

SPECIAL ISSUE:
National Conference Re-cap

The VOICE

The official magazine of The Construction Users Roundtable
Spring 2007

In Demand: Addressing the Labor Shortage



INSIDE:

- 2006 CURT National Conference Re-cap
- BIM: Risky Business?
- Walt Disney Imagineering Profile
- Historic 3XPT Introduced at CURT Conference



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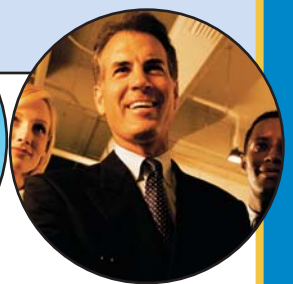
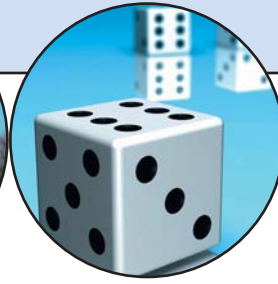
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On the Cover:

According to the U.S. Bureau of Labor Statistics, the construction industry needs 2.5 million workers by 2014. The problem is, current supply isn't meeting current demand, let alone the huge numbers that are required to sustain growth for the future. What's to be done? Check out the story on page 14.



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Sharing Ideas, Learning New Tools and Planting the Seeds for Change

When we think of planting, cultivating and harvesting a crop, the arid sands of the Arizona desert in mid-November do not typically come to mind. Yet, when it comes to new ideas, the ability to foment and grow professional relationships, and network in our industry, I cannot think of more fertile or nurturing ground than what we encountered in Tucson last fall.

There, during our sixth annual conference, a great cross-section of the construction industry once again came together to share best practices, to learn new tools and to explore new avenues of collaboration. Representatives for organized labor, merit shops, contractors, consultants, professional associations, suppliers and owners met over three days to discuss such topics as workforce development, economic trends, safety practices, legal trends and the transformation of the project delivery process.

In a highly fragmented and often insular industry, opportunities such as these do not come often. More often than not, the demands of our particular sector—as well as the inherent distrust engendered by a traditionally adversarial rather than collaborative environment—has resulted in a playground littered with multiple sandboxes from which we do not dare venture, except when forced by the circumstances.

We believe that CURT is in a unique position to redefine the boundaries of that playground in order to be more inclusive and to facilitate the interaction between all participants in order to find solutions to existing and emerging problems. Successful events, such as the National Conference, demonstrate that not only can it be done, more importantly, it should be done.

There are many challenges that face our industry. Certainly, some are unique to particular practice segments. For example, the issues facing today's graduating architects may, in fact, be different than those facing an established specialty trade contractor. Yet, there are many problems

that threaten the overall health of the entire system if not properly addressed. Such is the case with workforce development and technology development.

The growing challenge posed by an aging and retiring baby boomer generation, coupled with the apparent inability to attract new recruits in substantial numbers may be the most visible in and endemic to the craft labor segment. However, it is not unique to it. This shortage is also being felt across the various professional and management ranks. More importantly, the labor shortage will adversely affect the entire industry if not properly addressed.

Likewise, emerging technologies pose a new and exciting opportunity to transform the industry into a fully integrated and highly collaborative effort.

These tools will either dictate the way we do business in the future, or we can take the lead now and determine how we will use the tools to redefine our delivery processes.

Of course, there are many other areas that call out for our attention. But tackling them from the limited resources of our individual silos will be not be efficient, nor for that matter, effective.

They call out for the pooled resources, intellect, dedication and hard work of all stakeholders. At

CURT, we are privileged to be able to offer our peers across all segments of the industry the setting to get it done.

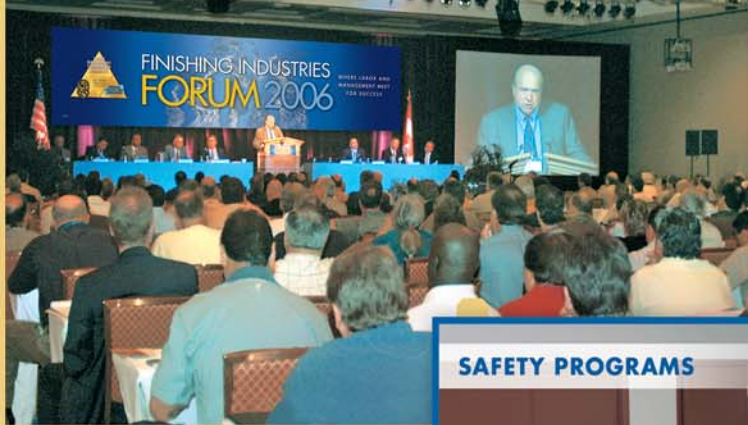
The fact that a generally inhospitable human environment such as the desert could form the backdrop for such an abundance of wealth is not surprising. When it comes to new ideas and lofty goals, the nutrients do not emanate from the soil, but rather from the determination, commitment and honesty of the people involved.

Ricardo Aparicio, AIA, Esq.
General Electric Company
CURT President

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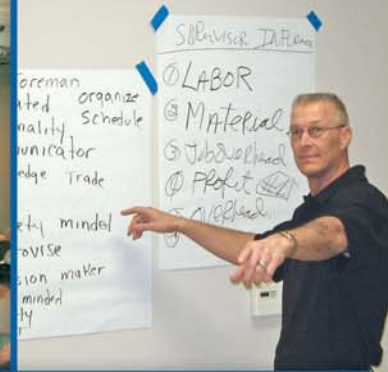
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Message from CURT National Conference Chairperson

"It keeps getting better and better." This was one of the comments from an attendee at the 2006 CURT National Conference that was held November 13-15, 2006 in Tucson, Arizona. The event was centered around the conference theme *Building Value in a Dynamic Construction Environment*, and attracted almost 500 attendees from the United States and Canada. Everyone enjoyed listening, observing and participating in one of the most valuable networking and educational settings in the construction industry, today.

The conference critiques have been partially reviewed and many comments echo the feelings of the Conference Planning Committee. These include:

- Consistent messages tied to the theme;
- Excellent speakers with current statistics and a look to the future;
- Good diversity in presentations;
- Break-out sessions that were relevant to today's issues; and
- Opportunities for value added communications with others in the industry.

There is no way I could mention all of the speakers or summarize their messages but let me reflect on a few of the speakers who can't be forgotten. Nido Qubein led off with an outstanding presentation and reminded everyone to be a solution finder. Some of the major themes from his speech were that excellence needs to become a habit, results rule, life is about creating value, and don't just communicate...connect!

In addition to this speech, a few of the CURT member executives shared their corporate expectations and vision in areas such as labor availability, safety, project management, environmental and regulatory challenges, and the financial future. Much of this was tied to the CURT subcommittee charters and the five-year mission of CURT.

Finally, the Afterburner Fighter Pilot's motivational presentation closed out the conference in style. The presentation left attendees with real-world examples of their *Plan-Brief-Execute-Debrief-Win* model. The high-energy presentation left attendees with fitting memorable examples such as: If you lose sight you lose the fight; preparation is the key to flexibility; how to avoid task saturation; and the benefits of, "nameless, rankles debriefs."

The 2007 CURT National Conference dates have been selected. So, mark your calendars now. The committee has already begun planning under the leadership of Mr. Doug Graham of Boeing Corporation. Building on past successes and comments from this years attendees, the conference will once again endeavor to live up to your expectations with outstanding topics and premier speakers to improve construction industry performance, provide pro-active solutions, and the latest details on optimizing the value of projects.

Ken Kuechenmeister
Ameren
CURT National Conference Chairperson

The Voice presents a conference re-cap:

Go to page 35 for comments from CURT's Board of Directors.

Go to page 38 for a synopsis of the conference's major speakers.

Go to page 42 for an overview of the winners of the Safety Awards and the Workforce Development Awards.

Go to page 47 for a re-cap of the concurrent educational break-out sessions.

Go to page 49 for a snapshot of the fun and excitement the golf tournament evoked.

Go to page 51 for feedback on the exhibit hall.

Join us in Paradise Mark your calendar NOW for CURT's National Conference

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A Call to Personal Action

Well they did it again! For the sixth year in a row, The CURT National Conference Planning Committee managed to blend the wisdom of the industry with practical insights from many of its leaders and practitioners to produce our most well attended conference yet. Each speaker and award winner contributed to pouring a solid foundation that can enable our industry to build on the rich heritage that has been passed down to us.

The National Conference Planning Committee captured the wisdom of many of our finest industry thinkers, and with remarkable insight, they elicited practical knowledge and advice from some of our best owners, contractors, designers and labor leaders. The experience was certainly enough to satisfy the attendees—500 folks thirsty for collaboration, innovation and guidance from seasoned leaders. But we simply cannot stop there.

While the CURT National Conference messages were relevant and needed, the greater challenge is for personal involvement—for a personal commitment to take these resources and drive change that brings about improvement. We cannot wait for the next guy to do it for us. Owners cannot defer to contractors or contractors to labor. Each of us must take personal responsibility for transforming our industry.

Focus with me on the magic world of “What If.” Here, you can be anything, do anything and live your professional life any way you want. All you have to do is close your eyes and imagine! What would you do? Who would you choose to be? What would you change?

A reporter asked George Bernard Shaw (a 20th century freethinker, defender of women’s rights and advocate of equality of income), “Mr. Shaw if you could live your life over and be anybody you’ve known or any person from history, who would you choose to be?”

“I would choose,” Shaw replied, “to be the man George Bernard Shaw could have been, but never was.”

What an insight! The sad fact is that few ever become all that they could have been. As Robert Browning wrote, “Of all sad words of tongue or pen, the saddest are, ‘it could have been’.”

Everyone reading this magazine has the opportunity to become involved in starting a “new industrial revolution.” We have tremendous and compelling reasons to change. The National Conference helped us see the possibilities and presented us with a wealth of resources.

Think about it. The prospects are limitless: improving safety to save lives, implementing LEAN to save project’s money, using BIM to streamline the way projects are designed and built, recruiting young people to become engineers or construction managers and craftsmen, and the list goes on. CURT and its National Conference Planning Committee will continue to provide the products, services and information you need to be successful, but whether anything gets done depends on a personal commitment to act.

No one can do what you can do, exactly as you do it. No one knows *what* you know or *who* you know. Each of us has the chance to get involved and make a difference where we are. If, in the long term, the CURT National Conference ever has a failure, it will be our failure to get you inspired, to get you involved and to get you moving to action.

For every truly meaningful change that has been made in this industry in the past twenty years, at least a hundred probably could have been made, but they never were. Why? Many, “What If” dreamers simply failed to act.

Whether we will be recognized as the generation that transformed this industry for the better largely depends on, well, you!

Gregory Sizemore, Esq.
CURT, Executive Vice President

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In Demand

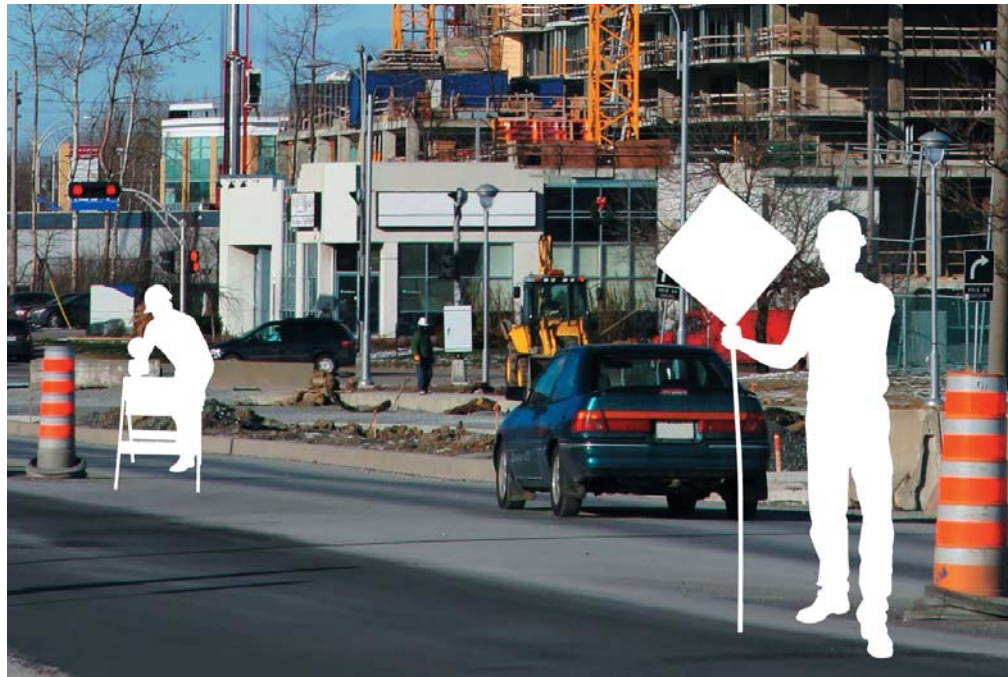
Emerging Solutions for the Workforce Crisis

By Paul Turenne

For the better part of a decade, many players in the U.S. construction industry have recognized that there exists a shortage of skilled workers to meet the booming demand for projects. We've all been told about the problem—many skilled crafts workers are aging and retiring and the industry isn't attracting new recruits to replace them. Meanwhile, demand for workers to build projects all over the country continues to thrive. Efforts are being made to address it, including many spear-headed or supported by The Construction Users Roundtable (CURT), but the question now is, are they having an impact?

"I think we're building momentum but we're not there yet," says Gerald Sprentall, Co-Chair of CURT's Workforce Development and Industrial Relations Committee. "I believe we've made some steps to find that light at the end of the tunnel. The more folks we get involved, the brighter the light gets."

Sprentall says those who have adopted and are using CURT's white paper on the issue, WP 401, *Confronting the Skilled Workforce Shortage*, have found it very helpful, however, the trick is to get more widespread use. Everyone involved



in the industry, from owners to workers to governments to schools, need to work together to tackle the shortage, says Sprentall. "What I see today are owners who are applying mitigation strategies to small, remote issues and not putting the focus on the long-term issue of building up the workforce."

Regional differences are also stopping

people from seeing the big picture. Serious thought must be given to working as an industry, coast to coast, to ideally distribute the workforce, says Steve Mongiardo, the other Co-Chair of CURT's Workforce Development and Industrial Relations Committee. "We have not been able to really get some people to believe there's a problem because in some parts of the country there's too much labor and in others there's not enough. There is an imbalance out there," he says. "I think we need to get together along with the different users and suppliers of labor and come up with better models that show where the demands are and what the needs are."

Mongiardo says CURT has actively been trying to encourage all sectors of the industry to tackle the problem together, otherwise everyone will suffer. "We're trying as an organization to get the industry changed. The industry has to change to survive."

Take notice, drug-free employees at the tip of your finger

About 50,000, pre-qualified, drug and alcohol-free workers have made themselves available to work on job sites across the country. On July 1, 2006, the Building and Construction Trades Department's Building Trades National Drug and Alcohol Program opened for business. The program acts as an online multi-craft repository of drug and alcohol test results for construction industry workers, and was developed to maximize on-the-job safety while eliminating the inefficiencies that come with duplicate testing.

"This will enhance people's abilities to fill jobs quicker and make them more productive sooner," says Program Director Wayne Rice. "It was created for the good of the whole."

Since its inception last summer, the program has already pre-qualified roughly 50,000 workers, whose test results remain in good standing for one year.

CURT has taken a leadership role in organizing discussions on the issue and offering solutions to it. In fact, it has been nearly three years since WP 401 was published. In addition, CURT helps fund and support programs like the "GREAT" campaign and the Gulf Coast Workforce Development Initiative. The shortage was also a hot topic at the National Conference in Tucson in November 2006, and

With the development of laser technology in tools and equipment the technical skills of our craft workers are at an all time high. In turn, so are wages."

For Gill, part of the answer lies in the training opportunities provided. He explains, "Our industry understands that not everyone is suited for or wants a traditional four-year education. Those individuals need to be identified and given an opportunity to earn a technical degree in our trade."

One of the steps CURT has taken is to throw its support behind the GREAT program, which is currently operating in Louisiana and Mississippi and is planning to expand to Texas and Alabama by early summer. The idea behind the program is to offer pre-apprenticeship training courses of up to four weeks so new workers can enter construction trades, with the expectation that they will choose to make a career out of it. Tim Horst, the Gulf Coast Workforce Development Initiative Program Manager, says CURT has played a "huge" role in the program, with 16 CURT members donating cash or in-kind labor totaling roughly \$3 million.

"By the end of the first quarter of 2007 it's my prediction we'll have more than 5,000 people trained," says Horst. While it's early, Horst says the program has already helped boost the ranks. "You can't put over 2,500 workers into the workforce without having an appreciable impact," he says.

In an effort to minimize the impact of this shortage, several efforts are underway to maximize the productivity of existing workers. One of the areas of study undertaken by the CURT Tripartite Initiative is the subject of workplace attitudes and their impact on the productivity of the job site.

A landmark paper now provides insight and guidelines on the importance of job site attitudes.

CURT released a ground-breaking document in January 2007, the likes of which have never been seen in the industry. A product of about 18-months of hard work, the *CURT Tripartite Initiative's Project Stakeholder Responsibilities* paper was designed to clarify the roles of owners,

One Contractor Takes Action

For Adrian Zaccaria, President and COO of Bechtel Group, Inc., the awareness that major challenges exist throughout the industry has propelled the company to step up and create a plan. For this global construction company, craft shortages, a negative industry image, commodity price volatility and rising transportation costs are all cause for concern.

In response, Bechtel has devised a forward-thinking plan to address these issues. The strategy, explained Zaccaria, "has ensured that the company is anticipating what needs to be done," versus simply reacting when it's too late.

The first strategy involves opening hiring offices around the world to, "make sure we have quality talent," says Zaccaria. This includes hiring trained individuals and also providing schooling, when needed. The second tactic requires an investment in supplier development—deploying experienced expatriates and partnering with local firms in those countries, to become familiar with codes, standards and the supply chain. Third, says Zaccaria, is the importance of craft development. Working with The Business Roundtable, Bechtel is recruiting and training workers via the Gulf Coast Workforce Development Initiative. Fourth, rising to the talent challenge, involves finding, developing and retaining talent. In order to do this, the company has set clear goals for employees and managers, and encourages development and the furthering of education.

"We're proud of how we're meeting the challenges," says Zaccaria. "If we do nothing will the problem solve itself? No! Now's the time to take action."

contractors, unions, crafts workers and supervisors on the job site so that attitudes, behavior, and productivity can all be improved to everyone's benefit.



will again be put front and center during the Construction Business Forum June 5 and 6, 2007 in New Orleans, which CURT is sponsoring along with Engineering News Record Magazine (ENR).

"I think it's very, very appropriate for the owners to be taking a leadership role in this area. After all, they're the ones building the projects," says Janice Tuchman, ENR's Editor-in-Chief, who says she wholeheartedly endorses the recommendations made in CURT's 2004 white paper.

Richard Gill, a panelist at the upcoming forum and Executive Vice President of The Shaw Group, Inc., agrees that owners need to take an active roll. However, he notes that a negative public perception must also be turned around if a change is going to take place. "Our industry is seen as requiring low technical skills with low wage potential," he explains. "Nothing could be further from the truth, though.



Although other papers exist on the topic—unions’ codes of excellence, for example—this paper is the first to give the owners a role to play in the development of the document.

“This is the first of its kind. I’m very excited about this whole thing,” says Larry Wargo, Co-Chairman of the CURT Tripartite Initiative Subcommittee, the team that created the paper.

Bob Pleasure, Education Director at the Building and Construction Trades Department and a member of that same committee, called the paper “extremely far-seeing. I have never been able to find three-way documents that included the customer in the process. Nothing had closed the circle with that very important third party. It was a project that was very much needed,” he says. “Having this third party was vital to taking it to the next level, in that it proposes mutual responsibilities for all parties.”

The paper outlines common-sense responsibilities, 52 in total between all the parties, like, “manage site layout and logistics” (owner), “staff appropriately” (contractor) and “promote safety with members” (unions).

“It shows what each stakeholder needs to do to promote the right attitude on our job sites,” says Wargo. “It’s not earth-shattering but it’s very informative. People I’ve shown it to have been impressed.”

Pleasure says the unions have thrown their full support behind it.

“When they go onto a CURT project, they will be working with this document and their own codes of conduct but some are taking it with them onto non-CURT jobs too. It will go far beyond CURT sites,” he says. “They are also busily incorporating these ideas into their apprenticeship training and formal curricula.”

Lighting a successful path is something that the entire industry, owners, contractors and unions, must do together. As Sprentall, Co-Chair of the Workforce Development and Industrial Relations Committee notes, “The more people we get involved to help solve the issue, the better. It has to be a collective effort.” ●



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Historic 3XPT Introduced at CURT Conference

New partnership discussed at Conference, takes shape in the upcoming year

By Mike Bordenaro

The official public announcement of a historic collaboration among CURT, the Association of General Contractors and the American Institute of Architects was delivered in November 2006 at CURT's National Conference in Tucson, Arizona.

The new partnership, 3XPT (3X symbolizes the three groups involved, PT symbolizes **P**roject **T**ransformation) is a dramatic demonstration of the collaboration required to deliver high-quality building projects in today's business environment.

In an industry noted for adversarial relationships among designers, contractors and owners, the announcement is a strong step toward achieving higher productivity.

"3XPT has become one of the highest priorities for each of the organizations because collectively and collaboratively, we need to improve our project quality," said William Tibbitt, a former CURT President and 3XPT Strategy Group Co-Chair.

Tibbitt stated that 3XPT

For more information on other presentations made at the conference, check out pages 38-51.



will make joint presentations and prepare papers explaining the value of adapting collaborative processes that take advantage of powerful new tool sets to design, construct and operate buildings more productively. The group is also planning programs to engage architects, contractors and building owners, and a 3XPT Summit is planned for later in 2007.

Using new technology tool sets, including Building Information Models (BIM), in a collaborative way reduces costs, shrinks schedules and contributes to higher quality projects, according to Tibbitt, who shared process transformation success stories during his speech at the conference. "We [Johnson & Johnson] were building two pharmaceutical plants at the same time. One was more complex—four times larger than the other. But, because we used collaborative processes and tools on the larger project, it was completed six months faster than the other plant," Tibbitt said. "I don't have to tell you that six months of production at a pharmaceutical plant is highly valuable."

Norman Strong, FAIA cited the many steps leading up to the organizations agreeing to promote collaboration among designers and contractors in order to improve results for building owners. "The AIA National Board is very pleased this group has been formed but we realize there is a long way to go to make design and construction a more collaborative process," said Strong, Partner with The Miller/Hull Partnership, Seattle, Washington.

Strong indicated that the 3XPT team will make presentations around the country. He has, himself, participated in 20 3XPT presentations, delivered to mixed audiences

ranging from 100 to 300 attendees. He noted the importance of encouraging integrated discussions by having an audience of designers, contractors, building owners and other building team members, such as lawyers and insurers. "I look forward to the partnership expanding beyond the three initial stakeholders," he said.

Strong will be replaced as the AIA's 3XPT representative by James Suehiro, AIA, who is with NBBJ's Seattle office. Suehiro said during a recent interview, "Owners will find value in an improved delivery process through reduced waste and more stable results. For contractors there will be reduced construction issues and more certain schedules. And, for designers, issues in regards to building systems coordination and enhanced creative freedom will be reduced."

John Tocci, CEO of the Tocci Group of Companies, represents AGC and said that his firm had been using BIM software with positive results for five months at the time of the conference. However, he emphasized that the focus of 3XPT is process transformation, not technology. "BIM is just the Trojan horse," Tocci said, indicating that new tools can be used to create a new, exciting collaborative environment where the entire team works together instead of against each other.

Tibbitt noted there will need to be new contract language that enables collaborative processes, such as sharing Building Information Models.

So, while there are still many steps left in the journey, one giant leap toward historic industry process transformation was announced at CURT's National Conference. ●

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Building Information

Contractual Risks are Changing with Technology

By Dean B. Thomson and Ryan G. Miner,
Fabyanske, Westra, Hart & Thomson, P.A

A new era in design

The everlasting quest to exceed owners' expectations is driving innovation in the construction industry. Owners are demanding that complex projects be completed more quickly and cheaply. These demands, plus a desire to avoid claims, have led designers to think beyond two-dimensional blue-prints and to develop three-dimensional Building Information Modeling (BIM).

The concept of BIM is relatively simple, yet revolutionary. The theory is that if every piece of data required to design and construct a project were entered and developed within a single online system, we could construct the project in the virtual world first. The system could create dependable 3-D models and add additional fourth and fifth dimensions of scheduling and costs. Attaching cost estimates to various design and schedule options will allow the team to do cost/time/benefit analysis of different designs and construction sequences, almost instantaneously. The product of a team's collaborative effort would include shop fabrication drawings, constructability analysis, structural models available in 2 and 3-D, energy and air flow analysis, mechanical and structural collision identification, as well as operation and maintenance reports. Basically, the model's output would produce all the documentation that the team members would otherwise have to create in isolation and duplication, without the model.

In this collaborative BIM environment, team members would be able to solve problems before they manifest themselves on-site, requiring expensive solutions. For example, HVAC designers would be able to work with structural fabricators to solve interferences long before any material was procured. Solutions developed with the use of 4-D and 5-D models allow for an ongoing time vs. cost analysis. In effect, the project becomes one continuous work-stream, from conception to commissioning, without redundant effort.

The efficiency created through the use and reuse of constantly updated data is the fantasy of many designers and project managers. Fortunately, the fantasy of yesterday's designer has become the tool of today's collaborative project team. The General Services Administration (GSA) has announced that for all major projects (prospectus-level) receiving design funding in Fiscal Year 2007 and beyond, a spatial program BIM will be the minimum requirement for submission to the Office of the Chief Architect (OCA) for final concept approvals by Public Building Service (PBS) Commissioner and the Chief Architect. In addition, OCA is encouraging the implementation of various 3-D, 4-D, and BIM technologies above the minimum requirement on a project-by-project basis.

The technology's application to real life projects, however, has been more challenging than the theory. Problems originate

Modeling:

due to the fact that BIM programs have evolved in pursuit of different solutions and separately from advanced project management tools. As a result, they do not always interface well. For example, some BIM models were developed for structural steel fabrication and separate ones for erection sequences. Two of the largest challenges being actively addressed by technology developers and end-users are the interoperability of existing BIM programs and the creation of multiple accurate models to fulfill specific purposes.

Interoperability is the ability for the different systems and models to interface without creating inaccuracies or requiring inefficient data re-entry that is prone to error and data aging. Although these technical interferences have limited BIM's application, the tools are effectively being used within their capability. Further information on how the International Alliance of Interoperability (IAI) is overcoming these challenges can be found at www.iai-na.org.

The apparent industry consensus is that there needs to be a set of standards from which all future BIM technology can relate. For example, the National Institute of Building Sciences (NIBS) through its Facility Information Council (FIC) has been awarded a grant of approximately \$160,000 from the Charles Pankow Foundation to further development of the functional requirements for a National Building Information Model Standard (NBIMS) for precast concrete. Planned for completion in August 2007, the project focuses on the multiple exchanges of data between an architect and a precast contractor, and is expected to speed the process while also improving accuracy and reducing costs.

Currently, the models used by the steel industry are leading examples of accuracy and application for a specific purpose. The American Institute of Steel Construction has even updated contracts to make the model controlling over other documents. See www.aisc.org.

Rocks in the road

Problems arise when a model designed for a specific purpose, such as steel fabrication, is used for another purpose, such as curtain wall procurement. If the BIM generated data is not entirely accurate for its purpose, the result could be disastrous. Often times these models will be labeled "for reference only" or with some other disclaimer of accuracy because designers are not willing to assume the risk associated with warranting their use. Obviously, the more disclaimers, the less likely people will be to use the technology. Furthermore, designers have not necessarily received additional compensation for the

efficiency and savings created when the BIM technology is used. Therefore, they have less motivation to utilize the system to its full potential.

According to a May 15, 2006 ENR article, the Denver Art Museum project dealt with these issues by contractually allocating precedence to the 2-D documents and using, "specific, detailed subcontractor language on generation and hand-off of electronic data." The downside is that if the model is expressly subordinate to traditional construction documents, the model cannot be relied upon during the pricing or construction process and traditional 2-D documents must be duplicated, significantly decreasing the value of the model.

The line between designer and constructor also blurs in a world of design-build online virtual project collaboration where individual parties work off of a common data set. Architects build erection sequences into their designs and contractors add constructability analysis to the design selection. As collaboration increases, the traditional lines of responsibility dissolve, and industry standard form contracts do not adequately allocate risk and responsibility between the parties. Model improvement, industry standards and interoperability are issues for the software developers, NIBS, and the IAI to address.

It is the responsibility of contracting parties and their lawyers to create contractual language that will foster collaboration and appropriately allocate risk and compensation for a project utilizing BIM technology. For this to be accomplished, it may take a paradigm shift in the way we think about industry roles and delivery systems. The design-build delivery system helped the industry take a step toward a more collaborative project environment. Proponents believe that the integration of BIM technology into the process will be the industry's next evolutionary step.

Legal issues

For all the efficiencies and savings that BIM technology can provide, its use is not without risk. One of the first issues to determine is ownership of the BIM data and how to protect it through copyright and other laws. In the March 2001 Briefing Paper on e-Construction, we predicted some of the issues that would develop from the electronic communication of construction designs. For example, if the owner is paying for the design, then the owner may feel entitled to own it, but if team members are providing proprietary information for use on the project, their propriety information needs to be protected as well. Thus, there is no simple answer to the question of data ownership; it requires a unique response to every project depending on the participants' needs. The goal is to avoid inhibitions or disincentives that discourage participants from fully realizing the model's potential.

When project team members, other than the owner and A/E, contribute data that is integrated into the BIM, licensing issues can arise. For example, equipment and material vendors offer designs associated with their products for the convenience of the lead designer in hopes of inducing the designer to

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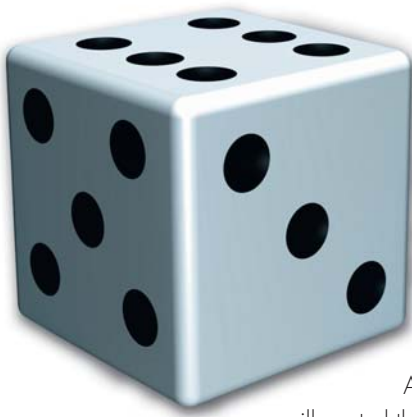
The screenshot shows the homepage of the Improving Plant Life website. At the top left is a portrait of a man with the text "Click for What's New!". To the right is the "Improving Plant Life" logo and the "NMAPC" logo (National Maintenance Agreements Policy Committee, Inc.). Below the header is a paragraph: "The NMA is the money-saving solution for construction and maintenance work for owners who demand quality work done on time, on budget, and right the first time. This web site will introduce our program to you through the eyes of the owners, contractors, and labor reps who get the benefits of this labor-management program every day." The main content area features five video thumbnails, each with a "watch video" button and a camera icon. The thumbnails are: 1. "User's Guide" with a factory image and text: "How to put the NMA to work for you. For owners, by owners." 2. "Contractor's Guide" with a man in a suit and text: "How to put the NMA to work for you. For contractors, by contractors." 3. "Building Trade Reps" with a man in a suit and text: "Labor representatives discuss how the NMA is the way to smoother jobs." 4. "Save With The NMA" with an excavator image and text: "There are many factors why the use of the NMA makes sense." 5. "Safety" with a man in a hard hat and text: "With our acclaimed 'Zero Injury Safety Award', we are an industry leader in safety." A large orange arrow points from the bottom left of the screenshot towards the main text on the right.

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specify the vendor's equipment. While this practice might be good for business, licensing issues can nevertheless arise if the vendor's design was produced by a designer not licensed in the location of the project.

Another issue to address is who will control the entry of data into the model and be responsible for any inaccuracies in it. Taking responsibility for updating BIM data and ensuring its accuracy entails a great deal of risk. Requests for complicated indemnities by BIM users and the offer of limited warranties and disclaimers of liability by designers will be essential negotiation points that need to be resolved before BIM technology is utilized. It also requires more time spent imputing and reviewing BIM data, which is a new cost in the design and project administration process. Although these new costs may be more than offset by efficiency and schedule gains, they are still a cost that someone on the project team—probably the designers—will have to bear. Thus, before BIM technology can be fully utilized, the risks of its use must not only be identified and allocated, but the cost of its implementation must be paid for as well.

As the dimensions of cost and schedule are layered onto the 3-D model, responsibility for the proper technological interface among various programs becomes an issue. Many sophisticated contracting teams require subcontractors to submit detailed CPM schedules and cost breakdowns itemized by line items of work prior to the start of the project. The prime contractor then compiles that data, creating a master schedule and cost breakdown for the entire project. When the subcontractors and prime contractor use the same software, the integration can be fluid. In cases where the data is incomplete or is submitted in a variety of scheduling and costing programs, a team member—usually a general contractor or construction manager—must re-enter and update a master scheduling and costing program. That program may be a BIM module or another program that will be integrated with the 3-D model. At present, most of these project management tools and the 3-D models have been developed in isolation. Responsibility for the accuracy and coordination of cost and scheduling data must be contractually addressed.

The fluidity and speed by which an electronic design can be changed is both exciting and troubling. When is the ever-evolving electronic design upon which contractors are bidding finalized? Does instantaneous notice of a design change equate to instantaneous knowledge of and agreement to the change? Communications or agreements entered into over the Internet can be binding if made in conformance with the Electronic Records and Signatures in Global and National Commerce Act enacted by Congress on October 1, 2000. In order to avoid disputes, some definition of the design for the project and a protocol for sending binding communications must be

developed or the project participants may not have a meeting of the minds concerning what has been offered and what has been accepted.

Conclusion

At first glance, BIM technology appears to have opened a door of new possibilities which the industry cannot ignore. Without dampening enthusiasm for the new technology, it is nevertheless prudent to be aware of the risks involved in this new paradigm. This paper has touched on only some of the potential issues associated with an excursion into a BIM designed project. Thoughtful planning and appropriate contract language can serve as a good road map to make your venture a success. ●

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THE COMPANY: Walt Disney Imagineering (WDI)

THE HISTORY:

Think Disney. What comes to mind? Mickey and the gang, of course. Thrilling rides too, I bet. Storybook hotel suites...well, if you've stayed at any Disney location, how could you forget the hotel suites? Behind the magic is Walt Disney Imagineering, a team of more than 140 professional engineers, scientists, sculptors and architects. Each visionary is, in essence, the storyteller behind every Walt Disney park and resort—using their creativity and ground breaking technology to dream up and create dreamlike destinations throughout the world.

WDI played an enormous role in bringing the first Disney theme park (in California) to life in 1955. Known at the time as WED (Walter Elias Disney) Enterprises, the first group of *imagineers* joined in 1952 to design and build Disneyland. As Frank Reifsnyder of Disney explains, "Walt Disney Parks and Resorts encompass eleven theme parks in five locations worldwide. As the primary design and creative group, Disney Imagineering creates, plans, designs and builds everything from attractions, restaurants, themed hotels, retail facilities and entire parks."

THE RIGHT-NOW:

Walt Disney Parks and Resorts has a

continued focus on Disney Parks, hotels and resorts, as well as the design and construction of two new cruise ships. In addition, Walt Disney Imagineering is currently constructing a new interactive attraction in Tokyo Disneyland (an entirely new mini-land); the *Tower of Terror* in Walt Disney Studios Park in Paris; *it's a small world* in Hong Kong Disneyland; a new hotel at Tokyo Disney Resort and *Toy Story Mania!* which marks the first time a Disney attraction is being built simultaneously in more than one location (Disney's California Adventure and Disney-MGM Studios). Reifsnyder notes that, "The construction teams for many of these projects are using 3D visuals to pre-visualize installation sequences, simplify communication and cross the language barrier between the contractors."

THE FUTURE:

What does the future have in store for Disney's timeless characters? WDI teams continually explore and raise the bar to ensure great guest experiences. For example, the Blue Sky Studio hosts a brilliant group of imagineers who are working on new concepts and experiences that may not be seen for five to ten years.

Building Information Modeling (BIM) is also something that WDI has taken advantage of, and will continue to do so into the future. As Reifsnyder explains, "BIM technology allows Walt Disney Imagineering to fast track project schedules to support earlier openings than

they could before BIM technology and 4-D scheduling were available. In particular, show and ride components can be designed in parallel with the overall building design rather than sequentially, reducing the overall project duration requirements on WDI's more complex and highly integrated attractions such as *Expedition Everest.*"

Furthermore, BIM technology provides each

project team the ability to quickly identify and resolve component design conflicts with the overall building design.

THE SOCIAL COMMITMENT:

Giving back to the community has been a big-deal to WDI during its more than 50 years in existence. Since 1992, for example, WDI has sponsored Imagine Nations, a university design competition that provides scholarships to a diverse group of students who showcase their talents and gain practical knowledge in design. Imagineers also support a wide-range of other charitable causes including Habitat for Humanity and designing children's centers of the USO, a private, nonprofit organization whose mission is to provide morale, welfare and recreation-type services to our men and women in uniform.

THE AWARDS:

Most recently:

- **Gold Industrial Design Excellence Award (IDEA)**—For the design of *Mission: SPACE* at Epcot, Walt Disney World Resort, Orlando, Florida.
- **International Themed Entertainment Awards for Outstanding Achievement**—Classic Award: Disneyland, Anaheim, California, 2006.
- **International Themed Entertainment Awards for Outstanding Achievement**—*Show: Remember...Dreams Come True*, Disneyland, 2006.

THE FACTS:

- WDI has published two books that share the creative ideas: *The Imagineering Way* and the *Imagineering Workbook*.
- WDI cares for more than 80,000 original pieces of art in its archives, including Herb Ryman's first-ever sketch of Disneyland in 1954.
- Disney is the only major entertainment company with a dedicated R&D organization.

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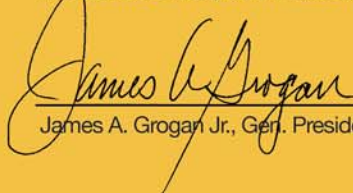
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<i>UP-805 Construction Safety: Monitoring Contractor Performance</i>	\$ 11.95	_____	_____
<i>UP-806 Improving Safety Programs</i>	\$ 11.95	_____	_____
<i>R-807 CURT Owner Safety Blueprint</i>	\$ 11.95	_____	_____
<i>T-808 Construction Safety: Owners' Safety Blueprint, Assessment Tool</i>	\$ 11.95	_____	_____
<i>TM-809A Construction Safety: Owners' Safety Blueprint, Training Module (Instructor Pack) *</i>	\$ 199.95	_____	_____
<small>* Includes one copy of TM-809B</small>			
<i>TM-809B Construction Safety: Owners' Safety Blueprint, Training Module (Student Workbook)</i>	\$ 19.95	_____	_____
<i>UP-1001 Construction Strategy: Selecting Contracting Strategies</i>	\$ 11.95	_____	_____
<i>UP-1002 Construction Strategy: Selecting The Right Contractor</i>	\$ 11.95	_____	_____
<i>WP-1003 Construction Strategy: Optimizing The Construction Process</i>	\$ 11.95	_____	_____
<i>WP-1201 Guidelines On The Use Of Reverse Auction Technology</i>	\$ 11.95	_____	_____
<i>WP-1202 Collaboration, Integrated Information And The Project Life Cycle</i>	\$ 11.95	_____	_____

TOTAL: \$ _____

Price includes shipping and handling. Please allow 7-10 days for delivery.

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CURT Leaders Declare Conference a Success



*Back Row: William P. Tibbitt; Michael Conley; Steven Satrom.
Left to Right: Tom Wiese, Past President; Egon J. Larsen, Vice President; Ricardo Aparicio, President; Allen Bunner; Gregory Sizemore, Executive Vice President; Larry Wargo, Secretary/Treasurer. Missing: Curtis Ashley Baker.*

"It was encouraging to see so many attendees from so many different sectors of our industry. Because this conference addressed critical issues, highlighted CURT successes and initiatives, showcased informative and practical speakers and break-out sessions, and gave insight into what's new and what's next for the industry, I am confident in saying that it was a great success. I hope to see everyone again next year."

*Ricardo Aparicio, AIA, Esq.
CURT President
Contracts Manager Project Services
General Electric Company*

"Having a forum like the CURT conference is necessary for the industry. Not only does it give CURT the opportunity to showcase all of the great projects our different committees are working on—which benefit the industry—it also gives us the chance to meet, network and

discuss the issues and problems we all are dealing with on a daily basis."

*Egon J. Larsen
CURT Vice President
Global Construction Manager
Air Products and Chemicals, Inc.*

"I have attended many CURT conferences over the years and I would rank this one as one of the best. As an original owner member, I have seen this organization grow and flourish over its lifetime. The success of the conference each year illustrates the success of the association as a whole."

*William B. Tibbitt
CURT Past President (2002-2004)
Executive Director, Worldwide
Engineering Services
Johnson & Johnson*

"It's great to see how much the conference attendance has increased over

last year! I think this reflects a growing desire by the industry to expand and they see CURT as a means to do that. We had an impressive panel of speakers, informative break-out sessions and great networking opportunities. Those are things that our attendees really wanted to take advantage of."

*Greg Sizemore,
CURT Executive Vice President*

"Getting together in this conference environment is very beneficial for everyone who attends. People come here, soak up the information and take it back to their respective companies and organizations. It's a great way to get the word out about what's going on in the industry."

*Larry Wargo
CURT Secretary / Treasurer
Consultant, Contractor Services
FirstEnergy*

"The conference in November was my first as a CURT board member and I was happy to be a part of it. I think it was a great show, highlighting quite a number of problems but also discussing solutions, as well. I think next year will be an even bigger success!"

Michael G. Conley
At Large, Board of Trustees Member
Engineering Manager
DuPont

"The 2006 National Conference continued to build on the strong results of the past few years. It effectively brought together leaders in the owner and supplier communities to discuss and exchange views on many important issues confronting the industry. As well, the conference is a vehicle for the owner community to advance its views on the significant issues facing the industry and to influence the directions taken to resolve key issues of the day. The history

of our industry tells us that significant change requires strong owner leadership."

Steve B. Satrom
At Large, Board of Trustees Member
CURT Past President (2000-2002)
Vice President, Engineering,
Energy Businesses
Air Products and Chemicals, Inc.

"The conference was well attended and I think the best one that we have had. I do not believe that you can completely realize the benefits that CURT has to offer unless you attend the National Conference. These include great networking opportunities, interesting presentations on relevant topics by industry leaders, and educational break-out sessions that offer current trends and issue resolutions. The conference is a true benefit to the industry because it represents the primary national forum for the development of industry standards and

understanding owner needs and expectations."

Curtis Ashley Baker, P.E.
At Large, Board of Trustees Member
Vice President, Environmental Projects
and Construction West
Southern Company Generation

"Our construction industry has multiple segments and many of those segments approach our construction industry from their vested perspectives. CURT as an organization, and through its conference, give the owner community associated with large capital-intensive construction a forum to explore current and pressing issues, and future challenges from the owners' perspective, yet with objectivity. The conference theme this year was relevant to the current challenges faced within the construction industry."

Allen Bunner
At Large, Board of Trustees Member
Director, Engineered Systems
Tyco International

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Many code officials rely on evaluation reports from ICC Evaluation Service (ICC-ES) as one method to establish that a building product or system meets code requirements.

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- ICC-ES follows a comprehensive and proven process of evaluating building products. The process includes examining code requirements, test reports, calculations, and the manufacturer's quality control system. ICC-ES also requires product testing to be done at a testing laboratory accredited by International Accreditation Service (IAS) or one of IAS's mutual recognition partners.
- ICC-ES inspects the manufacturing facility of every new applicant for an evaluation report. Once the applicant has satisfactorily answered all the questions raised by ICC-ES staff, and fulfilled all other requirements, an evaluation report is issued and posted on the ICC-ES web site (www.icc-es.org).



Ensuring that building products meet code requirements.

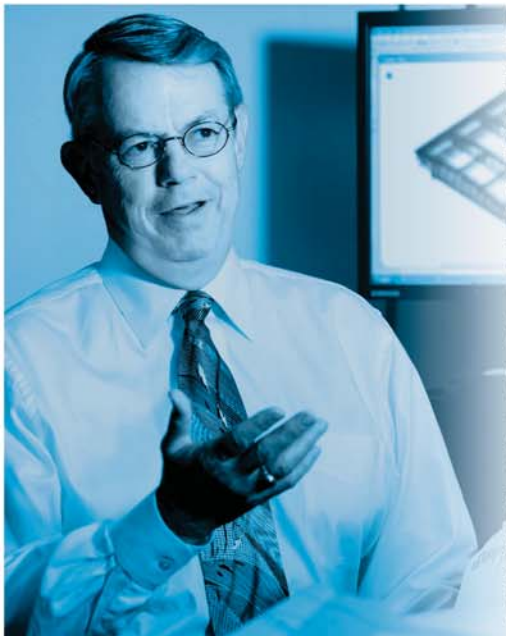
Get Free Access to Evaluation Reports for Building Products
www.icc-es.org

ON INTEROPERABILITY

RUBY

CONSTRUCTABILITY "When doing the pricing on a recent project, Douglas Steel Fabricating Corporation asked us to review the job to enhance constructability. It was a community college project that originally called for fully welded moment connections and knee-braced frames. The number of pieces and amount of field welding made the project uneconomical. Douglas Steel sent us the original design documents. We put together an alternative design that satisfied the intents of the owner and architect. We then transferred our CIS/2-

DAVID I. RUBY, P.E., S.E., Structural Engineer. Principal, Ruby & Associates P.C., in Farmington Hills, Michigan. Specializing in steel designs that speed and ease constructability. Recently consulted on a community college project where his design and use of Interoperability resulted in a hyper-fast and efficient design—and a six-figure rebate from the fabricator to the school.



compliant model back to Douglas Steel, enabling them to process the model in SDS/2 so they could bid both the original and alternative designs on time. Without CIS/2 Interoperability — or what used to be called Electronic Data Interchange — we couldn't have turned it around fast enough to keep the job on schedule."

VALUE "The architect's drawings, the site constraints, points of access, equipment — there are so many different things to consider to come up with the most economical product that meets a client's needs. A lot of people talk about value engineering. What that really means is examining a set of decisions that have already been made, and going from there. You're talking inside the envelope. But when you design for constructability and value, outside-the-envelope thinking leads to things like speed to market and achieving budgets. CIS/2 Interoperability is a tool that lets us think like this."

EFFICIENCY "For the community college, the floor beams were spaced at about 3-foot, center-to-center, with a very light metal deck and a reasonably thin slab. As a rough count, we eliminated over 700 members, as well as 11,000 shear studs from the floor system and it was designed so everything could be field bolted. We ended up with a metal deck system and a thicker slab that added a little dead load to the structure, but increased the strength of the composite beams. Basically, we made it easier to build, stronger and much more economical. Plus, we stayed on schedule because the design only took four days thanks to CIS/2 Interoperability."

PERSPECTIVE "Working with Fazlur Khan to design the Hancock Building early in my career gave me a different feel for construction. One thing about the Hancock: the steel out-raced concrete to the roof. In fact, steel was 25 floors ahead at one point! We even had to design temporary braces to keep the structure together because we were so far ahead. Faz was such a great concept engineer. I learned you can't just look at a building as a design — it has to be built too! Piece by piece, stability is an issue during construction. But once it's done, the issue goes away and you let the building act as it should."

COMMUNICATION "The advantage of Interoperability is speed through the elimination of paperwork and many layers of communication. Typically, a detailer

would verbalize a problem to the fabricator who would submit a request for information to the contractor who'd send it to the architect. A response from the structural engineer would be communicated through the contractor to the fabricator and ultimately, back to the detailer. And many times the detailer would respond, "That's not the question I asked." This happens time and time again when you're trying to explain a three-dimensional problem in 50 words or less. CIS/2 Interoperability means the pertinent decision-makers — the engineer, detailer and fabricator — can look at the model in real-time, discuss the problem and collaborate on a solution. Better, faster communication is the value of Interoperability."

INTERACTION "With Interoperability, I work with the fabricator and detailer directly. We receive their files over the Internet, pull them into our system, make comments and send them back in just a couple of hours. This saves a tremendous amount of time and keeps us on schedule. Let's say there's a connection issue, or perhaps the fabricator has a question. We're not waiting because the drawings are in the mail. They just send us their three-dimensional models and we solve the problem today. That's what Interoperability is all about."

UNIVERSAL "The files a fabricator works on are generated from the RAM model we send them. So when they pull our models into the system for detailing, they have the most current designs. There is less paperwork to keep track of and that's a significant advantage. If I send files at noon, by 3 o'clock the fabricator has his bill of materials. Manually, this process took a week. And we're not talking just 40 hours — but two or three people putting in 40 hours to pull that all together. Those extra hours are an expense completely eliminated due to Interoperability."

INTEROPERABILITY "The primary reason for Interoperability is to integrate design and construction processes by eliminating the need for manual re-entry of data. The advantage for steel is that the CIS/2 standard enables compliant software—Tekla, SDS/2, Bentley, RAM, FabTrol and others—to exchange data electronically with accuracy and speed. In fact, CIS/2 makes most structural steel design, detailing and manufacturing applications interoperable."

STEEL "Steel already gave us a much quicker delivery time. And that's now clearly enhanced by CIS/2 Interoperability. Steel lets me build a structure that can be modified, easily reinforced, adapted to another use and has overall economy from start to finish. Unless you're building sidewalks, there's never a reason not to use steel."

INTEROPERABILITY is the ability to manage and communicate electronic product and project data between collaborating firms. It allows the exchange and management of electronic information, where individuals and systems are able to identify, access, and integrate information across multiple systems. The goal of interoperability is to create greater efficiencies by eliminating the manual reentry of data, duplication of business functions, and the continued reliance on paper-based information management systems. The steel design and construction industry uses the CIMSteel (CIS/2) neutral file format to enable interoperability.



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Speaking Out:

What the Major Speakers Had to Say



NIDO QUBEIN

Achieving Peak Performance & Creating Value, Too

For Nido Qubein, catching the attention of conference attendees was an easy task. His no-nonsense way of explaining the issues and his rich sense of humor had everyone on the edge of their seats.

Qubein's life story, in and of itself, was cause for listening. He came to the United States as a teenager. He had little knowledge of the English language. He had only \$50 dollars in his pocket. Yet, today he is a major success story.

Just how did he do it? He found solutions and he didn't complain about his situation. For example, Qubein memorized 10 words a day for 1 year and by the end of that year, he had learned English. As he noted, "When people ask 'how did you get here' I am quick to respond that it is by working hard, working smart and listening."

Qubein said that if the people in the room wanted to follow suit, they should surround themselves with great people and not worry themselves with obstacles, only with solutions to those obstacles. He also noted that people must accept change, although that is difficult for most. So, as owners, you must create an environment where people want to change, versus telling people they simply must change.

Qubein ended his powerful speech by imparting three rules to success. One, it's not enough to communicate. You have to also connect. Two, you must have the desire to win—it is what separates the winners from the losers. Three, you have to go beyond success to significance. All the money in the world does not guarantee happiness. Significance in your life, does.

Nido currently serves on the board and executive committee of a Fortune 500 financial corporation, chairs a national public relations company and is President of High Point University, an accredited undergraduate and graduate institution with 3,000 students from 33 countries.

THOMAS R. VOSS

Executive Vice President & COO

Ameren Corporation

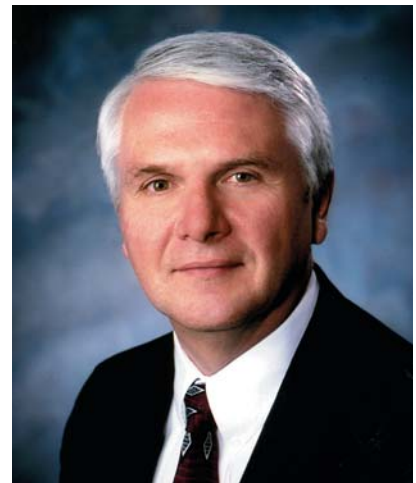
Generating Value in a Dynamic Construction Environment

For Thomas R. Voss it is hard to imagine a more dynamic environment than that of utilities. His company, Ameren Corporation, has responded to that environment and as such, has experienced unprecedented growth in the past years. For example, total company assets in 1997 were just under \$7 billion. In 2006, that number had jumped to just over \$18 billion.

Continued success, said Voss, is to a large part reliant on the construction industry. After all, the company is in a state of growth, building new plants throughout the United States. Voss asked, "Will there be people to build our projects? If we want to build it, will they come?"

Ensuring the answer is yes, he noted, is a challenge that CURT must tackle head-on. Specifically, he said that CURT has to continue to build to the highest standards—on schedule, on budget, with the latest technology and while doing it safely.

Can CURT meet this objective? Yes, said Voss. "If everyone has that commitment in mind, it will get done."



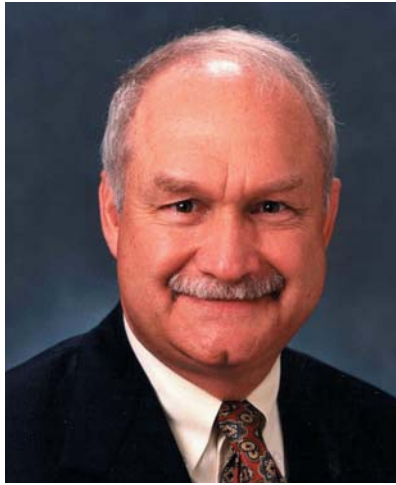


RICARDO APARICIO
 In-House Legal Counsel and
 Contracts Manager,
 General Electric
 President, CURT
**Creating Value, Building the
 Industry: The CURT
 Perspective**

"The demand is real," acknowledged Ricardo Aparicio during his speech. "We feel the problem. We see the problem. Even the paper tells us there is a problem." That is why, he continued, CURT exists. "We are here to share knowledge about our best practices, so that everyone can do a better job."

The mission that Aparicio outlined contains a number of action plans. One, develop a supply database of what is available and where. Two, spread out the work to help alleviate shortages—make sure owners are not competing for the same people at the same time. Three, while it does take a lot of communication, the cross-utilization of resources is vital. Four, tap into the wealth of immigrant workers, while ensuring they are appropriately trained. Five, revise training programs so that people can enter the workforce faster. Six, market the industry as an appealing choice to attract more people.

Above all, said Ricardo, "Owners must lead the pack and drive the change. This must be done through aggressive implementation, results-driven collaboration, and leadership and co-operation."



JOHN MITCHELL
 Economist, US Bank
**Bulls, Bears & Rallies: The
 Bottom Line for our Industry**

"This is a very exciting time. A lot of sectors in the U.S. economy are pushing capacity. This means expansion, which means construction," said John Mitchell at the very beginning of his presentation.

The problem, he said, is that "We're flirting with capacity." This is why, he noted, it is vital to understand the numbers, pointing out that an unknown political future, a commercial and residential building boom, a

rapid increase in exports and a growing global economy all came into play in 2006.

Mitchell pointed out a few things that everyone should keep an eye on. For example, how will the housing slowdown play out? Will energy prices go up or down? Will there be more trade and more investment?

As for 2007, Mitchell predicted that output (which was up 3.5 per cent in 2006) will move down, with the trend continuing into 2008. He also expects the housing market to weaken.

"It all comes down to the data," says Mitchell. "So keep your eye on it. If you want to understand what's going on, you have to first understand the numbers behind the outlook."

PETER COCKSHAW
 Publisher & National Labor Analyst
 Cockshaw's Construction Labor
 News+Opinions
**The State of Construction Labor
 Relations & Other Workforce
 Issues**

The naked reality, according to Peter Cockshaw, is that the construction industry must change or die. "There must be a new rallying cry," he said during his speech.

Cockshaw noted that organized construction is in worse shape than when he started in the industry in 1965. "People point to Katrina as the culprit," he said. "Katrina contributed but the hurricane is not totally to blame. The shortage would have happened eventually. We should have raised wages at the proper time. We didn't and that drove people away."

It is not a new problem either, he noted. "It is one that has lingered and lingered and nothing was done. Now we're feeling the pinch," he said.

Cockshaw was quick to acknowledge though, that there are big opportunities still. The challenge however, is to attract entry-level workers who have a negative view of the industry. That is why, Cockshaw said, "We have to go in when they're young and show them that our industry is a good industry to establish a career in."

"It must be done today," he urged listeners. "Tomorrow is too late. This is YOUR industry. You have to make it happen."





ADRIAN ZACCARIA

President & COO,
Bechtel Group, Inc.

Delivering Value in a Dynamic Construction Environment: A Contractor's Perspective

Sustainability is the name of the game, according to Adrian Zaccaria. The consequence of the current building boom, he cautions, is that it could at some point go bust—if the industry doesn't anticipate what needs to be done to maintain growth.

The challenges are many, according to Zaccaria's speech. For example, volatile commodity prices, increased transportation costs and worker shortages are all challenges that need to be overcome in the near future. If that can happen, though, Zaccaria was quick to admit that the future is full of opportunities. He said, "For those who explore new options for training, maintain quality and embrace technology, then the future will be bright."

ROBERT HIXON

Project Executive, U.S. Capital
Delivering Value in the Public Sector: Opportunities, Challenges and Lessons Learned

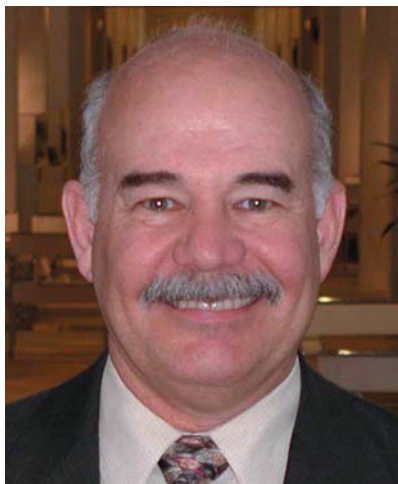
Throughout his presentation, Bob Hixon took attendees on a journey through the building of the Capitol Visitor Center, located in Washington, DC. The project, an enlargement of the U.S. Capitol Building, was, in November 2006, budgeted at \$522.7 million.

However, this was not the original number. The initial expansion, which was planned to happen between the 2001 and 2005 Inaugurals, was budgeted \$265 million.

So, what went wrong? According to Hixon, a number of factors led to the project's extreme break of the budget. This included pre-construction work that took longer than expected and the terrorist attacks on September 11, 2001, which added new security measures.

A new direction was required to get back on track. This included a new vision to deal with delay costs and disputes in a timely manner, to identify hot issues such as blame and a poor team image, and to explore the big issues such as funding, safety, major delays and everyone's role.

Construction is now slated for completion near the end of 2007.



EDWIN G. FOULKE, JR.

Assistant Secretary of Labor,
Director of OSHA

What's Hot & What's Not at OSHA

According to Edwin G. Foulke, Jr., there were more than 5,188 workforce fatalities in 2005. In the construction industry alone, more than 1,186 people died (there are approximately 10.7 million people employed in this sector, so the number here reflects 21 per cent of all fatalities). This is the most fatalities out of any industry.

While these numbers are still cause for concern, there has been much improvement. Foulke pointed out that before 1971, when there were no uniform safety provisions, there were on average, 14,000 employee deaths per year. There's still work to do, though. Foulke said, "We want to see America's working men and women return home each day to their families and friends."

In order to facilitate this, OSHA has been focused on accident prevention, safety and health, and helping employers and employees see the value in promoting safety. Companies who have a comprehensive safety and health management plan have seen good things happen, said Foulke. "Companies who have good plans reduce injury and illness rates by 20 per cent or more and companies participating in voluntary protection programs have saved more than \$1 billion since 1982."

Special Report:

To read what was discussed at the *3XPT Strategy Group: How AIA, AGC & CURT Are Collaborating to Transform Project Delivery* session, go to page 19.

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And the Award Goes to...

CURT once again celebrated the best in safety and innovation with the presentation of the Construction Industry Safety Excellence (CISE) Constructor Awards and the Construction Industry Workforce Awards. Here is a look at those companies and individuals who were honored.

SAFETY FIRST

The Construction Industry Safety Excellence (CISE) Constructor Awards recognize those contractors, owners and LUCs that best exemplify the value of safety in their everyday work practices. The awards further promote CURT's already-strong support of and commitment to promoting safe construction as a key component of cost effective project delivery.

CONTRACTOR SAFETY AWARDS



Dr. Ron Prichard, CURT Safety Advisor; Larry Wargo, CURT Secretary / Treasurer; Anthony O'Dea, Gilbane Corporate Safety Director; and Thomas Gilbane, Jr., Gilbane Chairman and CEO.

Gilbane Building Company:

How can a company achieve year-after-year safety success? Build a safety ideology and stick to it! Gilbane's safety policy states that, "Our goal is accident-free work..."

Accident-free is exactly what has happened for the past three years. This is due, in part, to a safety philosophy that starts at the top with a senior management team that believes safety comes first. As Anthony O'Dea, Corporate Director of Safety explained, "Construction is a people business and safety is about people. Gilbane is intensely focused on managing our projects the right way and avoiding accidents. We're extremely excited to be recognized by CURT."

Harper Limbach, LLC: Incident and injury free. That's what a strong focus in safety has resulted in at Harper Limbach, LLC. How do they do it? Well, by including everyone in the process, from the President and CEO to the employees.

Receiving the CISE from CURT was an accomplishment that was shared with everyone, even making the Safety & Wellness newsletter in late 2006. In his message, Craig Montgomery, Executive Vice President, noted that, "This award recognizes exemplary safety performance without a single lost workday for injury over a period of three years. Harper Limbach was acknowledged for its performance in the field, as well as recognized for the continued support from management as a key success factor of the safety program."



Russ Moore, Executive Vice President of Harper Limbach, LLC accepts the CISE Award.



Dr. Ron Prichard hands the award to David Hatfield, Safety Manager, and Nash. M. Childs, Vice President.

Bancroft Construction

Company: For Bancroft, safety comes first—literally. The company's proactive approach ensures that it is intertwined with each project right from the pre-construction phase. Safety is, in fact, considered critical to the success of any project this company takes on. And it shows. Bancroft boasts three years without suffering a single lost workday injury. Most importantly, said Dave Hatfield, Safety Manager, in his acceptance speech, was the dedication of the employees who he thanked for, "Working together to maintain a safe workplace for all Bancroft employees, subcontractors, clients and visitors."



Dr. Ron Prichard; Ed Allison, DuPont; Connie Fabre, GBRIA Executive Director; Marcus Lewis, LUC Chairman, Rhodia; and Ricardo Aparicio, CURT President.

tions. With a membership that already has one of the lowest injury rates possible, the GBRIA wants to go lower, to zero!

They plan on doing this through a number of initiatives, including fostering safe behavior through safety awards programs, increasing safety awareness through a Safe Nation radio show, continuing OSHA compliance through their Process Safety Management Audit program, and adding online discussion boards that are focused on safety to their website.

LUC SAFETY AWARD

Greater Baton Rouge Industry Alliance:

The GBRIA has a number of objectives for the upcoming year. Number one on that list is to achieve injury and incident free opera-

OWNER SAFETY AWARDS

Air Products & Chemicals, Inc.:

Safety is no accident for Air Products & Chemicals, Inc. This mantra was demonstrated during the construction cycle of the product that won this company this award. It covered an 18-month period and over 350,000 man-hours, during which there were zero lost workday cases and zero recordable incidents. The reason: an innovative team approach that persevered despite instituting new efficiency practices and the effects of surrounding hurricane-related chaos.

Air Products & Chemicals, Inc.—Shanghai, China:

What do you get when you undertake an international project in a location with major geographical and cultural differences from the United States? Zero recordable or lost-time incidents, if you're Air Products & Chemicals Inc. Taking home their second CISE of the night for a project completed in Shanghai, China, this company strived for the best safety record possible by organizing training workshops that promoted sharing, communication and understanding of safety issues at all project levels.



Dr. Ron Prichard presents the award to Steve Satrom, Vice President, and William "Rusty" Fannin, Global Construction Safety Supervisor.



Tom Vaughn, President of BE&K with Bob Krzywicki, Contractor Safety Practices Manager, DuPont and CURT Safety Committee Chairman.

BE&K Construction Co.: BE&K's entire team has been focused on having a safe and healthy working environment, and it shows. With three years of exemplary safety records, the company has taken home numerous safety awards including a CISE at the conference.

"This is a fantastic accomplishment," said Rich Baldwin, Safety Director. "BE&K's improvement in safety processes allowed us to achieve the safety performance deserving of this award. I commend not only our company leadership and safety personnel, but all BE&K employees who are committed to working safely."



Dr. Ron Prichard with Robert Royal, Safety Director at Triple "S".

Triple "S" Industrial

Corporation: What's an acceptable number of accidents per year? Zero, said staff at Triple "S" Industrial Corporation. Triple "S" has three years of accident-free days already under its belt and is hopeful that integrating safety practices into all work processes will continue them on this path of success.

Triple "S" has twelve full-time field safety coordinators who report directly to the Corporate Safety Director. This Director then reports to the owners. Having senior management involved to this degree sends a clear signal: all accidents are preventable and if there are problems, they should be proactively identified and corrected.



Dr. Ron Prichard; Rex Largent, Construction Manager; and Ricardo Aparicio, CURT President.

Conocophillips Company:

Safety from the start. That's what allowed Conocophillips to achieve 422,000 man-hours and no recordable or lost-work incidents on one of their recent projects. This was achieved by using a buddy system for new employees, enforcing mandatory safety orientation for all workers and implementing a 100 per cent glove policy, as well as incorporating CURT safety resources and best practices into this construction project.

Owner Safety Awards, continued



Dr. Ron Prichard with Tony Barfield, Construction Services Supervisor.



Dr. Ron Prichard with Jonathan Yarbrough, Site Mechanical Manager.



Dr. Ron Prichard; Brian Morrissey, Senior Project Engineer; and Arthur Limper, Manager, Construction Safety.

Exxonmobil Chemical

Company: Three weeks, 100,000 man-hours and no recordable injuries—now that's reason to celebrate. Exxonmobil Chemical Company earned their CISE award for reasons including mandatory safety orientation for everyone entering the site and a new twist to the buddy system with which employees observed, coached and mentored new employees in regards to their safety performance. Project themes included "Leading by Example" and "No One Gets Hurt."



Dr. Ron Prichard; William "Butch" Standerfer, Construction Manager; and Ricardo Aparicio, CURT President.

was done in Puerto Rico, saw a shift in focus from, "I have to work safely" to "I want to work safely." Despite being considered a high-risk, schedule-driven project, Merck was able to achieve success by implementing and monitoring a safety program that ensured full-time staff, the owner and the contractor were organized with one common goal; safety for all.

Exxonmobil Refining & Supply – Bayton Refinery:

The Baytown Refinery is one of the largest in the world, located on 2,400 acres with a crude oil capacity of almost 465,000 barrels per day. Even with such a big operation safety has not taken a back seat. Rather, it is integrated into every aspect of business. Incorporating Contractor Safety and Health Guidelines, organizing Contractor Safety Teams, improving communication between management and recognizing safety successes are just some of the ways this refinery does its job and stays safe.

Merck & Company, Inc. – Barceloneta, Puerto Rico:

The second CISE award of the night for Merck was a result of 900,000 hours and zero injuries. This project, which



Dr. Ron Prichard; Tim Stephenson, Manager of Workforce Management; and Frederick Pastor, Jr., Vice President Engineering & Operations Support.

management, involvement, accountability, established safety staffing with budgets, rigorous safety and health programs, site specific safety requirements, comprehensive orientation of new hires...and the list goes on! These reasons, and more, are the combination that earned PSEG Fossil a CISE award.

Merck & Company, Inc. – Gardasil Manufacturing Facility:

Getting the job done quick. Getting the job done on budget. Getting the job done safe. What's your priority? For Merck & Company, Inc. safety comes first, ahead of all other project priorities. During a 12-month construction project in the U.S. the company recorded only one injury. How could such a lengthy project be completed almost accident-free? Merck's safety mentoring program focused on new employees and an aggressive project hazard analysis, as well as rigorous safety planning, training and corrective action, if needed.

PSEG Fossil, LLC Engineering & Operations Support:

For PSEG Fossil, health and safety are the only choices. The list of safety elements that are incorporated into their projects is long: management commit-

WORKFORCE AWARDS

The Construction Industry Workforce Awards were developed to recognize both national and international examples of extraordinary, exemplary and innovative training and education programs. Congratulations to the winners and honorable mentions!

Albany Technical College, Industrial Systems Technology Program:

Together with their Local User Council (LUC), Albany Technical College in Georgia developed the Industrial Systems Technology Program. This curriculum gives students the skills they'll need to successfully perform as industrial electricians or industrial systems technicians. The course-load was developed with input from the South Georgia Construction & Maintenance Council, a LUC affiliated with CURT. Enrollment has grown to over 100, with graduate placements ranging from 92 to 100 per cent over the last four years.



Robert Piper, VP Workforce Development and Kirk Pickerel, President & CEO.

Associated Builders & Contractors, Workforce Development Recognition Program: Training for a construction career involves many different components, including preparatory (elementary, middle and high school), college/university, craft/ap-

prenticeship, journey person, and management/leadership education. The Associated Builders & Contractors (ABC) recognize this lifelong commitment and as such, have created a Workforce Development Recognition Program.

In terms of winning the CISE award, ABC President and CEO, Kirk Pickerel said, "ABC is extremely honored to be recognized by CURT for our efforts in promoting careers in construction...ABC knows that the future of the construction industry depends on our ability to attract and retain men and women through training and lifelong learning designed to focus on achievement and advancement, while promoting the exciting and rewarding career opportunities the industry offers."



Roger Lane, DTE, CURT Workforce Committee; Ron McKenzie, NCCER Chairman; and Rachel Smith, NCCER.

National Center for Construction Education and Research, Build Your Future Campaign:

Reaching 1.5 million people across the

United States is a huge endeavor for any campaign. However, the Build Your Future Campaign (BYF), created by the National Center for Construction Education and Research (NCCER), has managed to do just that. Designed to appeal to students on the verge of making their future career decisions, the campaign portrays a realistic and positive image of the construction industry.

"NCCER is extremely honored to have our BYF campaign recognized by CURT for this prestigious award," said Chairman Ron McKenzie. "BYF is made possible by the dedication and contributions of the industry contractors and associations that are committed to promoting the rewards of a career in construction."



Jim Morgan, Chairman of the Board of AGC of St. Louis; Gabrielle Fields, a student at The Construction Careers Center; and Gina Washington, Vice Principal, The Construction Careers Center.

Associated General Contractors of St. Louis, Construction Careers Center: Since 2001, students in the St. Louis area have had the chance to attend a high school with a unique twist, a focus on construction. The Construction Careers Center, founded by the Associated General Contractors of St. Louis and the St. Louis Construction Industry, graduated its first class in June 2005. Students, from grade 9

through 12 receive a solid foundation in academics, a broad exposure to the construction industry and relevant vocational education preparation.

As student Billy Rooks said, "I would recommend CCC to anyone interested in the construction trades. It provides hands-on training in a number of fields...I highly recommend CCC to those who are undecided on their future or curious about the field of construction."

Wyoming Contractors Association Customized/ Concentrated Training: Dedication. The Wyoming Contractors Association (WCA) has true dedication to the training of the craft. WCA has taught almost 15,000 NCCER craft modules and, in 2000, built a Training Center in Casper Wyoming. What started with 5,000 square feet of classroom and office space, and another 5,000 square feet of shop space, has since been expanded (in 2004) to include training for the oil and gas industry, and then again in 2005 with an additional 3,200 square feet for more classrooms and lockers. And it will not end there! Over the coming months another \$7.5 million will be raised to complete the campus, with an addition of 32,000 square feet of dorms, classrooms, offices and supportive infrastructure.



Mary Woods, Director of Construction Training and Kurt Hovet, Past President of the Wyoming Contractors Association.

The Building Trades Employers' Association, Construction Skills 2000: While CS2K may sound like some futuristic movie name on the space channel, it is actually an innovative program designed to give New York City youth the chance to learn about and experience the construction industry. Founders of the program, the Building Trades Employers' Association hopes that an introduction into the field will ultimately lead students to a long-term career in the skilled trades.



Henry C. Kita, Vice President of BTEA New York City and Ricardo Aparicio, CURT President.

Crisis in Construction: HELP WANTED



1 million new workers needed by **2012***...

Natural disasters on the rise increase **employment needs***...

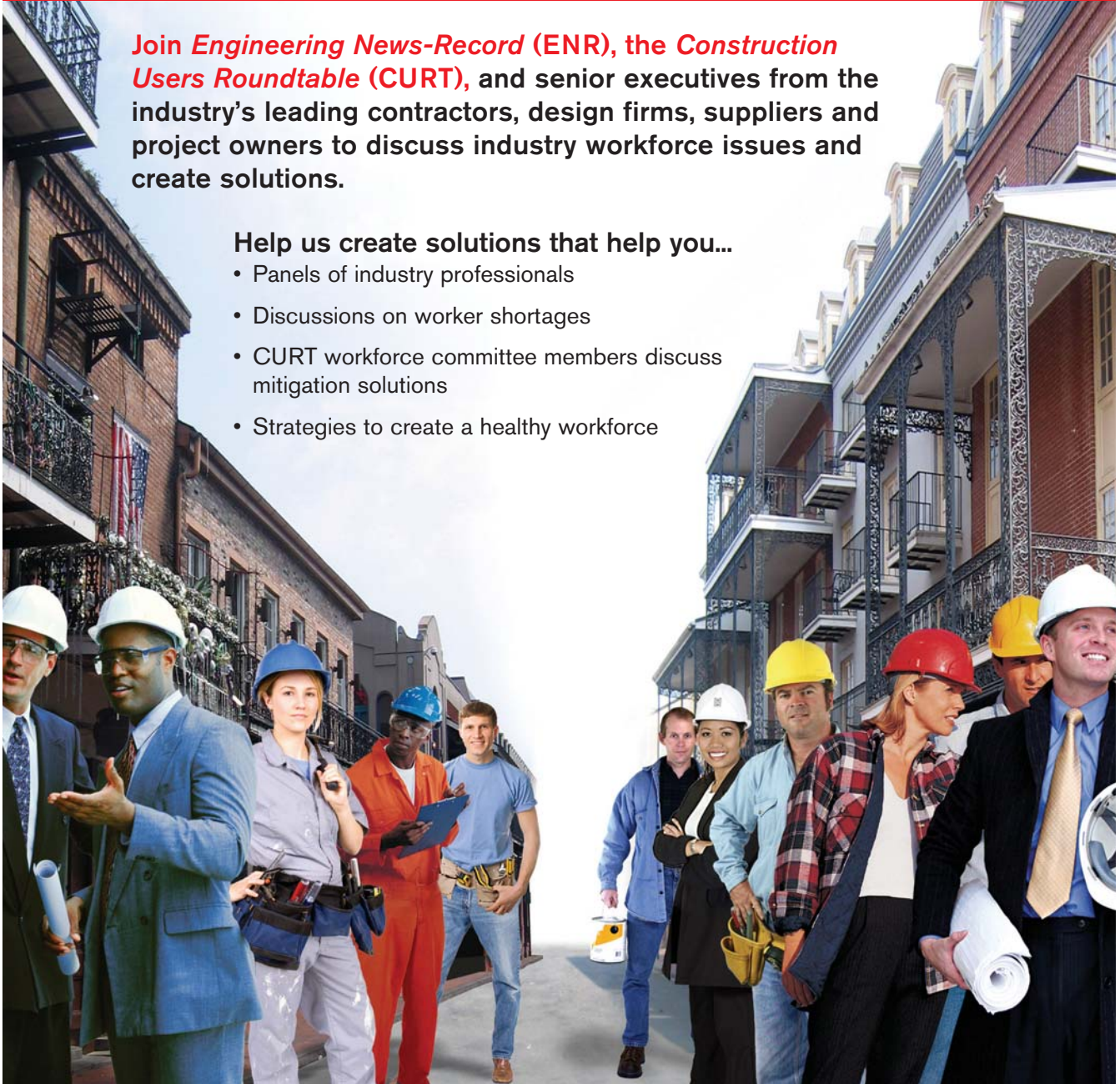
If we don't **take control** of the workforce crisis, **who will?**

June 5-6
Royal Sonesta Hotel
New Orleans, LA

Join *Engineering News-Record (ENR)*, the *Construction Users Roundtable (CURT)*, and senior executives from the industry's leading contractors, design firms, suppliers and project owners to discuss industry workforce issues and create solutions.

Help us create solutions that help you...

- Panels of industry professionals
- Discussions on worker shortages
- CURT workforce committee members discuss mitigation solutions
- Strategies to create a healthy workforce



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*Source: U.S. Bureau of Labor Statistics and McGraw-Hill Construction's Solving the Workforce Whitepaper

Break-out Sessions, Revisited

The educational break-out sessions at the CURT National Conference featured a wide-range of topics, all designed to educate, inform and update the attendees. For a complete synopsis of the sessions, contact the CURT office to purchase a CD containing the PowerPoint presentations from each speaker. Next years' break-out sessions are set to provide even more insight into all the critical aspects that affect your business. Keep an eye on the CURT website for updates on all the sessions you could take part in, this year in Florida.

Value Enhancements to Workforce Performance: Merit Shop Leaders

Speak Out by Ted Kennedy, Chairman, BE&K; Eddie Rispone, Chairman, Industrial Specialty Contractors; and Rick Graves, Vice President, Fluor Corporation.

The market today has many challenges, according to Rick Graves. Project costs are increasing, certain resources are in short supply, competition for employees is heating up and staff are more selective in their assignments. Succeeding despite these issues involves implementing a winning equation: recruiting + compensation + training + retention = having the right employees at the right time.

What's Ahead in Job Demand: An Industrial Workforce Needs Assessment

by Tony Salemme, Vice President, Industrialinfo; and Steve Jones, Senior Director, McGraw-Hill Construction.

The construction industry is responsible for eight per cent of the GDP (second only to healthcare). In order to maintain this, though, challenges must be overcome: a high demand for specialized skills with not enough people to meet the demand, natural disasters that eat up resources and a lack of interest from young Americans in entering the industry. As Steve Jones

explained, an ENR Workforce Summit in September 2006 called for a plan of action that included improving the industry's image, investing in training and education, ensuring better pay and working conditions, and improving productivity. Overcoming these critical areas is a must, he said, or, "Everyone will suffer."

Owner's Take Action With the Southeast Manpower Tripartite Initiative: A Plan for the Future

by Ron Campbell, Vice President of Tech Services, Southern Company; and Alan Katz, Construction Manager, Florida Power & Light.

According to Ron Campbell, you, "Can't solve a problem before you identify and quantify." So, that's exactly what they did. By using all the existing data available, as well as conducting their own industry needs survey, and by talking with unions and open-shop to find out the

number of people each had available to work, the team was able to develop a fairly accurate vision of supply and demand for the area. The next steps involve forming a national commission to attract new hires, working with the Department of Labor to develop new training and engage in regional forums to address common issues.

Craft Workers Weigh in on Construction Productivity: Things That Help & Things That Hinder

by Rusty Fannin, Global Safety Supervisor, Air Products & Chemicals; Paul Goodrum, Assistant Professor of Civil Engineering, University of Kentucky; Bryson Edmonds, Vice President of Construction Services, BE&K; Art Stover, Construction Manager, Bechtel Construction; and Jon Young, Senior Manager of PM & Construction, Anheuser-Busch.



The entire Afterburner Crew..

The last presentation of the conference, *Adding Value Through Flawless Execution: The Afterburner Story* was high-energy, entertaining and most-of-all, educational. Anthony "AB" Bourke and Patrick "Lips" Houlahan, both Afterburner Fighter Pilots, enthralled the audience with tales of their high-octane careers flying jets, and how flawless execution and teamwork is critical to their success and survival. The Afterburner Seminars consist of a select group of America's top military fighter pilots. Their mission: to train businesspeople around the globe to use combat proven fighter pilot skills to achieve victory in today's business world.

In a survey on the factors that craft workers say had the greatest impact on their productivity, number one on the list was *I have to wait for people and/or equipment to move the material I need*. This is just one answer, which came from both union and non-union workers, that shed light on what's

being done right and what needs improvement.

Identifying the Value of "Safety First": Owner & Contractor Viewpoints by Greg Landis, Director Site Facilities

Other presentations included:

Value Enhancements to Work Performance: Union Leaders Speak Out by Ed Hill, General President, IBEW; Bill Hite, General President, United Association; and Sean McGarvey, Secretary/Treasurer, BCTD.

The Owner's Safety Blueprint: New Value Added Implementation Tools by Steve Lindholm, Consultant, CURT; Cliff Florczak, Manager-Safety & Health, Shaw Environmental & Infrastructure; Art Goehry, Director of Project Management, Johnson & Johnson; and Tom Roscetti, Consultant, Exxon-Mobil Chemical Co.

Building Value by Diversifying Contract Strategies: Unique Approaches for Owners by Teresa Magnus, Contract Strategy Manager, Southern Company; and Ned Parrot, Attorney, Watt Tieder Hoffar & Fitzgerald.

Uncloaking the Mystery: BIM & Other Enabling Technologies by Chris Holm, Director of Metrics/Continuous Improvements, Walt Disney Imagineering; and Mike Alianza, Senior Analyst/Engineer, Intel Corporation.

E-Discovery in Today's Construction Environment: Guidelines for Documentation by Randy Erickson, Construction Co-Chair, Crowell & Moring, LLP; and Andy Marks, Partner, Crowell and Moring, LLP.

Global Resources for North American Projects: What's Going on out There by Joe Gionfriddo, Global Construction Manager, Procter & Gamble; Steve Mongiardo, Senior Director of Infrastructure, Merck & Company, Inc.; and Paul Hochi, Marketing Services Manager, Jacobs Engineering Group.

Engineering, Merck & Company, Inc.; Bob Krzywicki, Contractor Safety Practice Manager, DuPont; David Krause, Project Manager, ExxonMobil Chemical Co.; and Ken Leach, Executive Vice President, Turner Construction Co.

During this session, representatives from four major companies discussed how their respective companies have strived to and ultimately achieved excellent safety records, as well as why safety ranks as a number one priority for each company. As Ken Leach said, "With more than 2,500 projects a year, establishing consistent policies and procedures, and educating staff, the subcontractor market and the trade workforce was just a practical step for us to achieve zero injuries."

What are They Thinking? Results of the FMI Owners Survey by Mark Bridgers, Consultant, FMI Corporation.

What are owners thinking? It's not a mystery anymore. The Seventh Annual Survey of Owners was designed to better understand an owners point-of-view, as well as to understand the advantages of collaboration and concentration within a construction program. The survey asked questions such as, *what type of owner are you, what is your annual capital spending and how do you select a program manager?*

Providing Construction Value in the Changing Oil & Petrochemical Marketplace

by Jose R. Leon, Vice President Engineering & Manufacturing Support, ExxonMobil Chemical Company.

The world oil and gas demand has skyrocketed in the past number of years. This demand has created an environment of opportunities that if executed correctly, can yield huge results. Leon cautions that four major components must be met if success is going to happen. These include security leadership, the highest standards of ethical conduct, technology competence and innovation, and professional and workforce development. ●

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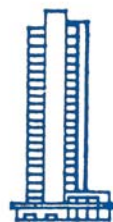
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Fore!

Conference golf tournament sees clubs swinging, people smiling

Forget the Monday blahs. Participants in the golf tournament spent their Monday morning swinging clubs and enjoying the scenery. Players got to show off their skills (and sometimes lack-there-of) on the Cañada Course; one of three at the Hilton Tucson El Conquistador Golf & Tennis Resort.

In the background, the dramatic view of the Santa Catalina Mountains and the Tucson valley wowed those who tried their luck on the 18-hole course.

What more can be said? The photos here, say it all!

SPECIAL SECTION: Conference Re-cap

1

2



Photos from top left:

1. A view of the beautiful course.
2. Watch out for the water!
3. The perfect Monday morning.
4. Practice makes perfect.
5. Congratulations to our winning team: Regi Phelps, Bechtel Construction Co.; Mark Butler, United Association Local 469; Larry Wilson, Beck Group; and Albert Schwarzkopf, Merck. The group finished with a score of 163.
6. Lining up for the shot.



5

Special thanks to Randy Bakel, Executive Director of the Florida Construction Users Roundtable, for coordinating the tournament.

3



4



6



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Exhibit Hall Re-cap

Not only did the CURT National Conference feature great speakers and sessions, it also was host to an exhibit hall featuring products specific to the needs of CURT members and the industry. Here are a few comments from the exhibitors:

"Crowell & Moring LLP chooses to participate as an exhibitor because the CURT Conference has a large presence of owner's, a well-attended event and great locations for us to present in. We enjoy the exhibit hall events and always make great contacts there, not to mention showcasing our product at the CURT Conference provides a great platform for our attorneys to present their expertise."

Michelle Geist
Legal Specialist
Crowell & Moring LLP

"The CURT owners are exactly the type of people we want to expose our product to and the CURT Conference gives us the opportunity to do just that. By showing them what we offer we are able to increase our business and make sure that everyone knows what we can do for them. We went to this conference for a reason and we achieved great success."

Jan Reinhardt
Turner Construction

"The number one reason we choose this conference is because of the attendees. We are constantly marketing IMPACTs programs to the folks that have their finger on the construction dollars. This particular conference is loaded with everyone from tradesmen in the field to the owners who build the buildings and everyone in between. CURT members are the folks that hire our product, a well-trained drug-free Union Ironworker, so it is important that CURT members understand what we can do for them."

Kenneth Waugh
Director Industry Liaison
I.M.P.A.C.T.



Teton Industrial Construction is a diversified, full service heavy industrial contractor based in Atlanta, Georgia doing business throughout North America. Teton is a member of the PCL family of companies with over a century of construction excellence, leadership, and unsurpassed value.

Watch us build at www.tetonindustrial.com



Surety Underwriters: You Need Us

Project owners assessing contractors on their own assume more risk, surety underwriters provide alternative

By Matthew Klimczak, Surety & Fidelity Association of America in Washington D.C.

As a lawyer, I was taught that an attorney who represents himself or herself has a fool for a client. But at least you know everything there is to know about that client, even if your objectivity is severely prejudiced. Owners who take on the in-house assessment of contractors who will ultimately determine whether their project is built on time and on budget, however, may be assuming a bit more risk than they realize, even if no natural prejudice exists.

While most sophisticated owners have the expertise to evaluate a contractor's basic information and financial statements, successful surety underwriters know that it is the relationship and intimacy with their contractor clients that enable them to reach a comfort level to issue guarantees of performance and payment responsibilities. Even these professionals, many of whom have devoted an entire career to this process, are sometimes caught by surprise.

What is not surprising though, is that a high percentage of losses derive from accounts they have had for less than three years, as surety underwriters get to know their newer accounts. It would be even more challenging for owners who are not necessarily looking for a longer term business relationship.

Assessing new surety accounts is laborious and difficult, not to mention a subjective and objective exercise for underwriters. It involves the evaluation of the contractor's ability to perform and whether

it has the financial strength to pay all suppliers and material men in order to meet the obligations of the contract and the performance and payment bonds on projects.

An accurate look forward

A contractor's financial statement contains an anomaly not found in the financials of other industries. While most statements are a retrospective snapshot, a contractor's statement includes the contractor's subjective opinion as to what will happen in the future on uncompleted jobs. The contractor's financial statement strength is based in large measure on his or her opinion, not the accountant's, of two critical areas that will affect the ultimate financial strength displayed:

- **Percentage of project completion.** If inflated, the financials may reflect greater profits than actually there. And the work program may reflect less strain on capacity than actually exists.
- **Expected project profitability.** If overly optimistic, the financials may reflect greater profits than actual. Or worse, if unrealistic, the statements could be grossly overstated.

An analytical tool frequently overlooked by owners when evaluating contractors is the contractor's work on hand report (WOH). Uncompleted work can contribute considerable added strength to a financial statement, so it is a more revealing indicator of not just the current financial position

than a balance sheet and income statement, but also the likelihood of successful financial operations going forward. It certainly is necessary corroborative information to that statement. Surety underwriters will obtain the WOH on a quarterly basis and their assessment will delve into more than just the expected profitability on uncompleted jobs. They will conduct trend analysis, paying attention to changes in contract price, billings, costs completed to date, costs to complete, and estimated profits on each project.

Most illuminating to me is the billing trends of an uncompleted work program. An underwriter will analyze and question projects that begin to show underbillings—billings not yet made—that are related to what the contractor thinks are the costs and percentage of profit he believes he has earned to date. The concern here is that profits have actually faded and the contractor has not yet recognized this reduction. This will typically manifest first as an underbilling, even before the estimated profit is shown lower on a subsequent WOH. Underbillings are displayed as a current asset on the contractor's balance sheet much like cash, so it is vital to know if they are an accurate or illusionary part of the financial strength.

Overbillings are billings that have been made prematurely or a prepayment on work not yet completed. While accountants and analysts will applaud its

The opinions and ideas expressed in the BACK AT YOU SECTION are not necessarily those of CURT. If you would like to contribute to our BACK AT YOU SECTION please send topic ideas/completed articles to editor@matrixgroupinc.net for review.

conservative treatment as a liability on the statement, what they cannot be certain of is whether these received funds will be available to complete that work to be finished or whether they have already been spent on something else. A larger cash balance would suggest these funds will be available. Here again is where the relationship and continuous inquisitions by the surety underwriter augment so importantly the objective evaluation of the numbers.

Unbonded work is assessed on equal terms with bonded work because the surety underwriter knows bonded exposures do not reside in a vacuum. Difficulties on unbonded work can have a disastrous impact on all jobs. Similarly, problems on bonded work can divert attention and resources from unbonded jobs where there is no surety to assert its concern to address issues quickly.

Face-to-face, always best

Beyond the financial and WOH analysis and all their subtleties, regular face-to-face meetings with the contractor's principal(s) and key personnel represent an invaluable tool not easily available to project owners doing their own assessment. The French have a wonderfully descriptive term *voir dire*, which our legal system uses to describe the process of questioning prospective jurors to determine bias. Actually, the unspoken purpose of the *voir dire* is for the attorneys to get a feel for the personalities and likely views of the jury. It literally translates "to see to speak" and is precisely what surety underwriters do in meeting with their contractor clients.

An experienced underwriter will want their contractor to describe a number of qualities that will provide compelling rationale for putting the underwriter's own surety company's assets on the line by issuing (or declining) bonds. They do this by evaluating explanations and details such as:

The experience of the principals and key employees;

- The formal continuity arrangements in place;
- The contractor's completed and uncompleted projects including the type, size, unusual characteristics and gross profit;

- Profit fades or profit increases (remember, if overly optimistic, these will produce an inflated financial statement) on their uncompleted work;
- The contractor's knowledge and experience with owners, architects and subs he/she has worked with or is about to work with;
- An explanation of any slow trade payments, UCC filings, or other inconsistencies; and
- The contractor's banking relationship, which includes current cash balances/debt, average cash balances/debt over the last year, and parameters of the line of credit, including the amount of the line, interest rate, term, collateral, and other covenants.

A very intimate business relationship is nurtured to substantiate the capability and character of the people that make up the contractor to be bonded. These meetings provide a basis for determining the capacity of the contractor, both in size of project and size of work program. The experienced underwriter's ability to perform this extensive and personal assessment is a key distinguishing factor from relying on a list of documents and responses to perfunctory questions.

Of course, besides the experience and time-consuming effort needed to properly assess a contractor, there is another reason owners should think twice before assuming the role as "surety" on their own projects. A student once asked me, "How, after that exhaustive underwriting exercise, do you ever have a loss?" The simple answer, and all the more reason owners should consider bonding their projects, is "because stuff happens." Interest rates go up on a bank loan, oil and material prices increase, a subcontractor fails to perform, the weather turns bad. These are all things out of the contractor's direct control. Again, most losses derive from a surety's newer accounts, usually as a result of not knowing the contractor as well as established accounts. The information one does not know is much more dangerous than known problems. Owners, however sophisticated, are usually not in a position with sufficient time and experience to accumulate enough of that information.

The value of the bond is twofold. The surety will be there to complete the work and pay all bills related to the work if the contractor cannot. More importantly, a professional and extensive exercise has been conducted by experienced and knowledgeable underwriters so that a high probability exists that an owner will never have to ask the surety to step in. As the sign in a pizza restaurant announced, "We have a deal with the bank. They don't make pizzas and we don't cash checks." Let your surety underwriter do what he/she does best—evaluate and guarantee the work of its contractors. And rest easy as your contractor brings your bonded project in on time and within budget. ●

Matthew Klimczak is the Director of Underwriting at the Surety & Fidelity Association of America in Washington D.C. He has more than 30 years experience as a surety underwriter with several major sureties. He can be reached at mklimczak@surety.org.

For information on contract surety bonding, contact the Surety Information Office at (202) 686-7463 (www.sio.org). SIO offers speakers, answers to your questions and free publications, such as Contract Surety Bonds: Protecting Your Investment, Surety Bonds Vs. Bank Letters of Credit, and Surety Bonds: A Guide for Private Owners CD.



By Michael Jansen, Satellier

BIM and Workshare:

Changing the way we Practice

“Many have argued that unlike CAD, BIM is an integral part of the design process, in which case, it would be difficult to really outsource it. The next few years should tell us if BIM can be outsourced as successfully as it has been done for computer programming and other IT fields.” This statement was written by Lachmi Khemlani, the founder and editor of AECbytes, while reporting on the AIA National Convention 2006.

I'll start with this evocative observation as I discuss the merits of BIM and workshare (also known as outsourcing), and describe how together they can change the way we practice.

The deployment of cutting-edge technology is a core strategy for global AEC firms as they work towards increasing profitability and improving efficiency. Take BIM, for instance. There are arguments both for and against BIM but the fact is that it presents a unique opportunity for design firms to generate a cohesive, information-rich, holistic virtual building model with the evolved contributions of all disciplines. It eliminates much of the potential for conflict between the services and enables quick changes, largely because all the engineering information is contained within the model already. So, as any part of the model is modified, one can

see the immediate impact on the overall building project with respect to coordination issues, budget and scheduling. BIM also presents an opportunity for designers to visualize their structures in advance, which is a useful tool in the design process.

Why isn't everyone using BIM, in that case?

Well, as with anything else, migrating to BIM involves a disruption in the work flow, especially because firms are unwilling to make the investment in BIM and are also unsure of how to make the transition to BIM. It seems to me that over the last few years of dealing with principles in many of America's top firms, that there is not going to be a general migration to BIM so quickly, but indeed it will happen. The problem is that we feel there is not enough support

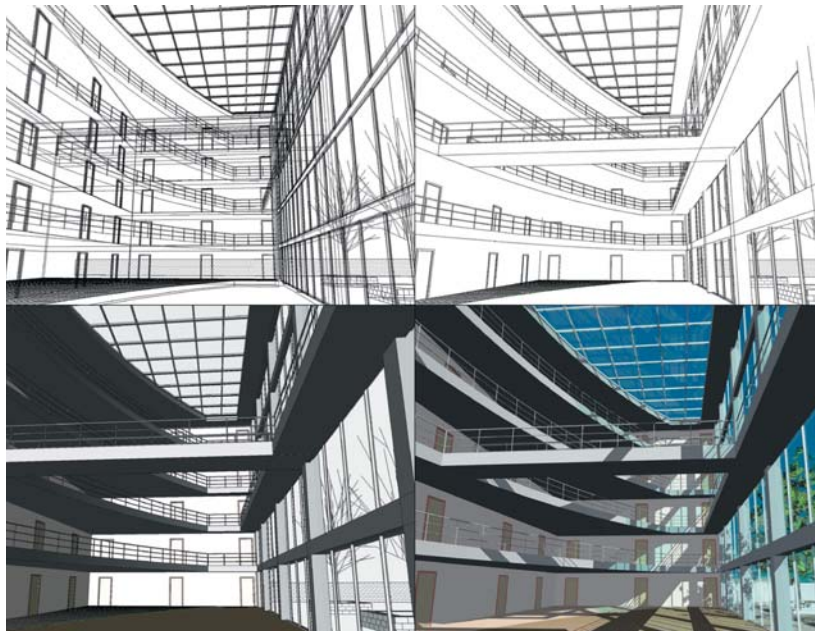
right now for firms that are trying to transition to BIM.

There is a definite need for a transition process business, which is where we are moving, ultimately involving front end processes which will enable firms to transition from one platform to another and back end processes that support the model making and data enrichment process.

Workshare—a global practice model

With the BIM paradigm, there are many parts of the modeling process that can be separated out so as to suit workshare, including data enrichment and modeling that are best handled by specialized teams working in a globally co-coordinated workshare environment that takes advantage of different skill sets from different parts of the world and different efficiencies from different time zones etc. And we now think that it is possible that in fact workshare may help drive some firms towards the BIM platform as they will simply need to tap into various globally-available BIM-centric production resources. These specialized teams can also assist contractors in preparing accurate estimates to bid and win profitable projects.

But then, why isn't everyone migrating to BIM? Currently, market penetration in the U.S. is about three to five per cent. There are still issues out there that software companies and the potential users of BIM software must address before adoption can really take off. Many users complain that the software is not functional enough yet for their needs. Producers will need to keep making better products and continue to devise innovative methods for e-training/on-site at a large-scale. Beyond that, certainly, interoperability is a major issue—there are a number of software programs out there right now which are in the game, all looking at different potential markets, all with very different philosophies. I have spoken to senior executives at a number of these companies to un-



BIM renderings illustrate how this building will look once completed. Photo courtesy of Satellier.

derstand their philosophies, and their arguments are all valid. It is a big world out there.

The question remains however, how do the software programs interoperate? No one has been able to answer that question yet, and this is one issue that promoters must contend with when faced with the decision to deploy one software or another. For example, what happens if you move to one platform and your client demands another model? It is a difficult problem to address because the amount of training that goes into specific BIM software packages is significant. The sooner this issue can get resolved, the easier it will be for the firms to adapt/adopt.

We move people in our company from software to software and they require new training each time. So currently there is a need for a third-party organization to create master BIM models of various building products. That is, an information-rich, interoperable 3D shared product library wherein these non-software specific models will be created for general consumption enabling firms to work with any software. I would hope, at some point, to see consolidation, however, I suspect what is going to happen instead is the emergence of software products with various advantages for various kinds of companies.

Workshare and BIM: the operating paradigm

If you look at the Building Information Model evolution and development process, there are certain processes that are intrinsic to creating that BIM model, which can be separated out and evaluated in a specialized environment, where those processes are handled more efficiently, more accurately and more cost effectively. Data enrichment and formal modeling are two processes that can be workshared, along with conflict detection, estimation and construction visualization.

The way that workshare functions with BIM is different from the way outsourcing works with CAD. With outsourcing CAD work, assignments are task driven and typically lower-end requiring less architectural and construction knowledge to complete. With BIM, the workshare team is

comprised of knowledge-enabled construction-modelers who cannot be disassociated from the design manager. So, in its next evolutionary form, the construction-modeler will need to be actively engaged with the design manager as he or she develops the model, along with the other disciplines so that as information is being gathered, the model is automatically updated and re-coordinated, and easily accessible by the owner and contractor.

I have seen a number of firms adopt this model. It has been highly successful for them and they are reaping the benefits. We now have a system in place with them wherein we can complete BIM models in less time than we used to do CAD documentation. Yes, it's getting interesting.

Changing the way we do business

In order for BIM and Workshare to change the way we practice two things must happen. One, developments/upgrades in BIM software must continue to make reasonable sense and keep pace with industry needs. The other, of course, is that companies like ours must continue to evolve and improve. Both BIM and workshare are right now in the process of learning and upgrading, and very rapidly. BIM a few years ago and BIM today is a very different scene. Outsourcing a few years ago and outsourcing today is a very different scene as well. One can only predict both will eventually grow together.

I believe strongly that owners and contractors will benefit the most initially, and perhaps ultimately. Today they suffer from delays and overruns that are often a matter of co-ordination (or lack thereof) between

the disciplines. Such incidences will be mitigated with the BIM model. And ultimately, the owners and the contractors will benefit because their projects are more likely to be completed on time and within budget—which ultimately benefits everyone on the BIM wheel, as we should hope to see less litigation and fewer charge-offs.

In fact, owners at this stage have little to lose by requiring their contractors and their AE consultants to deliver BIM models. Before they do that, they would need to develop a competency internally wherein perhaps they establish their own BIM project division to manage the new deliverable. Although owners will need help in making the transition and setting up the basic infrastructure, ultimately the benefits will far outweigh the initial investment.

"In the end, the practitioner of the twenty-first century is unlike the twenty-first century citizen. Confronted with an overwhelming amount of information and technology, it is understandable that some will hold on to established, comfortable methods of living. Others will see the almost endless amount of opportunity available to those who choose to educate and challenge themselves with new precepts. Know your options, enjoy your choice." From the AIA Report on Integrated Practice. ●

Michael Jansen is the President and CEO of Satellier, a leading workshare partner to the global AEC industry, providing value-added design support solutions evolving from CAD documentation, 3D modeling and BIM services to architecture, engineering, and construction firms. Additional information can be found at www.satellier.com.

2007 BIM/VDC Use Survey Open

The 2007 CURT-CIFE Building Information Modeling/Virtual Design and Construction (BIM/VDC) Use Survey is open and online at <http://cife.stanford.edu/>. The Construction Users Roundtable (CURT), working with the US General Services Administration (GSA), has contracted with Stanford University's Center for Integrated Facility Engineering (CIFE) to gather information documenting and supporting the business case for the implementation and use of BIM/VDC. The survey is intended for both current BIM/VDC users and those interested, but not currently using BIM/VDC. For current users the survey has 51 questions and takes approximately 15 minutes to complete. If you are not a current user the survey is shortened to 11 questions. CURT intends to provide summarized results to numerous industry organizations and publications.

Workforce Crisis: Solutions

Here's the Problem...

- One million new construction workers are needed in the next six years, with 2.5 million needed by 2014 (Bureau of Labor Statistics).
- Even though 65 per cent of industry jobs require an associate's degree or advanced training, only about 32 per cent of high school freshmen plan to attain that level of education (Source: *Workforce 2020: Work and Workers in the 21st Century* by the National Center for Construction Education and Research).
- While 15 per cent of construction industry jobs require minimal skills, 10 per cent of high school freshmen lack even those (Source: *Workforce 2020: Work and Workers in the 21st Century* by the National Center for Construction Education and Research).

The report, *Solving the Construction Industry Work Force Crisis: Ideas for Action* puts it as simple as possible—everyone needs to act. Put out by Engineering News-Record magazine and McGraw-Hill Construction, the report notes five key elements that must be focused on if change is going to happen: invest in education and training; reform immigration policies; ensure better pay and improved working conditions; improve productivity; and improve construction's images through full industry engagement.

Written down, these ideas sound simple enough. Putting them into action will be the challenge. Turning the ideas into reality, according to the report, falls on everyone's shoulders—construction firms, owners, government agencies, trade associations and schools and training facilities.

Speakers at the 2006 CURT National Conference had lots to say about the crisis, the solutions and who needs to turn ideas a reality. Here's some of what they had to say:

"We have to do more. We have to look at what is needed, when and where. We have to engage in dialogue. This can happen but it has to involve everyone. Those who typically don't want to talk, must. We have to succeed. It's the only option." **Allen Katz, Construction Manager, Florida Power & Light in his presentation, Owners Take Action with the Southeast Manpower Tripartite Initiative: A Plan for the Future.**

"This is truly a workforce crisis like we've never seen before. We need a unified message and we need to get it out to the media. We need an action plan that includes creating a computer database of what's available and where; tapping into the immigrant population; training people faster—even if it means revising our current programs; and ensuring the trades are portrayed as appealing—a great place to work." **Steve Jones, Senior Director, McGraw-Hill in his presentation, What's Ahead in Job Demand: An Industry Workforce Needs Assessment.**

"Everyone knows there's a workforce shortage. The task is how do we get people to stay and work? There are not enough young people coming in and too many older people who are on the verge of retiring. There has to be a universal dialogue and a universal acceptance that the industry has this problem so let's work together, everyone included, to put ideas into action to fix it." **John Mitchell, Economist, U.S. Bank in his presentation Bulls, Bears and Rallies: The Bottom Line for our Industry.** ●



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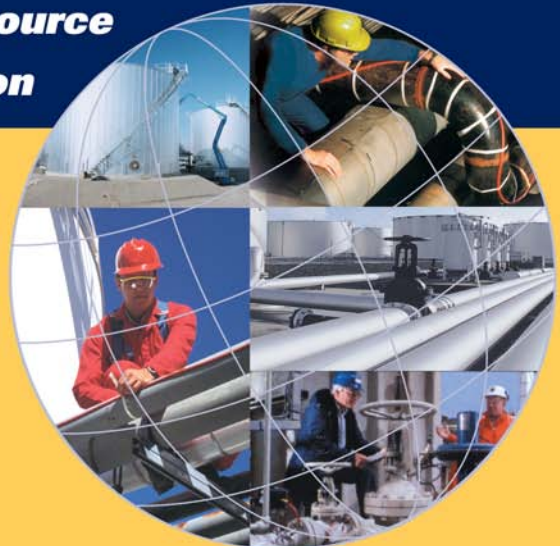
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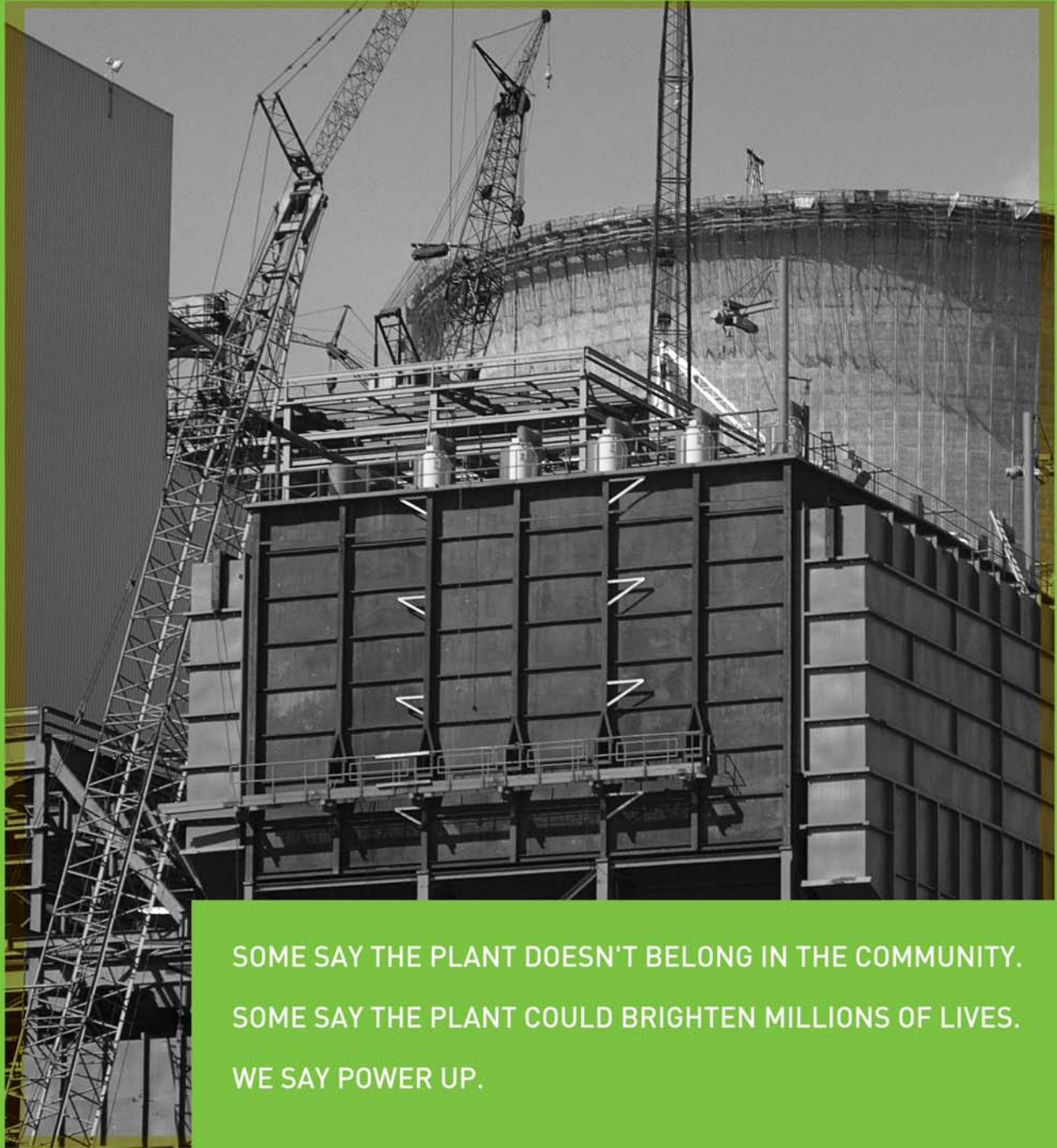
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