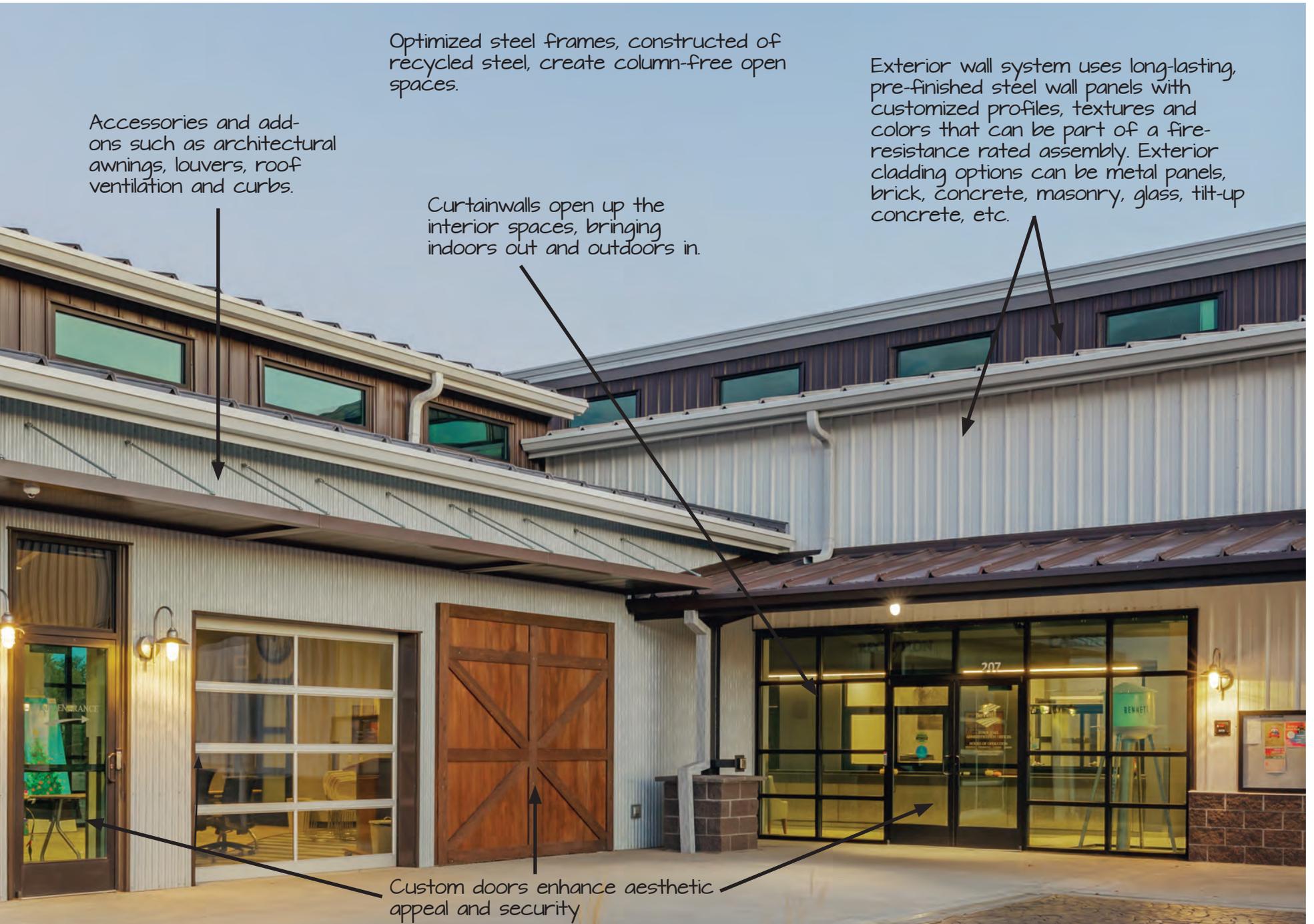
Building design, fabrication, delivery and construction are all managed through a single source.

Each building constructs quickly, saves energy, is long-lasting and is environmentally friendly, with virtually no waste in the manufacturing process and very little waste on the job site. All commonly used metal building elements are 100% recyclable.

Flexible interior and exterior elements allow creative design alternatives. While metal wall panels are popular, sometimes the metal panels are substituted or combined with masonry, stone, pre-cast or tilt-up concrete, wood, glass, aluminum or other architectural wall treatments. The versatility and flexibility of metal building systems allows for the creative introduction of colors, shapes, textures and designs both inside and outside of the building.

The graphic shown here depicts the attributes of one typical metal building.





Optimized steel frames, constructed of recycled steel, create column-free open spaces.

Accessories and additions such as architectural awnings, louvers, roof ventilation and curbs.

Curtainwalls open up the interior spaces, bringing indoors out and outdoors in.

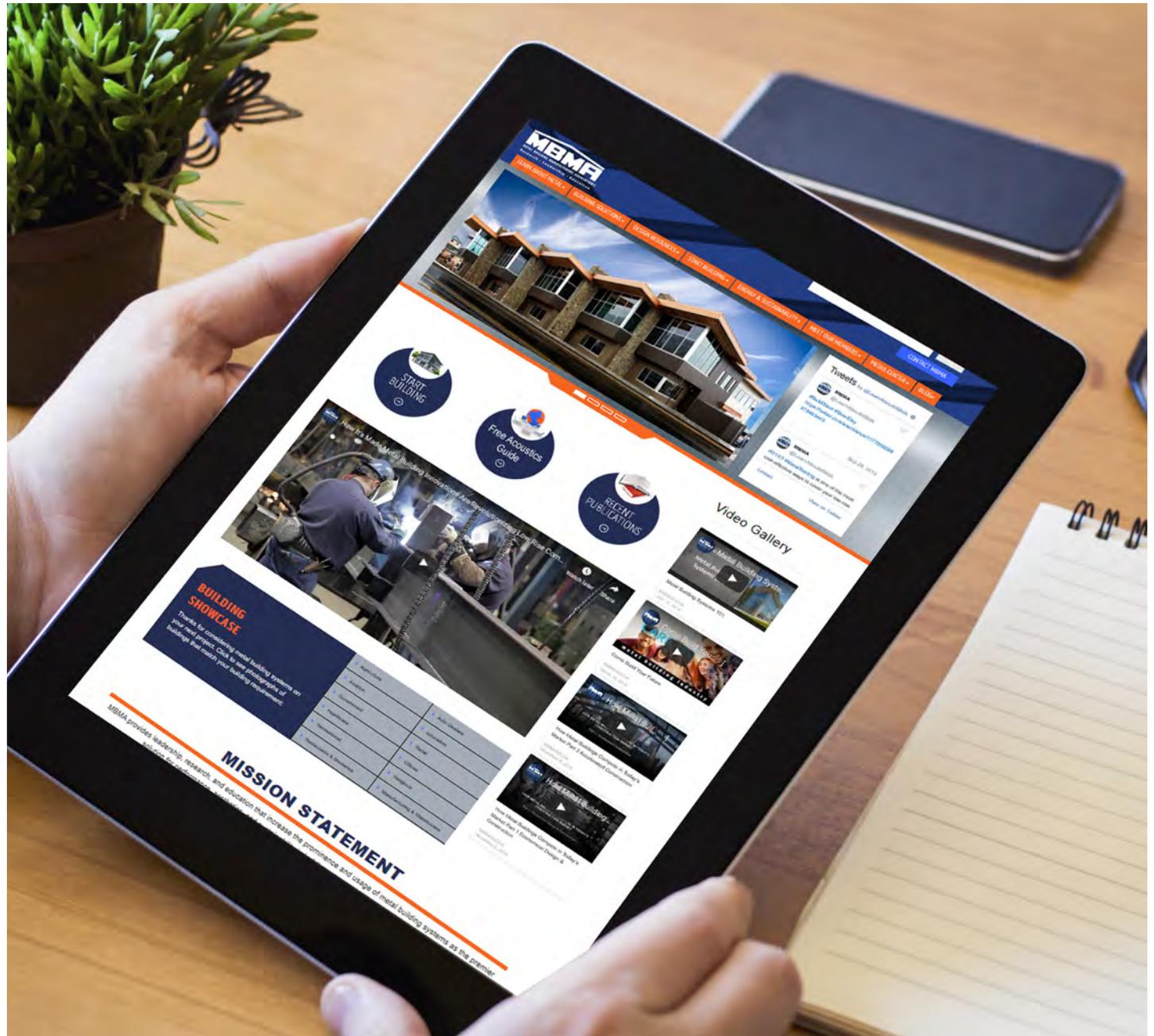
Exterior wall system uses long-lasting, pre-finished steel wall panels with customized profiles, textures and colors that can be part of a fire-resistance rated assembly. Exterior cladding options can be metal panels, brick, concrete, masonry, glass, tilt-up concrete, etc.

Custom doors enhance aesthetic appeal and security

# EDUCATIONAL & TECHNICAL RESOURCES

MBMA continues to lead the metal building systems industry and fulfill its mission by providing educational, research and technical resources. These include an increasing number of design guides and manuals that are invaluable for anyone who works with metal buildings anywhere in the world. MBMA publications are sold as print-on-demand or downloadable PDF files at [techstreet.com/MBMA](http://techstreet.com/MBMA). Users who purchase manuals this way are regularly notified of updates and errata.

MBMA offers free on-demand informational and educational videos, webinars, case studies, articles, fact sheets, e-books, reports and an array of free resources that can be found at [MBMA.com](http://MBMA.com). Take time to learn why MBMA can be your go-to source for knowledge, research, education and growth.



## Metal Building Design & Construction

### Technical Manuals & Guidebooks

- *2018 Metal Building Systems Manual*
- *Metal Roofing Systems Design Manual - Second Edition*
- *Fire Resistance Design Guide for Metal Building Systems*
- *Energy Design Guide for Metal Building Systems - Second Edition*
- *Seismic Design Guide for Metal Building Systems*
- *Concrete Masonry Walls for Metal Building Systems*
- *Guide for Inspecting Metal Building Systems*
- *Energy Code Compliance: A Guide for Metal Building Contractors*

### Videos

- *How It's Made: Metal Building Innovations Are Revolutionizing Low-Rise Commercial Construction*
- *Why Choose Metal Building Systems*
- *Metal Building Systems Speed of Construction*
- *Why Metal Building Systems with Dr. Lee Shoemaker*
- *AC472 Why Accreditation Matters*
- *What Do You Know About Metal Building Systems*
- *MBMA Interview with Professor Marci S. Uihlein, PE*
- *Get More with Metal: Recreation & Fitness Buildings*
- *Voices of the Industry: How Metal Buildings Compete in Today's Market - Parts 1-3*
- *Metal Buildings Systems 101*
- *Career Video Vignette Series*

### Reports & Brochures

- *Acoustical Performance of Insulated Metal Building Roof and Wall Assemblies*
- *MBMA Annual Reports*
- *Vehicle Sales & Service Case Studies*
- *Recreation & Fitness Case Studies*
- *Breweries & Distilleries Case Studies*
- *Retail & Wholesale Case Studies*
- *The AC472 Accreditation Program*

## Continuing Education

- *Specifying a Metal Building System*
- *Life Cost Assessment/Sustainability of Metal Buildings*
- *Creative Metal Building Design Alternatives*

## Energy & Sustainability

### Technical Manuals & Guidebooks

- *Energy Design Guide for Metal Building Systems - Second Edition*
- *Energy Code Compliance: A Guide for Metal Building Contractors*

### Videos

- *Energy Code Compliance for Metal Building Systems Webinar: 5-Part Series*
- *Sustainability for Metal Building Systems Webinar*
- *Using EPDs to Drive Value with Metal Building Systems Webinar*
- *Metal Building Systems and Life Cycle Assessment Webinar*
- *Sustainable Benefits of Metal Building Systems*

### Reports, Articles & Brochures

- *Athena Impact Estimator Case Studies*
- *Environmental Product Declaration: Primary Structural Steel Frame Components*
- *Environmental Product Declaration: Secondary Structural Steel Frame Components*
- *Environmental Product Declaration: Roll-Formed Metal Wall and Roof Panels*
- *Roofing & Solar Case Studies*
- *MBMA Has Resources to Quantify Sustainability of Metal Building Systems*
- *Building Green: A Way of Life*
- *Cool Metal Roofs Are Energy-Efficient and Cost-Effective*
- *The Benefits of Steel-vs-Wood for Low-Rise Building Construction*
- *Which Is the More Sustainable Building Material - Wood or Steel?*

## Fire Protection & Insurance

### Technical Manuals & Guidebooks

- *Fire Resistance Design Guide for Metal Building Systems*

### Videos

- *Fire Resistance Design for Metal Building Systems Webinar: 5-Part Series*

### Reports, Articles & Brochures

- *Material Capabilities: 5 Things to Know About Metal Buildings & Fire Ratings*
- *Insurance Facts*
- *Insurance Bulletins*
- *Fire Protection for Metal Buildings Fact Sheet*

## Safety

### Webinar Recordings

- *Safety Incentive Programs*
- *Changing Safety Behaviors*
- *Crane Operator Certification*
- *Outsourcing Maintenance*
- *Generations in the Workplace*
- *Business Continuity and Crisis Management*
- *Hand Safety*
- *Leadership in a Changing World*
- *New Hire Orientation and Mentorship*
- *Safety Plan Development & Setting Goals*
- *Power Boards and the Work S.M.A.R.T. Program*

## Stay Connected

 [MBMA.com](http://MBMA.com)

 [@LearnAboutMBMA](https://twitter.com/LearnAboutMBMA)

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Eufaula  
Florence  
Hueytown  
Muscle Shoals  
Rainsville

**ARKANSAS**

Cabot  
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**CALIFORNIA**

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Evansville

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# MBMA MEMBERS



## BUILDING SYSTEMS MEMBERS

A&S Building Systems  
ACI Building Systems, LLC  
All American Systems  
Alliance Steel, Inc.  
American Buildings Company  
Associated Steel Group, LLC  
BC Steel Buildings, Inc.  
Behlen Building Systems  
Bigbee Steel Buildings, Inc.  
BlueScope Buildings North America, Inc.  
Butler Manufacturing  
CBC Steel Buildings  
Ceco Building Systems  
Chief Buildings  
CO Building Systems, Inc.  
Cornerstone Building Brands  
Dean Steel Buildings, Inc.  
Garco Building Systems, Inc.  
Golden Giant, Inc.

Heritage Building Systems  
Inland Buildings  
Kirby Building Systems, Inc.  
Ludwig Buildings Enterprises, LLC  
Mesco Building Solutions  
Metallic Building Company  
Mid-West Steel Buildings  
Nucor Building Systems  
Oakland Metal Buildings, Inc.  
Package Steel Systems  
Pinnacle Structures, Inc.  
Red Dot Buildings  
Reed's Metals  
Robertson Building Systems  
Schulte Building Systems, Inc.  
Spirco Manufacturing  
Star Building Systems  
Sukup Manufacturing Co.  
Sukup Steel Structures, Inc.  
Trident Building Systems, Inc.  
Tyler Building Systems, L.P.

Union Corrugating Company  
Varco Pruden Buildings  
Vulcan Steel Structures, Inc.  
Whirlwind Steel Buildings, Inc.

## ASSOCIATE MEMBERS

ABIS, Inc.  
Agilex Business Solutions, LLC  
Akzo Nobel Coatings, Inc.  
All Weather Insulated Panels  
Applied Testing & Geosciences, LLC  
Arcelor Mittal USA  
Arcelor Mittal Dofasco, Inc.  
Atlas Bolt & Screw Company  
Bay Insulation Company  
Benchmark Holdings-Benchmark Consulting & Inspection  
Birmingham Fastener, Inc.  
Birmingham Rail & Locomotive  
Building Products Development  
Building Research Systems, Inc.



CADeploy, Inc.  
 CertainTeed Corporation  
 Commercial Metals Company  
 Crane Composites, Inc.  
 Diamond Door Products, Ltd.  
 D.I. Roof Seamers  
 DuPont  
 Dynamic Fastener Service  
 Expi-Door Systems, Inc.  
 Glasteel/Stabilit America, Inc.  
 Global Building Products  
 Hunter Panels  
 Intertek  
 ITW CCNA  
 ITW Polymers Sealants North America  
 JRH Engineering & Environmental Services, Inc.  
 Kingspan Insulated Panels  
 Konecranes  
 Lamtec Corporation  
 Lincoln Electric Company  
 Metal Building Software, Inc.

Metallic Products Corporation  
 Metl-Span  
 Mid-State Bolt & Nut Company, Inc.  
 Modern Trade Communications, Inc.  
 New Millennium Building Systems, LLC  
 Nucor  
 Owens Corning  
 Palram Americas, Inc.  
 Panasonic Corporation of North America  
 PDL Building Products  
 PowerLift Hydraulic Doors  
 PPG Industries, Inc.  
 Precoat Metals  
 Preferred Solutions, Inc.  
 Preformed Line Products  
 Premier Steel Doors and Frames, Inc.  
 Quality Roof Seamers  
 Redd Team By Hydro  
 Roof Hugger, Inc.  
 S-5! Attachment Solutions  
 Sealed "N" Safe

Service Partners  
 SFS intec, Inc.  
 Sika Corporation  
 Silvercote, LLC  
 Specialty Plus, LLC  
 Steel Dynamics, Inc.  
 Tell Manufacturing  
 Telling Industries  
 The Sherwin-Williams Company  
 Therm-All, Inc.  
 TopHat Framing System, LLC  
 Triangle Fastener Corporation  
 United States Steel Corporation  
 VELUX Design and Development Company USA, Inc.  
 Wurth House of Threads



Vista Brewing • Driftwood, TX

**PROJECT NOTES:** A metal building system for the Driftwood, TX, Vista Brewing fit the owners' desire to effectively control energy costs. The builder chose a very high insulation value within the structure to aid in keeping out the summer heat. "We have been very happy with the ambient temperatures and energy bills," says owner Karen Killough.



Big Ugly Brewing • Chesapeake, VA

**PROJECT NOTES:** Designed by Work Program Architects, Big Ugly Brewing in Chesapeake, VA, features roll-up glass garage doors and storefront openings to create a garage-like feel for the building. It features four skylights and a brick front wall with an accent parapet. The building includes the brewery, tasting room, and storage for products and equipment.



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[www.MBMA.com](http://www.MBMA.com)