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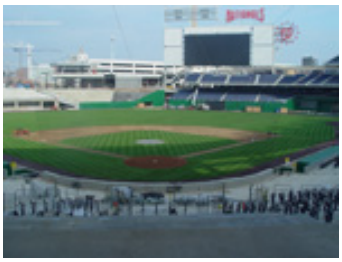
D.C.'s Impressive New Ballpark Required An Impressive HVAC Contractor



Everything about the new 41,000 seat D.C. Major League Baseball Park is impressive. The spectacular scoreboard, the wide main concourse, the dazzling array of restaurants and the speed records broken during the construction of the $611 million home for the Washington Nationals.

According to Rick Freeman, president of Stromberg Metal Works the project was quite an accomplishment considering they had no contract drawings from which to bid by or to design any ductwork around. “It all had to be done literally on the ‘fly,’ “ Mr. Freeman said.

The rapid design−build project with its very aggressive construction schedule required the major league skill and expertise of SMACNA Contractor Stromberg Metal Works who installed approximately $6 million of standard HVAC systems and kitchen exhaust systems associated with the concession areas.

The project required installation of medium pressure HVAC systems with 3” w.g. positive and 2” w.g. negative static and 2500 FPM velocities and used the Gripple hanger system. All of the ductwork was sub−assembled at Stromberg’s pre−fab shop and delivered to the jobsite in sections for immediate

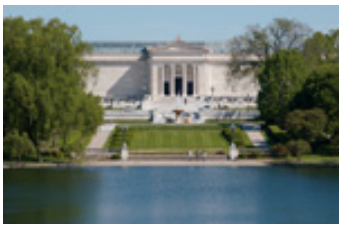
installation.

The severely compressed construction schedule required the mechanical and electrical design coordination effort be done while the structural steel was being erected, not a normal process for the construction industry. This deviation created many obstacles due to the ceiling space limitations. Since the building structure could not be altered to create more ceiling space the mechanical/electrical design changed daily, requiring the ductwork to also change daily.

Once the initial coordination effort was established, the ductwork plans were immediately sent to Stromberg's shop for fabrication, so the installation process could begin. In many cases the installed ductwork had to be redesigned, re–fabricated and reinstalled to accommodate other added systems or other hidden obstacles.

All of this rework was done without extending the project completion date, as the opening date was set in stone. Stromberg began installing ductwork at the beginning of 2007 with the deadline of March 2008 always hanging over their heads. Opening day for the Nationals Park was March 30th.

Museum Trusts Treasures To Cleveland Contractor



The Cleveland Museum of Art

Housing more than 43,000 works of art from ancient Egypt to contemporary and modern works of art, the Cleveland Museum of Art is one of the world's most distinguished and comprehensive art museums.

When renovations were required for the original 1916 building and the 1971 Breuer building, the Cleveland Museum of Art knew they could trust the preservation of their priceless works to a SMACNA Contractor, Duct Fabricators Inc., of Cleveland, Ohio. They also turned to Duct Fabricators for new construction of wings joining the two pre–existing buildings.

Sixteen smoke evacuation systems were installed in the attic of the 1916 building taking care not to damage the original skylights overhead.

Installation included air handling units serving VAV and zoned systems. Materials ranged from galvanized/stainless steel, black iron—24 gage to 10 gage and fiberglass.

The ductwork was strategically placed between the original columns in the 1916 building's mechanical equipment room.

According to John Sickle Jr., president of Duct Fabricators, "Working within the confines of the existing structure was a primary challenge." Ductwork was strategically placed between 90−year−old columns, while smoke evacuation systems were carefully lodged directly below original 1916 skylights. Other challenges involved working around the museum hours of operation; plus the equipment and ductwork had specialized isolation and sound dampening requirements.

Finger lines go to the slot diffuser that feeds the gallery rooms in the new wing.

As subcontractors, Duct Fabricators, Inc. has successfully completed many large HVAC sheet metal projects in the northern Ohio area some of which include the Society Tower, Rock and Roll Hall of Fame and Museum, Great Lakes Science Center and Quicken Loans Arena (formerly Gund Arena). Visit their Web site.

LEED AP Credential Now Administered Through Green Building Certification Institute

Over the last seven years, the Leadership in Energy and Environmental Design (LEED) Professional Accreditation program has verified that more than 43,000 building professionals have an understanding of green building techniques, the LEED Green Building Rating System and the certification process.

Now with the U.S. Green Building Council's (USGBC) enthusiastic backing, the LEED AP credential will be administered by a separately incorporated organization, the Green Building Certification Institute(GBCI). The formation of GBCI creates administrative independence between the LEED Rating Systems and the LEED AP credential—an important requirement in seeking accreditation for professional credentialing programs by the American National Standards Institute (ANSI).

While USGBC will continue to handle development of the LEED Rating Systems and offer LEED−based education programs, GBCI will manage all aspects of the LEED Professional Accreditation program including exam development, registration and delivery. Nothing will change for LEED Accredited Professionals except that the LEED AP Directory listing can now be updated at the GBCI Web site. GBCI.org is also the place to learn about LEED Professional Accreditation, register for the LEED AP Exam, find LEED Accredited Professionals in your area and access LEED AP exam records.

More on GBCI
The Green Building Certification Institute (GBCI) was established as a separately incorporated entity with the support of the U.S. Green Building Council. GBCI administers credentialing programs related to green building practice. These programs support the application of proven strategies for increasing and measuring the performance of buildings and communities as defined by industry systems such as the LEED Green Building Rating Systems.

While the U.S. Green Building Council handles the development of the LEED Rating System and offers LEED−based education programs, the LEED Professional Accreditation program is independently administered under the Green Building Certification Institute to allow for balanced, objective management of the credential. GBCI manages all aspects of the LEED Professional Accreditation program including exam development, registration, and delivery. This separation into two organizational entities brings the credentialing program closer toward meeting standards for programmatic excellence put forth by ANSI/ISO/IEC 17024.

GBCI will also oversee the development and implementation of a maintenance program for LEED AP credential holders. Development of this program has begun and details will be announced this year. Establishing maintenance requirements for LEED Accredited Professionals will ensure that the credential continues to distinguish those building professionals who maintain current knowledge and skills to successfully steward the LEED Certification Process with their thorough understanding of green building principles and practices and of the LEED Rating System.

ANSI/ISO/IEC 17024
The American National Standards Institute's (ANSI) accreditation for professional credentialing programs is a rigorous third−party verification program which puts forth both initial and continuous requirements to ensure minimum credibility, integrity and excellence for organizations and programs providing credentials to the public. Based on ISO Standard 17024, this accreditation program evaluates the structure, governance, security and validity of professional credential programs. Achieving ANSI Accreditation is a goal of the LEED Professional Accreditation program and facilitating the program's move into a separately incorporated entity, the Green Building Certification Institute, accomplished a significant organizational and strategic condition of 17024.

As of Jan. 1, 2008 the LEED AP exam fees are $300 for USGBC Members and $400 for non−members. For more information, visit the GBCI Web site.

Tech Corner: The Latest In Metal Cored Welding

The latest edition of SMACNA's Sheet Metal Welding Guide (2007), includes the introduction of metal cored welding. The publication also contains recent advances in welding processes, alloy metallurgy and equipment.

Following are principal characteristics of metal cored welding from the new SMACNA welding guide.

Metal−cored electrode wire is a composite tubular filler metal electrode consisting of a mild steel jacket and a core of specifically selected iron and other metal powders and alloys, producing no more than slag islands on the face of a weld bead. Much of the core material is metallic and adds to the deposition rate of these electrodes.

Special alloy combinations can be achieved that would be difficult or impractical with solid electrodes. Versatility is possible with these electrodes because of the infinite alloy compositions that electrode manufacturers can make. The sheathing acts as a conductor, and since it presents much less area to the arc than solid wire, higher current densities are achieved, leading to a faster melt rate and higher deposition at a given amperage or heat input.

The metal−cored electrodes are intended for single− or multiple−pass applications. They are characterized by a spray arc and excellent bead−wetting characteristics. The wetting action helps the weld metal to flow into the toes of the weld minimizing undercut. External shielding gas is required and is generally CO^2, or 75 to 80 percent argon with the balance being CO^2.

Want more information on metal core welding? SMACNA members may purchase the *Sheet Metal Welding Guide* (3rd edition), at a significant savings price of $17 for the hard copy, $20 for the CD, $27 for the CD and hard copy and $17 for a downloadable file. To order, visit the SMACNA Web site, and select the Publications Store link. Be sure to click on the member's log−in button for the discounted price list. You also may call SMACNA's publications department at (703) 803−2989.

Contracts Bulletin: What's New For 2008?

More than 10 years' worth of valuable business information is available to SMACNA members through the Contracts Bulletin series. With 100 to date, these bulletins address a wide range of construction contract issues and are distributed quarterly to SMACNA members.

Contracts Bulletin topics for 2008 include "AIA A401—The 'New' 2007 Contractor−Subcontractor Agreement," "Withdrawn Bids −− When is a Bid a Binding Contract," "Default vs. Breach," and "Rights to Audit Clauses."

A recent Contracts Bulletin on change orders discussed the basics for effectively implementing and incorporating changes into agreements. A change order is essentially a new contract between parties. Unless the agreement between the parties provides otherwise, a change order must be in a written form and signed by all parties to be legally enforceable. Assuming an agreement provides for change orders, it

is best to follow established procedures for implementing the change. Change orders that are effectively administered will usually result in fewer disputes and will protect a contractor if problems arise regarding the scope of work or the right to payment.

"Change Orders and Extra Work: Tools for Change in 2008" (bulletin #98) also addresses how standard contracts, such as the American Institute of Architects (AIA) and Associated General Contractors (AGC) standard form agreements, address project changes.

To access Contracts Bulletins, visit the Market Sector Council section of the SMACNA Web site, select HVAC Council, then Contracts Bulletins.

Newly Revised SMACNA Manual To Focus on Expanded Seismic Bracing Requirements

Prior to the first publication of SMACNA's *Seismic Restraint Manual: Guidelines for Mechanical Systems*, in 1991, seismic bracing was based on California's severe seismic conditions resulting in many over–designed and unnecessarily expensive restraining systems.

The SMACNA manual provided guidelines for bracing ductwork and piping in areas where seismic activity occurred less often and was less extreme than in California. The second edition, published in 1998, included alternate bracing details, new details for floor–supported piping and ductwork, a detail for VAV terminals and other updates. Subsequently, the Uniform Building Code (UBC) changed the basis of design for seismic restraints. In response, SMACNA provided an addendum in 2000 to address the change and added tables for the new Seismic Hazard Level (SHL) AA.

The third edition, scheduled for publication in 2008, will incorporate the addendum and address the International Code Council (ICC), International Building Code, 2006. The new code further adjusts the basis of design and results in a new equation for determining the SHL.

Design professionals can use appendix A in the new Seismic Restraint Manual to determine the SHL, that can vary from floor to floor in the same building. Once the design professional assigns an SHL, the contractor can use the details and tables in the manual to fabricate and install the proper restraints.

There are four SHLs and the designations are A, B, C and D. The following table illustrates previous and current values for the SHLs

Seismic Hazard Level	Horizontal Load (% of Vertical Load)	
	Previous	Current
A	48	100
B	30	75
C	15	50
D	NA	25

For example: The current value for SHL B is .75 or 75 percent of the horizontal load or .75g. The horizontal load is simply the weight and can be expressed as one g. If the design professional determines that the horizontal forces generated by an earthquake are between 50 and 75 percent of the duct's weight, then they would assign an SHL of B. The contractor would then decide which of the appropriate bracing details to use. Each detail refers to tables that are specific to the SHL. The tables provide the proper schedule to follow based on the dimensions of the ductwork.

The previous editions of the Seismic Restraint Manual provided information on three diameters of steel structural wire rope. The third edition offers 15 choices based on design load and each has been given a letter designation. A nominal diameter is provided for reference.

The latest edition allows the designer to choose an SHL relative to the location and conditions. It also allows the contractor greater flexibility in meeting the seismic restraints required.

SMACNA Guide To Cost Recovery For Sheet Metal And HVAC Equipment Coming Mid–Year

Developed using SMACNA contractors, manufacturers, dealers and other industry sources and published in cooperation with EquipmentWatch, the SMACNA *Guide for Cost Recovery for Sheet Metal and HVAC Equipment* is a rate guide on ownership and operating costs of equipment.

Formerly called the *Blue Book of Sheet Metal and HVAC Equipment*, this updated and expanded version will have a more user–friendly format.

Utilizing the widely accepted "blue book" methodology to obtain the equipment rates, this publication provides use rates for tools and equipment found in every shop or on every jobsite. It also provides monthly, weekly, daily and hourly rates for sheet metal and HVAC industry tools and equipment. Allowances for such items as depreciation, equipment related overhead, cost of facilities capital, repair and maintenance costs and more are included. Engineers, architects and owners will find SMACNA's *Guide for Cost Recovery for Sheet Metal and HVAC Equipment* a valuable resource for determining costs for time and material fees on jobs.

The guide will be available to download from the Members Only section of the SMACNA Web site later this year.

TABB And NEMI Offer New Training and Certification Courses

In addition to the traditional testing, adjusting and balancing certifications, TABB and NEMI are offering new training and certification courses throughout 2008. For a brochure of upcoming training and/or testing, contact NEMI at info@nemionline.org or visit the Class Registration Web page.

HVAC Fire Life Safety
The primary purpose of the HVAC system is to maintain a desired environmental condition by regulating the temperature, humidity, air motion and air quality. The smoke and fire features of the HVAC system are inextricably linked to the fire protection design. The HVAC system generally penetrates every occupied space of every floor, compartment, and sometimes the concealed spaces of modern buildings,

potentially conveying fire, lethal smoke, and toxic gases to areas remote from the origin of the fire. The successful operation of dampers designed to control fire and/or smoke within the HVAC system is an integral component to the building's fire protection design and is of paramount importance to building owners, facility managers, insurers and the building occupants.

TABB is offering an HVAC Fire Life Safety certification for Level 1 professionals. Level 2 is currently in the pilot stages. Level 1 concentrates on competency in installation, inspection and maintenance of fire, smoke, combination fire/smoke dampers and ceiling dampers in HVAC systems.

Sound and Vibration
TABB–certified sound and vibration engineers and TABB–certified sound and vibration contractors (certified professionals) practice their profession consistent with TABB's strict guidelines to provide the highest quality of workmanship. Complete knowledge of an HVAC system is essential for sound and vibration work. When the air handler comes on in a building, it should run smoothly and with little noise. However, some systems "kick in" with vibrations and loud noises. These noises and vibrations can occur when sound travels along ductwork from the air handler to mixing boxes in the ceiling. The sound and vibration professional is essential in creating a solution to this problem using techniques of measurement and analysis.

Commissioning
Building commissioning is the methodical process of ensuring the building systems are designed, installed and tested to perform according to the design intent and operational needs. It provides optimal productivity and improves and/or maintains performance of a system. TABB is currently certifying both supervisors and contractors for commissioning work.

IAQ
Indoor Air Quality (IAQ) describes the condition of air inside a building, which is a combination of the chemical, biological and particulate matter in the air and air temperature and humidity. The condition of the air affects the comfort and health of those in a building. If the condition of the air is unacceptable, complaints and even lawsuits can result. TABB is currently offering technician certification in IAQ, with the IAQ supervisor certification in the pilot process during 2008. Soon to follow is the TABB IAQ contractor certification.

The following report from TABB indicates the number of people currently certified in each discipline.

Testing, Adjusting & Balancing
Certified Contractors 72
Certified Supervisors 140
Certified Technicians 485

Commissioning
Supervisors 48
Pending Supervisors 33
Contractors 7

Sound & Vibration
Sound & Vibration Engineers 56
Sound & Vibration Contractors 5

Indoor Air Quality
Technician 94

HVAC Fire Life Safety Systems
Level 1 Technician 107

TABB Conference – Reasons to Attend

A contractor in the testing and balancing field knows that to advance in business, employees must demonstrate specific knowledge, skills and abilities by staying abreast of the latest developments in the industry. The TABB Conference is designed to do just that. This year's conference will be held May 14–16, 2008 in Industry Hills, Calif. at the Pacific Palms Conference Resort. Highlights of conference include:

- HVAC Fire Life Safety Systems Level 1 training course and certification exam
- IAQ Supervisor training and certification exam
- Sound and Vibration Engineer training and certification exam
- HVAC electric motor applications and preventive measures
- Why Motors Fail (how to properly take electrical measurements on motors)
- How to Pressure Test Buildings (envelope integrity)
- International Certification Board Open Forum
- Welcome reception and tour of SMWIA Local 105 training center
- Tradeshow featuring state–of–the–art equipment and techniques

For a complete schedule or to register, visit the TABB Conference Web site and click on "Register Now." If you are not computer savvy, call TABB at (703) 739–7100 and request a registration form. The Pacific Palms is holding rooms at just $139 a night. Identify yourself as an attendee at the TABB Conference to receive this rate.

Add These Free SMACNA Publications To Your HVAC Library

HVAC Systems: Understanding the Basics

This soon to be available resource provides an overview of HVAC systems, the equipment and components that comprise them and how they work. It is not intended to address HVAC design, building heating or cooling load calculations, equipment sizing or system layout. Instead, it should be utilized by the HVAC contracting firm's field and office personnel that require an overall understanding of HVAC systems for bidding and negotiating projects, planning and scheduling work, fabrication and installation of HVAC system equipment and components, and system commissioning and project closeout.

The manual may also be helpful to general contractor and construction management personnel who want to learn more about HVAC systems and equipment and to specialty contractors such as electrical contractors that need to interface with HVAC contractor. Watch for the link on the SMACNA homepage to download a free copy.

HVAC Contractors Guide to Bidding Green Building Projects

Green construction doesn't have to be just another contract requirement that the HVAC contracting firm must address. Instead, the firm can embrace the principles of green construction and become proactive, which is not only good for the environment but also good for business. This guide introduces HVAC contracting firm personnel to green building construction and provides information to help successfully bid green projects. SMACNA members may download a copy free of charge at the Members Only Web site.

Temporary Uses (Early Start−Up) of HVAC Systems In Building Construction Projects

Contractors are increasingly being required to perform early start−up of HVAC systems for the use of temporary heating, cooling or dehumidification during the construction process. Because this practice can pose a significant impact to the integrity of the HVAC equipment and distribution system, SMACNA developed documents in reference to concerns related to early start−up of HVAC systems.

Temporary Uses of HVAC Systems in Building Construction Projects outlines the realities and risks of using temporary heating, cooling and dehumidification equipment. It is intended for use in discussions with owners and general contractors. A second document addresses how the early start−up can cause problems with warranties and services and provides sample warranty language on construction heaters and addresses options for contractors when early start−up requests are received. Finally, a sample letter from an HVAC subcontractor to a project owner that outlines issues with early start−up of equipment is included. SMACNA members may download these documents free of charge at the Members Only Web site.

Find A TABB−Certified Lab Near You

The qualifications to become a certified testing, adjusting and balancing (TAB) facility are varied and extensive. As the certifying agency for labs associated with the Testing, Adjusting and Balancing Bureau (TABB), the International Training Institute (ITI) has a difficult job making sure each facility meets TABB's strict standards. However, it is these standards that help ensure that professionals completing the process of certification will be the best in the industry.

TAB lab classrooms provide hands−on training and practical field application in the principles of air and hydronic testing, adjusting and balancing. They offer membership the benefits of real world balancing and troubleshooting. Test and balancing has much theory in its instruction so having a hands−on lab provides students the ability to test different system operation scenarios in a controlled environment.

Training labs that are certified have low− and medium−pressure air distribution systems with air handlers, fan coil units, residential and exhaust fans. These systems operate under pressure independent and dependant DDC and/or pneumatic controls. Certified labs also have heating and chilled water hydronic systems for balance training and are equipped with chillers, boilers and pumps from various manufacturers, cooling towers, assorted flow metering devices and various heat exchangers.

There are currently ITI−certified TAB labs in Kirkland, Wash.; Portland, Ore.; Denver, Colo.; Chicago, Ill.; Philadelphia, Pa.; Detroit, Mich.; San Leandro, Calif.; Indianapolis, Ind. and Hartford, Conn.

TAB labs are under construction and development in Los Angeles, Calif.; Las Vegas, Nev.; San Jose, Calif.; Seattle, Wash.; Minneapolis, Minn.; Sanford, Fla.; Wisconsin and Carol Stream, Ill. These labs will seek distinguished certification from the ITI at their completion. There are new TAB labs in early planning stages for Boston, Mass.; Hawaii; Oklahoma City, Okla. and San Diego, Calif.

Two New OSHA National Emphasis Programs—Combustible Dusts And Crystalline Silica

The Department of Labor's Occupational Safety and Health Administration (OSHA) recently issued two National Emphasis Programs (NEP) that could affect SMACNA members and the sheet metal / HVAC industry as a whole. A NEP typically means increased and "focused" compliance inspections and enforcement actions related to the topic of concern.

Combustible Dusts

OSHA issued a safety and health instruction that details OSHA policies and procedures for inspecting workplaces that handle combustible dusts and that may have the potential for a dust explosion. Combustible dusts are often either organic or metal dusts that are finely ground into very small particles, fibers, chips, and/or flakes. These dusts can come from metal, wood, plastic and organic materials such as grain, flour, sugar, paper, soap and dried blood. Dusts can also come from textile materials. Some of the industries in which combustible dusts are particularly prevalent include agriculture, chemical, textile, forest and the furniture industry.

The main "exposure" for sheet metal and HVAC contractors would be when working in industrial and manufacturing facilities and plants that have the potential to accumulate these types of dusts. HVAC contractors who design, install, and/or maintain dust collection systems should certainly be aware of this issue. Special precautions should be taken when welding, cutting, or brazing (or other "hot work") in these areas. Click here for more information.

Crystalline Silica

The second national emphasis program was established to identify and reduce or eliminate the health hazards associated with occupational exposure to crystalline silica. The sheet metal industry was one of many industries named in the program with the "potential for overexposure to crystalline silica".

The main area of concern for the sheet metal industry was identified as abrasive blasting (or sandblasting). However, any work that results in significant disturbance of concrete or masonry should be considered to be under the jurisdiction of this national emphasis program and evaluated for possible silica dust exposures. Click here for more information.

If you have questions about the programs, please contact Mike McCullion, SMACNA's director of safety and health by telephone at (703) 995–4027 or by e–mail at mmccullion@smacna.org.

Catching the Green Wave: New Business Opportunities in Sustainable Design and Development

Where is the green wave going and how can you ride it? That's the topic of the HVAC Contractors Council Forum during SMACNA's 65th annual convention Oct. 19–22, 2008, in Maui, Hawaii.

One of the country's leading experts on green buildings and its marketing, Jerry Yudelson, will present the current state of green buildings in the U.S. and detail some of the technology developments. In a fast–paced, fact–filled presentation, Mr. Yudelson will show how to take advantage of this once–in–a–lifetime business opportunity by positioning a company as the "go–to" contractor for green buildings. The forum will conclude with a roundtable discussion on topics relevant to HVAC contractors.

Jerry Yudelson, PE, MS, MBA, LEED AP, is the author of several books on green buildings and a frequent speaker at national and international conferences. He holds an MBA and engineering degrees from Caltech and Harvard. Mr. Yudelson is one of the world's leading speakers of green building and green building marketing. He has served on the national board of the U.S. Green Building Council (USGBC) and is an expert in the LEED® green building rating system He serves as a national LEED trainer for the USGBC and has trained more than 3,000 people in the LEED green building rating system.

For more information on the annual convention, go to the SMACNA Web site and click on the Convention link or contact Mary Lou Taylor, director of meetings and convention, at (703) 803−2998 or mtaylor@smacna.org.

Building Information Modeling – The Key to Unlocking Your Future

Dee Cramer, Inc., of Holly, Mich., and Ventcon, of Allen Park, Mich., are the lead coordinators for the Building Information Modeling (BIM) for the new 1.1 million−sq.−ft. C.S. Mott Women & Children's Hospital at the University of Michigan. The Dee Cramer/Ventcon team is performing full 3D CAD M.E.P. coordination including collision checking. The project will be 100 percent collision free before any field work has begun.

During SMACNA's 65th annual convention, Oct. 19−23, 2008, in Maui, Hawaii, you can hear firsthand from Matt Cramer, president of Dee Cramer Inc., as he shares his experiences of working on this dynamic project. When complete this hospital will be one of the most state−of−the−art, technologically advanced projects in the U.S. Plus, this is the first 100 percent BIM project the University of Michigan has undertaken in its history

In addition, Dana "Deke" Smith, AIA executive director, of buildingSMARTalliance, will be on the program and discuss the basics of BIM, how it benefits SMACNA members, how it is quickly gaining a foothold among construction owners and what it takes to get involved in this exciting industry initiative. He also will present the advancements in technology and how these affect the construction market that sheet metal contractors participate in.

Building Information Modeling is a digital representation of the physical and functional characteristics of a facility. A basic premise of BIM is collaboration by different stakeholders at different phases of the life cycle of a facility to insert, extract, update or modify the model to support and reflect the roles of that stakeholder.

For more information on the annual convention, visit the SMACNA Web site and click on the Convention link or contact Mary Lou Taylor, director of meetings and convention, at (703) 803−2998 or mtaylor@smacna.org.

HVAC Systems: Understanding the Basics

The increasing complexity of HVAC systems and their importance in modern buildings makes it imperative that HVAC contracting firms and field personnel understand not just the part of the system they normally work on but also the entire system, how the various subsystems and components work and the interrelationship between the two.

During a session at SMACNA's 65th annual convention Oct. 19–22, 2008, in Maui, Hawaii, Dr. Thomas E. Glavinich, author of HVAC Systems: Understanding the Basics, will provide an overview of HVAC systems, the equipment and components that comprise them and how they work. This document essentially covers the wet and dry components addressed in Division 23—HVAC of the revised MasterFormat.

Dr. Glavinich is an associate professor in the Department of Civil, Environmental & Architectural Engineering at the University of Kansas (KU), where he teaches undergraduate and graduate courses in construction engineering and management. Prior to joining KU full time, he worked for 16 years in the industry and was involved in the planning, design and construction of commercial, industrial and utility facilities.

For more information on the annual convention, visit the SMACNA Web site and click on the Convention link or contact Mary Lou Taylor, director of meetings and convention, at (703) 803–2998 or mtaylor@smacna.org.

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