2010 MBMA ANNUAL REPORT

BUILDING TOWARD THE FUTURE

INSIDE:

MBMA
METAL BUILDING MANUFACTURERS ASSOCIATION®

Leadership to Spur Industry Growth

A message from Chuck Haslebacher, MBMA Chairman

Chuck Haslebacher,
Chairman, MBMA

Economic challenges continued to influence the construction industry in 2010, but the Metal Building Manufacturers Association (MBMA) has retained its long-standing and fervent commitment and investment to providing the funding, technical personnel and technical oversight to support cutting-edge initiatives critical to development and expansion of the metal building system industry.

The need for metal building systems continues to grow and the marketplace continues to embrace these systems because of their versatility, reliability and sustainability. While non-residential construction was very depressed in 2010, metal building shipments were up approximately 10%. That is why metal building systems have been able to maintain and grow their market share to over 40% of the low-rise commercial building category. From strip centers, to car dealerships, to medical clinics and airplane hangars, metal buildings continue to gain acceptance throughout economic cycles and circumstances.

In addition to accomplishing a significant number of important technical programs which are highlighted in this report, I would be remiss if I did not extend appreciation to all MBMA members who helped make the new IAS accreditation process a success. In fact, the program received special recognition in 2010 when the International Accreditation Service (IAS), a subsidiary of the International Code Council (ICC), recognized MBMA for our contribution in developing the new Inspection Programs for Manufacturers of Metal Building Systems (AC472).

The IAS program requires accredited fabricators to implement a comprehensive quality management system covering all phases of its engineering and fabrication processes. This accreditation will become a requirement for MBMA membership in 2011. It is based on the mandates of Chapter 17 of the International Building Code (IBC) and provides code officials with a means to approve the inspection programs of manufacturers of metal building systems under IBC Section 1704.2.2 Fabricator Approval.

The industry continues to build its future through the efforts of the MBMA.

MBMA: Well-Positioned for the Future

A Message from Chuck Stockinger, General Manager, MBMA

MBMA has served metal building systems manufacturers and suppliers for 54 years. Through all the years since its inception, the MBMA has been the seminal agent of change, influencing the metal building systems industry, and the association's member companies.

MBMA provides engineering leadership through the many research programs that it sponsors annually, often in coordination with major universities and engineering schools throughout North America. This research is used to improve the performance, efficiency and quality of metal building systems and to elevate the technology used to produce them.

Each year, the MBMA board refines and expands its strategic plan to reflect current market conditions and what we need to do in the technical area to advance metal buildings in the year to come. We then work according to that plan to complete each year's established objectives.

At MBMA's annual meeting in Dallas last December, the committee chairmen provided detailed overviews of the work performed by their various teams. Our thanks go out to the many volunteers who serve on these committees and fulfill our desire to provide industry leadership through the advancement of knowledge and technical acumen. The annual meeting drew 95 individuals—a record breaking attendance despite the economic tumult and an indicator of the industry's desire to hear about the innovations represented through the ongoing research that MBMA supports and initiates.

In addition, I must commend MBMA's professional staff, part of the Thomas Associates Inc. management team, who carry out the mission of the association. The association could not have achieved its current level of industry respect without the intelligence, wisdom, and commitment of the leadership team outlined below.

MBMA Leadership
Charles E. Praeger - Assistant General Manager
W. Lee Shoemaker, Ph.D., P.E. - Director of Research and Engineering
Dan J. Walker, P.E. - Senior Technical Engineer
Jay D. Johnson, LEED AP - Director of Architectural Services

MBMA is managed by Thomas Associates Inc., one of the oldest and largest association-management firms in the United States. It has an extensive and diverse technical team that can support the code, standards and research goals. Such synergy allows us to expand our research and bring in human resources that enhance the technical strength of MBMA.

Research Provides Unique Industry Resources

The year 2010 clearly underscored MBMA's efforts to fulfill its stated mission to enhance the collective interests of the metal building systems industry. From new accreditation procedures for system manufacturers to the introduction of cutting-edge research materials, MBMA is providing the leadership that will help propel the industry to greater achievements as the economy begins its slow but inevitable recovery.

Here are some of the highlights from the past year:

MBMA Releases 2010 Supplement to the 2006 Metal Building Systems Manual
In early 2010, MBMA released the 2010 Supplement to the 2006 MBMA Metal Building Systems Manual. This update integrates provisions of the 2009 edition of the International Building Code (IBC) into the manual, as well as updating many chapters and adding new information. MBMA's Technical Committee and professional staff, under the leadership of Dr. W. Lee Shoemaker, assembled some of the best engineering talent in our industry to publish this state-of-the-art supplement. This publication has drawn a worldwide audience as more and more international companies purchase the publication via an online documents source, at www.mbmamanual.com.

The supplement includes a new procedure for assessing longitudinal wind drag on open buildings as well as background information on the testing that led to this procedure. Other revisions and additions include a new seismic design example for metal buildings with concrete masonry walls (hardwalls), new Underwriters Laboratories (UL) fire resistance listings for head-of-wall (HOW) joints, information on the International Accreditation Service Inc. (IAS) AC472 inspection program for manufacturers of metal building systems, a discussion on one-sided welding, and an updated section on lightning protection.

Energy Design Guide for Metal Buildings Shows How to Save Money, Go Green
MBMA also released the Energy Design Guide for Metal Building Systems in 2010. The guide provides up-to-date information on energy efficient technologies, programs, codes and ways to increase the energy efficiency of metal building systems and applications. The guide is an invaluable resource for metal building owners and builders. In addition to metal buildings, it also provides plenty of useful information for increasing energy efficiency in all types of construction, making the guide a good resource for anyone in the building design and construction industry.

MBMA's Director of Architectural Services, Jay D. Johnson, LEED AP, oversaw the extensive research efforts to put together this comprehensive guide. It begins by introducing both green building concepts and metal building systems and applications, followed by chapters on energy code fundamentals, insulating metal building systems, cool roofs, and how to implement daylighting. There are additional chapters on energy codes and standards and the various compliance tools available. It also includes detailed information on the various green rating and certification programs, such as USGBC's LEED rating system, GBI's Green Globes rating system, and the Energy Star labeling program, jointly sponsored by EPA and DOE. There are over 60 illustrations and drawings accompanying the text as well as 25 charts included.

"Metal building systems are already recognized as some of the most cost effective and sustainable building types available. The new MBMA Energy Design Guide provides anyone who works with or owns a metal building the knowledge to increase energy efficiency and save money on both new and existing buildings."
Jay D. Johnson, LEED AP, Director of Architectural Services, MBMA

Whether you work with metal buildings or other building types, the guide is an ideal resource on energy codes, programs and ways to increase energy efficiency of all buildings.

Fire Resistance Design Guide Adds Depth to Industry Research Sources
The release of the Fire Resistance Design Guide for Metal Building Systems in 2010 resulted in great interest from various industries. The uniqueness of this publication makes it a special resource to our industry and to anyone who needs information on fire-resistance properties. The guide provides building owners, architects, engineers, specifiers, fire marshals, building code officials, contractors, product vendors, builders and metal building manufacturers information on how to effectively meet fire resistance requirements of a project with metal building systems. Complete details can be found at www.mbmamanual.com and www.mbma.com.

This design guide was commissioned by the MBMA to consolidate and present the available information on common fire-resistant construction practices for metal building systems and all of the MBMA-sponsored fire-resistant rated assemblies that have been evaluated and listed. It has been developed in the context of the relevant provisions of the 2009 International Building Code (IBC) and its typical applications in the United States. The guide provides up-to-date information on passive forms of fire resistant systems, codes, explanations of specific fire protection materials, and ways to provide one- and two-hour fire rated assemblies for walls, columns, roofs, floors and ceilings.

The guide includes both broad background information for practitioners not familiar with the subject, as well as advanced guidance and insights for more experienced users. It specifically addresses steel-fire protection for low-rise metal building systems, also referred to as passive protection. There are chapters on gypsum board, spray-on materials and other fire protection materials. Additionally, there is a comprehensive list of resources for fire resistive design, and appendices with both MBMA sponsored and other fire-resistive assemblies.

AC472 Accreditation Brochures Commitment to Quality
MBMA developed informational flyers regarding the AC472 Accreditation Program. This family of flyers was developed for specific audiences, such as building owners, specifiers, code officials, contractors, and national account customers. These flyers are helping our member companies educate important buyers and influencers about the program. The brochures are available in print and electronic forms and may be downloaded from the MBMA website at **www.mbma.com**.

Dave Evers, Energy Committee Chair

Brad Robeson, Sustainability Committee Chair

MBMA Annual Meeting Brings to Light Many New Initiatives

Below are some of the key technical findings presented by committee chairs to the annual meeting attendees:

ENERGY COMMITTEE

Mission:
To promote the use of metal building systems in the non-residential construction industry, by encouraging fair and equitable treatment of metal building systems by energy codes, standards organizations, testing and rating groups, and other governmental and non-governmental groups.

Codes and Standards:
Expect plenty of codes and standards activity in 2011 as ASHRAE and IECC sort through building envelope insulation issues. The ASHRAE 189.1 standard was published and the IgCC green building code has gone through two public reviews. Insulation values in both are more stringent than IECC 2009, yet different than either the ASHRAE standard or the proposed 2012 IECC code.

"During 2010, the MBMA staff and member company volunteers spent a significant amount of time in the drafting of the 2010 ASHRAE 90.1 standard, the proposed IgCC, the ASHRAE 189.1 green building standard and the proposed IECC 2012 code."
Dan Walker, Senior Staff Engineer, MBMA

First Green Conference a Resounding Success:
The MBMA 2010 Strategic Plan stated that the association's number one objective was to define current and future energy and sustainable requirements, their impact on metal building systems and take action, including education of the membership. The Energy Committee and Sustainability Committees devoted significant resources to determine how these new market forces will impact metal building systems construction.

As a result, the Energy Committee sponsored MBMA's first green building conference: Sustainable Green Building: Challenges, Solutions, and Opportunities for Metal Building Systems. Speakers represented the Department of Energy, government laboratories, energy consultants, and architecture firms. Based on its success, another conference is planned for 2011.

Air Infiltration Task Group Formed:
MBMA's energy committee named a task group to begin evaluating the air infiltration performance of metal buildings and explore ways to make improvements. Requirements for air infiltration are being proposed on a regular basis in advanced energy design guides and by the Corps of Engineers, so proactive performance analysis will improve acceptance of metal buildings in the marketplace. A task group formed from members of MBMA's Energy Committee identified six needed test assemblies. Then, MBMA contracted with the National Association of Home Builders Research Center to conduct the tests. Results will be documented and presented later this year and will influence the next steps for the MBMA task group.

Energy Committee 2010 Research Examples:
ORNL Joint Development Testing – Insulation Assemblies: Oak Ridge National Laboratory received a grant for improving the insulating value of building envelopes that included 10 hotbox tests for metal building assemblies for advanced insulation systems. An MBMA member task group was formed to assist in this research. To date, six tests have been conducted that resulted in U-factors that meet more stringent standards for many climate zones. Additional work is scheduled for 2011. The results from these tests will help MBMA members develop advancements for high-performance, energy-efficient roof systems.

Whole Building Modeling:
MBMA contracted with the Heschong-Mahone Group to complete a simulation analysis of a single-story, small warehouse in each of ASHRAE's eight climate zones. Modeled per ASHRAE 90.1-2007 prescriptive and whole building performance requirements, the same prototype was created using metal and concrete construction. The analysis was conducted using E-Quest Software and members can use the system and this analysis to begin specific building modeling.

Daylighting Research Changes Title 24:
MBMA also contracted with the Heschong-Mahone Group to conduct a daylighting study. The results from that study led the California Energy Committee to make wall side lighting allowable in Title 24. As daylighting continues to emerge as a building envelope design requirement, more codes and standards will address this issue and MBMA research will help to influence code decisions.

SUSTAINABILITY COMMITTEE

Mission:
The MBMA Sustainability Committee was formed in 2009 to represent the metal building industry in the many facets of green and sustainable construction and to ensure fair and equitable treatment for metal buildings by the many groups which publish standards relating to green construction.

Industry Leaders Carefully Monitor Sustainable Issues
MBMA's Sustainability Committee just completed its first year of service, yet already plays a vital role within the MBMA. The committee is monitoring various issues and activities in order to keep MBMA members abreast of the rapidly changing initiatives within the sustainability movement.

Examples of the groups and/or standards being monitored by the committee include:

United States Green Building Council (USGBC) which maintains the Leadership in Environmental and Energy Design (LEED) program

Canadian Green Building Council (CaGBC) which maintains the Canadian Version of LEED

Green Building Initiative (GBI) which maintains the Green Globes program

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) which maintains Standard 189.1, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

International Code Council (ICC) which is developing the International Green Construction Code, or IgCC

The Sustainability Committee is also charged with monitoring significant trends. One of these trends is the use of Life Cycle Assessment (LCA) to determine the environmental impact of the materials and processes used to manufacture, construct and later dispose/recycle a building after its life cycle is complete. LCA is currently an optional compliance path for ASHRARE 189.1, IgCC and the LEED 2012 Integrated Process and LCA pilot credits. It is expected that LCA will ultimately replace the Material and Resources section of LEED.

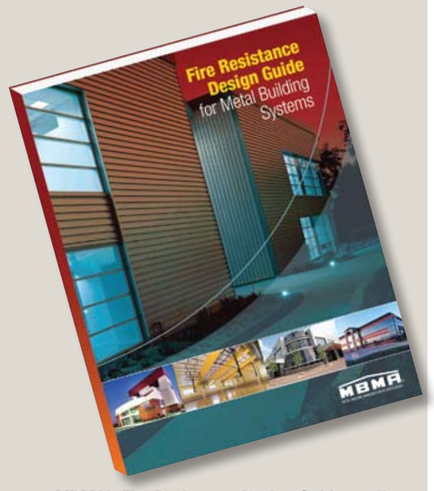
Life Cycle Assessment
A compilation and evaluation of the inputs, outputs, and the potential environmental impacts of a building system throughout its life cycle. LCA addresses the environmental aspects and potential environmental impacts (e.g., use of resources and environmental consequences of releases) throughout a building's life cycle from raw material acquisition through manufacturing, construction, use, operation, end-of-life treatment, recycling, and final disposal (end-of-life). The purpose is to identify opportunities to improve the environmental performance of buildings throughout their life cycles.
Source: ASHRAE 189.1

Sustainability Committee Task Groups
The High Performance Green Building Task Group watches the development of codes, standards and guidelines pertaining to green building construction requirements.

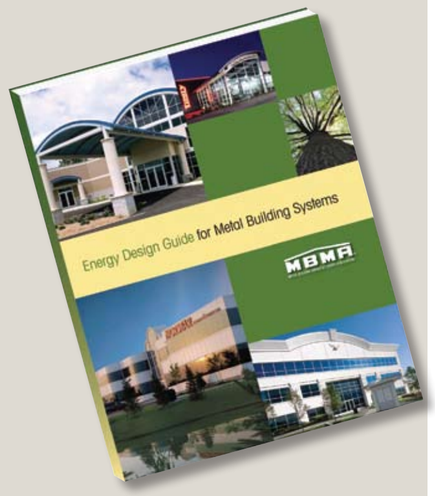
The LCI/LCA Task Group focuses on developing the industry response to the inclusion of LCA in green building codes and standards.

The Eco-Calculator Task Group is charged with determining the proper implementation of Life Cycle Assessment assemblies in the ATHENA EcoCalculator for Assemblies.

Bob Hodges, Chairman Fire Protection & Related Insurance Matters Committee Chair



MBMA's Fire Resistance Design Guide, available at www.mbmamanual.com, is a resource for every professional involved in building construction, codes and fire safety issues.



MBMA's Energy Design Guide available at www.mbmamanual.com

Fire Protection & Related Insurance Matters Committee

Mission:
To promote the use of metal building systems in the non-residential construction industry by encouraging fair and equitable treatment of metal building systems by regulators, fire and building codes, insurance and insurance regulating and rating organizations, underwriters and re-insurance firms.

The Fire Protection & Related Insurance Matters Committee is a key group of leaders within MBMA who have worked for many years to strengthen the case for the value of metal building systems as a low-risk alternative for fire and other insurance-related commercial building considerations. Their annual meeting report focused on some hot button issues that will impact future codes and construction decisions.

MBMA Head-of-Wall Fire Testing Impacts Code Changes:
IBC Building Code change proposals submitted by MBMA were successful this year and will be included in the 2012 IBC Building Code. MBMA One-Hour Head of Wall test reports, ICC staff and committee interpretations and supporting commentary have been posted on the MBMA website, www.mbma.com. The changes will require that intersecting voids between fire resistive walls and non-fire resistive roof assemblies be filled with approved material. This removes the need for a fire resistive joint, leaving only the need to establish joint continuity. Joint continuity may be established by MBMA Head of Wall testing. This project is scheduled for closure in early 2011 with updated press releases and/or insurance bulletins or other documentation.

MBMA Fire Resistance Guide Achieves Industry Acclaim:
MBMA's Fire Resistance Design Guide, described in detail earlier in this annual report, is a unique resource document for architects, engineers, code officials, fire fighters, insurance companies and others impacted by the ways in which metal buildings meet building code fire resistance requirements. Special thanks go to Nestor Iwankiw, P.E., SE, PhD, of Hughes Associates for serving as primary author of this publication and the American Iron and Steel Institute for their support. The 2011 phase of this project will be to carry the guide to the marketplace through MBMA website information, trade magazines and shows, building code articles and development of formal training programs to educate members, builders, architects, fire marshals, etc. For details on how your firm can participate in sharing this vital resource throughout the industry, contact Charles Praeger at cpraeger@mbma.com.

Metal Wall Assemblies Fire Test Program Dubbed "Complete Success":
The MBMA one-hour wall fire tests, conducted at Underwriters Laboratory in October 2010, were hailed as a "complete success" by the MBMA committee members involved in the testing process. One-hour fire-rated wall assemblies updated to meet future energy codes and that are more constructible will help expand the markets for metal buildings into commercial and institutional markets. This will relieve problems in using economical and competitive fire-rated metal building wall assemblies without the need to interface masonry solutions into metal buildings. This will also help the metal building contractors with fire marshals and local building officials by providing them with solutions they need to provide a complete metal building system. The fire rated wall assemblies can meet future energy codes by providing blanket insulation or rigid board insulation options.

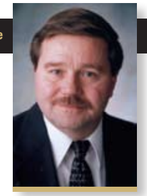
2010 Research Examples
Steel Column Fire Protection Spreadsheet:
This spreadsheet will provide a tool to allow its users to determine gypsum and spray-on fire protection options. The fire protection spreadsheet is scheduled for external reviews by the Gypsum Association, W.R. Grace and others late this year, with an anticipated publication in 2011.

Roof-Ceiling Fire Test Program:
This test program is an important part of the long-term MBMA strategic goal to increase market share by providing a portfolio of UL fire resistance design listings that allow metal buildings to qualify as Type IIA and Type IB construction. This will result in increased allowable floor area for various occupancy groups. The one-hour UL fire resistance design listing for a roof assembly system utilizing metal building framing will enable architects and designers to use metal buildings for higher occupancy commercial, institutional and governmental end-uses.

General Insurance Study:
This project is a multi-phase project resulting from the MBMA 2008 Fire Protection Survey and Gulf States Insurance Market Study. The study includes:

- Conducting insurance rate comparisons between metal buildings and other types of construction, building sizes, geometry, locations, etc.;
- Updating and revising the MBMA Insurance Fact Book and insurance bulletins;
- Establishing communications with Insurance Services Office Inc. (ISO) to initiate an educational program with ISO and other insurance carries; this project began in 2010 and is expected to be completed in 2011. The first two phases are well underway and will give the association a better understanding of how insurance rates for metal buildings compare to other construction materials.

Tom Wrigley, Chairman Safety Committee



SAFETY COMMITTEE

New MBMA Safety Committee Begins Aggressive Plans
MBMA's newest committee is taking on some aggressive goals in order to hit the ground running and make an impact on the safety initiatives of MBMA member companies. Their first action was to develop six safety principles to offer a platform that encourages safety mindedness as a workplace choice. The safety principles are:

1. All injuries and work-related illness can and must be prevented.
2. Leadership is responsible for clear safety objectives. All employees are responsible and accountable for working safely.
3. Employee engagement and training is essential.
4. Working safely is a condition of employment.
5. Excellence in safety and health drives excellent business results.
6. Safety and health is integrated into all business management processes.

To reinforce these principles, the committee initiated a variety of activities including plant tours to learn about safety programs in other firms and development of a Safety & Heath Principles Guidance Book, available at www.mbma.com/pdf/SafetyPrinciples&GuidanceBook012210Final.pdf. In addition, the group is spearheading the development of a secure digital portal to facilitate MBMA member companies' ability to interact and learn from each other.

Top Priorities of MBMA's New Safety Committee
The Safety Committee identified the following top priorities:

1. Best Practices—These must be identified and shared in order to continually improve.
2. Engage Employees—This is a requirement if we are to see sustainable results.
3. Top Management Support—This must be both oral as well as visual on a daily basis.
4. Change the Culture – Safety must be part of each member company's basic culture.

Changes to the Annual MBMA Plant Safety Awards
For many years, MBMA has bestowed safety awards to member company locations that achieved a safety record significantly better than OSHA reported averages for the previous calendar year. The program has been revamped and MBMA's new criteria is that winning firms must have work-related accident and illness rates that are a minimum of 50% below OSHA-reported averages for the North American Industry Classification System (NAICS) code 332311 which is Prefabricated Metal Building And Component Manufacturing. The award year was moved to a calendar year to match the OSHA calendar year reporting. The award presentation ceremony was then moved to coincide with MBMA's spring meeting, in alignment with calendar year reporting.

OSHA Trends Revealed
At an MBMA Safety Committee meeting in July, an OSHA Compliance Officer reported a number of key changes that will impact the entire building industry:

1. OSHA policy will move from partnership to enforcement of compliance.
2. If OSHA finds the company in violation of the rules, there will be a fine, and the firm will go on the Severe Violator Enforcement Program (SVEP) List. Compliance must be maximized because safety professionals can be held liable.
3. Firms must be aware that OSHA is targeting companies that are paying employees to be safe because this could tend to promote the hiding of accidents.
4. Safety departments should conduct regular audits and have other departments within the company conduct the audit rather than the safety department.

Jerry Hatch, Chairman Technical Committee

TECHNICAL COMMITTEE

MBMA's Technical Committee has been very active in truly changing the image and impact of the metal building systems industry. Here are some of their key projects undertaken in 2010:

Code Update:
Seismic Behavior of Metal Buildings
The goal of this project is to update the building codes with more appropriate seismic design methods for tapered member rigid frames. Full scale shake table testing at the University of California San Diego has provided data that will be incorporated into analytical models and be used to explore frame behavior for the range of buildings utilized in the low-rise building market. The study of the analytical models is expected to run through 2011. A video of this testing is available at www.uctv.tv/search-details.aspx?showID=18699.

Testing:
Full Scale Wind Loads on Overhead Doors
Two wind load test reports have been published and a third and final report is anticipated in 2011. Researchers at Virginia Tech are developing an analytical model that will predict performance of overhead doors when installed in metal building jambs. This model will allow us to balance the needs of the door for good performance with the strength and flexibility of the metal building jambs.

Shear Strength of Tapered Members
The method we use to determine shear strength of tapered members has been around at least since Omar Blodgett published the concept in 1966. The assumptions used in this method were never supported by experimental tests. The focus of this project is to test 12 specimens of varying geometry to obtain objective evidence to corroborate the method. Testing began in the fourth quarter of 2010 and will be completed in 2011.

ASTM Skylight Fall Protection
Light transmitting panels are commonly used in metal building construction. The focus of this project is to develop a strength test method for these panels and have it adopted by ASTM.

Research:
Flexural Strength of Cs and Zs with Rigid Insulation
Rigid board insulation placed between R panels and girts or purlins require the use of bridging. The point of this research is to document the performance of this system without bridging. If, through testing, we can demonstrate that the system meets the structural needs in resisting environmental loads, then our customers could save on erection costs.

Lateral Wind Drift
There has been general agreement that the calculated deflections for metal buildings are probably greater than the actual deflection encountered. This research has focused on collecting load deflection data on erected buildings and comparing it to mathematical models. We assume column base plates are pinned when designing buildings. What we have found out is that common base plates resist more moment than anticipated. When considering this partial fixity, the test data coincides with the models. This may lead to a different analysis assumption that would more closely reflect the actual behavior.

Resources:
Foundation Design Guide
Foundations for metal buildings need to be designed considering loads that are unique to tapered member frames. This manual is being developed by a consultant to document customary design practices used for metal building foundation design. The goal is to also provide a format for reaction information generated by the metal building manufacturer supplied to the foundation engineer. Consistent format for delivery of reactions will help to reduce confusion.

Inspection Handbook
This manual will give guidance to builders in those areas where building codes require inspection of metal buildings or where inspection might be carried out by an owner, insurance provider, etc. This manual should reduce the number of issues that builders face when seeking an occupancy permit for a metal building and provide a useful resource for anyone tasked with carrying out an inspection of metal building construction.

Metal Roofing Systems Design Manual Update
The Metal Roofing Systems Design Manual was originally developed by MBMA and AISI in 2000. MBMA's Technical Committee is currently reviewing and updating its contents and will provide the revised document in a binder format so that future updates can be easily inserted.

MBMA Technical Committee Plans For 2011
Flange Brace Research:
Researchers at Georgia Tech have demonstrated that the strength and stiffness requirements for flange braces used in metal building systems are different than those developed for conventional steel construction.
A definitive guide to flange braces will be developed that identifies the key concepts.

Column Base Rotational Stiffness Program:
As a result of recent wind drift testing and seismic behavior testing, it is evident that frame base stiffness has a larger than anticipated impact on design. There could be economies in frame design if we consider the partial restraint of the typical pinned base plate. This research will develop a base plate wizard software program to assist in determining the stiffness of typical base plates that can then be entered into a frame analysis.

Distortional Buckling Research:
This project will analyze the distortional buckling behavior of purlins and girts when subject to uniformly distributed loads. The results will more closely reflect the behavior of gravity loaded purlins and might lead to different design requirements than those currently used that were based on point loads.

Research the Direct Strength Method—Combined Axial and Bending:
This research has the potential to provide a more mechanically sound solution to the strength of beam-columns, eliminating excessive conservativeness and at the same time encouraging a new generation of highly optimized, high-strength, cold-formed, steel shapes.

All this research is costly and time-intensive, yet it is the very essence of what has made metal building systems advance from a utilitarian structure to one of the most flexible, innovative, and energy efficient types of construction in the low-rise commercial building market. In a short five decades, metal building systems have achieved a reputation for superior quality, efficiency, strength and durability. While the marketplace may be slow today, the ongoing efforts to continuously improve the quality and integrity of metal building systems will help define the industry's potential for true leadership in the years to come.

MBMA Membership

Building Systems Members

A & S Building Systems Inc.
An NCI Company
Caryville, TN
www.a-s.com

ACI Building Systems, Inc.
Batesville, MS
www.acibuildingsystems.com

Alliance Steel Inc.
Oklahoma City, OK
www.allianceokc.com

American Buildings Co.
A Nucor Company
Eufaula, AL
www.americanbuildings.com

BC Steel Buildings, Inc.
Oklahoma City, OK
www.bcsteel.com

Behlen Building Systems
Columbus, NE
www.behlenbuildingsystems.com

Bigbee Steel Buildings, Inc.
Muscle Shoals, AL
www.bigbee.com

BlueScope Buildings North America, Inc.
Kansas City, MO
www.bluescopesteel.com

Butler Manufacturing
A Division of BlueScope Buildings North America, Inc.
Kansas City, MO
www.butlermfg.com

CBC Steel Buildings
A Nucor Company
Lathrop, CA
www.cbcsteelbuildings.com

Ceco Building Systems
An NCI Company
Columbus, MS
www.cecobuildings.com

Chief Buildings
Grand Island, NE
www.chiefbuildings.com

Chisum Site & Steel, Inc.
Paris, TX
www.chisumsteel.com

Dean Steel Buildings, Inc.
Fort Myers, FL
www.deansteelbuildings.com

Garco Building Systems, Inc.
An NCI Company
Airway Heights, WA
www.garcobuildings.com

Golden Giant, Inc.
Kenton, OH
www.goldengiant.com

Gulf States Manufacturers
A Nucor Company
Starkville, MS
www.gulfstatesmanufacturers.com

HCI Steel Building Systems
A Division of BlueScope Buildings North America, Inc.
Arlington, WA
www.hcisteel.com

Heritage Building Systems
An NCI Company
North Little Rock, AR
www.heritagebuildings.com

Inland Buildings
Cullman, AL
www.inlandbuildings.com

Kirby Building Systems, Inc.
A Nucor Company
Portland, TN
www.kirbybuildingsystems.com

Liberty Building Systems
A Division of BlueScope Buildings North America, Inc.
Memphis, TN
www.libertybuildings.com

Ludwig Buildings, Inc.
Harahan, LA

Mesco Building Solutions
An NCI Company
Irving, TX
www.mescobuildingsolutions.com

Metallic Building Company
An NCI Company
Houston, TX
www.metallic.com

Mid-West Steel Buildings
An NCI Company
Houston, TX
www. mid-weststeel.com

NCI Building Systems, Inc.
Houston, TX
www.ncilp.com

Nucor Building Systems
A Nucor Company
Waterloo, IN
www.nucorbuildingsystems.com

Oakland Metal Buildings, Inc.
Florence, AL
www.oaklandmetalbldgs.com

Package Industries, Inc.
Sutton, MA
www.packagesteel.com

Pinnacle Structures, Inc.
Cabot, AR
www.pinnaclestructures.com

Red Dot Buildings
Athens, TX
www.reddotbuildings.com

Robertson Building Systems
An NCI Company
Ancaster, Ontario, Canada
www.robertsonbuildings.com

Ruffin Building Systems, Inc.
Oak Grove, LA
www.ruffinbuildingsystems.com

Schulte Building Systems, L.P.
Hockley, TX
www.sbslp.com

Spirco Manufacturing
Memphis, TN
www.spirco.com

Star Building Systems
An NCI Company
Oklahoma City, OK
www.starbuildings.com

Steel Built Corp.
Ambridge, PA
www.olympiabuildings.com

Trident Building Systems. Inc.
Sarasota, FL
www.tridentbuildingsystems.com

Tyler Building Systems, L.P.
Tyler, TX
www.tylerbuilding.com

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