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This Quarter: Winning the Talent War

Dear Reader:

The War for Talent in the construction industry is ablaze. Companies are starting the long battle for a limited resource, labor. The war is expected to be long — some analysts say this war will be the biggest the industry's seen and predict it will continue raging for the next 20 years. So companies hoping to hunker down will not win this fight; instead, they will likely find they've been raided by their competition. Companies armed with talent-development strategies will be the ones on the right side of the battlefield after this fight through boardroom bunkers and cubicle trenches. Whether you know it or not, you are under attack, and so our issue this quarter is dedicated to helping you win this costly war for talent.

Our feature interview this quarter is with our very own, Hank Harris, CEO of FMI Corporation. Hank shares his insights on the *Surprises of the New Executive*. We've also included eight features surrounding our theme this quarter.

Kelley Chisholm highlights the ACE Mentor Program, an innovative approach to attracting young people to the fields of architecture, construction management, and engineering.

The labor crisis has necessitated an even greater focus within organizations on talent development and training. Ashley Robertson and Kelley Chisholm in their feature, *Developing Talent From Top to Bottom*, describe how companies can effectively address this need through recruiting, training, performance management, career pathing, reinforcement, and evaluation.

Project managers serve on the front lines of the project, and in this war for talent it will be crucial for companies to arm themselves with superior project leaders. Gregg Schoppman shows us how companies can grow project leaders out of project observers through planning, communicating, and business acumen, in his feature, *Evolving Project Observers into Project Leaders*. Then, Schoppman puts the spotlight on one successful program that's developing project leaders.

In *Project Management Excellence*, Schoppman interviews Dr. Ralph Ellis of the University of Florida, revealing how their construction management program is developing young people for work in today's industry.

In our never-ending quest to provide thought leadership for the construction industry, we've included a thought piece on the roots of the industry's labor crisis. Hoyt Lowder and Jay Bowman identify and examine three main roots — the industry's image, current career and education trends, and workforce demographics — in their feature, *Rooting Out the Problem*.

Nick Schubert provides an in-depth look at a growing byproduct of the labor crisis, unauthorized migrant workers in the construction industry. In his feature on the subject, he explains how the industry has become dependent on immigrant labor, making it necessary to understand the changing labor environment, the needs of their current and future workforce, and the laws.

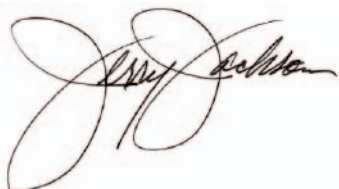
Companies hoping to survive the industry's labor storm will do well to follow Vanessa Winzenburg's outline for developing and executing a strategy to create a sustainable organizational culture characterized by employee growth in her feature, *Shore Up Your Levee System for the Labor Shortage Storm*. Then, Mark Bridgers and Mike Chase provide our annual economic outlook for utility contractors.

Finally, our departmental editors, including a piece penned by Zurich Construction, provide ideas and experiences aimed at equipping your organization with the necessary weapons to win the talent war.

As you take time for reflection in your winter season, use these articles to outline your winning battle plan. We wish you every success in 2006 and, as always, look forward to your comment.

If you would like more information on the topics covered this quarter, or any issue, for that matter, pick up the phone and call FMI in Raleigh, Denver, or Tampa. We aim to build a great future for the construction industry and its leading organizations.

Sincerely,

A handwritten signature in black ink, appearing to read "Jerry Jackson". The signature is stylized with large, overlapping loops and a cursive script.

Jerry Jackson
FMI Quarterly Publisher and Senior Editor

Departments

STRATEGY

Ethics Matter ... Sometimes

“Well, it depends.” How often have we heard someone say this when challenged with a difficult question? “Conditional ethics” — what this phrase represents — lead to poor customer satisfaction and poor construction performance. At least, that’s what FMI Corporation’s 54 years of construction industry experience illustrates.

In a similar vein, ethical lapses have too often dominated business news in recent years. While many individuals are now debating the costs incurred to comply with Sarbanes-Oxley, few doubt the benefits of shareholder trust it has restored in the stock market. Trust is the fundamental concern for business and the economy, and trust is synonymous with integrity, demonstrated through ethical business practices. Yet, in a survey conducted by FMI and the Construction Management Association of America (CMAA), 84% of industry respondents consisting of contractors, construction managers, and owners said that they had personally experienced industry-related acts that they considered unethical. (See Exhibit 1.) “Well, it depends.” Although this figure is astounding, the solution is simple and fundamental. Trust may be in short supply as demonstrated in Exhibit 2; in this list of the highest ranking topics of concern as rated by construction industry participants, the need to build greater trust is present in four of the five top-ranked responses.

A respondent to FMI’s survey of construction industry ethical practices said it best:

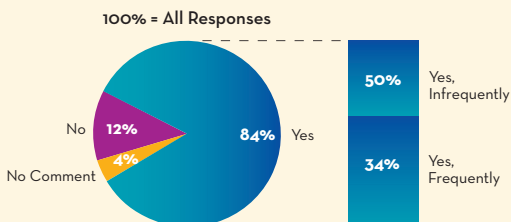
“You should not have to regulate or teach ethical behavior. Individuals know right from wrong.” —

Anonymous respondent to the *FMI/CMAA Survey of Ethics in the Construction Industry*.

Exhibit 1

Observed Unethical Acts

Survey Question: Have you personally experienced industry-related acts that you consider unethical?



Source: FMI/CMAA Survey of Ethics in the Construction Industry

DO ETHICS REALLY MATTER?

Ralph James, long-time consultant to construction-industry firms, in his book, *The Integrity Chain*, on the relationship between integrity, ethics, and successful construction performance, demonstrates the financial and moral link among these three characteristics.

“The integrity of the construction process is as important as the integrity of the construction products.” — Ralph James, Ph.D., *The Integrity Chain*

A significant, but not high enough, percentage of the construction industry feels the same way. Thirty-five percent of respondents estimated that unethical practices cost between one-half of one percent and two percent of the total project cost.

Additional costs are also incurred for scandalous activity making news headlines such as legal fees, lost reputations, falling share prices, and potential loss of life due to shoddy materials, unprofessional work etc.

In FMI’s work with owners and contractors, we have learned that unethical behavior is very expensive in both objective and qualitative ways.

Exhibit 2

Top Ethical Concerns

Topic	Percentage of Response
Trust between contractors and subcontractors	76%
Trust between owners and contractors	75%
Public perception of our industry	65%
The cost of getting our projects built	61%
Trust between contractors and design professionals	60%

Source: FMI/CMAA Survey of Ethics in the Construction Industry

STRUCTURAL INTEGRITY

Just as buildings must have structural integrity, we all want to work with individuals and companies with integrity and worthy of our trust. When it comes to the trust issue, 91 percent of survey respondents said they consider the ethics and integrity of the contractors they hire or work with to be important, or of the utmost importance. Yet, only 16 percent of respondents said that they would *never* hire or work with a contractor they *knew* had a reputation for unethical practices. (See Exhibit 3.) *“Well, it depends.”* Perhaps this apparent contradiction is not unexpected. In our research, we have found a gap exists between what people want to do and what they actually do. If members of the construction industry want to improve the industry’s ethical standing, they will have to work on closing these gaps. The owner community, as the consumers of construction services, can take the lead by both demanding and enforcing higher ethical standards.

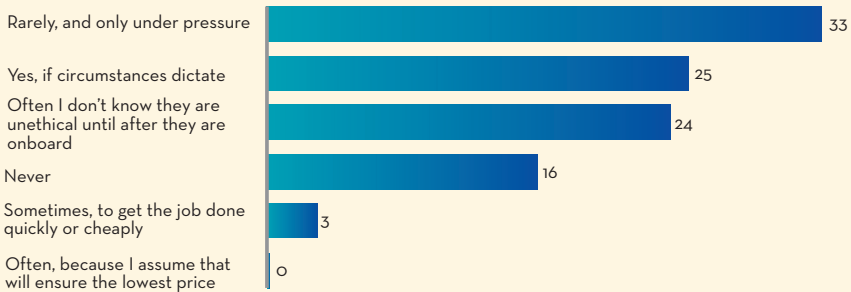
Just as buildings must have structural integrity, we all want to work with individuals and companies with integrity and worthy of our trust.

Exhibit 3

Hiring Unethical Contractors

Survey Question: Do you ever hire or work with a contractor that you know has a reputation for unethical practices?

Percentage



Source: FMI/CMAA Survey of Ethics in the Construction Industry

BLACK AND WHITE

What do we mean when we talk about “ethical” or “unethical” behavior? Merriam Webster defines ethics as:

- The discipline dealing with what is good and bad about moral duty and obligation
- A set of accepted moral principles and values about what ought to be
- A theory or system of moral principles governing the appropriate conduct for an individual or group
- A code of morality.

The term “ethics” can refer to several different things — a discipline or area of study, rules or principles, or a system governing what individuals and groups see as their duty. This term that we use easily in conversation can be loaded with different meanings and questions. What do we mean by “moral principles and values?” Morality is a set of accepted standards or rules about what is right or wrong conduct. Conduct or behavior is the way a person responds to a set of conditions. Therefore, when we speak of an action being “unethical,” we mean an action that is inconsistent with agreed-upon moral conduct.

An executive summary of what ethics means is captured in the idea that “Ain’t no right way to do the wrong thing.” — Rep. Dick Armey.¹ There is general agreement about right and wrong, until we are faced with the choice ourselves. “Well, it depends.”

Morality is a set of accepted standards or rules about what is right or wrong conduct.

SHADES OF GRAY

Although many people accept the idea that we intuitively know right from wrong, once we start to talk about moral codes and values, duties and obligations, the subject becomes more complicated. There are differences of opinion and gaps

in what is considered right and wrong in various circumstances. For example, the related practices of bid shopping and reverse auctions have caused a good deal of discussion and disagreement in the industry.

Surveyed owners, construction managers, architects, engineers, and contractors were

clear in their response that reverse auctions are unethical; seventy percent of respondents either agreed or strongly agreed that reverse auctions are unethical. (See Exhibit 4.)

Some might ask: “What is unethical about reverse auctions?” “Well, it depends.” Applied using strict rules where all players are competing fairly against other firms capable and willing to perform the work, FMI believes there is nothing inherently unethical about reverse auctions. However, many in the industry think reverse auctions look like bid shopping. When we asked respondents if they thought bid shopping was unethical, we got an even stronger, positive response. (See Exhibit 5.) Our conclusion: the two practices are perceived as being different versions of the same thing. The fact is that reverse auctions are simply a different means of purchasing goods or services. Parties to the process are all equally armed with the same information, hardly an unethical advantage to any. What may appear to be situational ethics is, in this case, not two versions of the same thing at all. Simply because one party does not like a particular system or process does not necessarily mean that the process lacks ethics.

According to the American Subcontractors Association (ASA), bid shopping is “the practice of divulging a contractor’s or subcontractor’s bid or proposal or requiring a contractor or subcontractor to divulge its bid or proposal to another prospective contractor or subcontractor before the award of a contract or subcontract in order to secure a lower bid or proposal”

(ASA news release, Sept. 26, 2003). Bid shopping is a breach of trust. Even though reverse auctions are frequently set up under specific rules, the perception remains that these auctions are a mechanism to cause subcontractors to divulge their bid so contractors or owners can secure a lower bid.

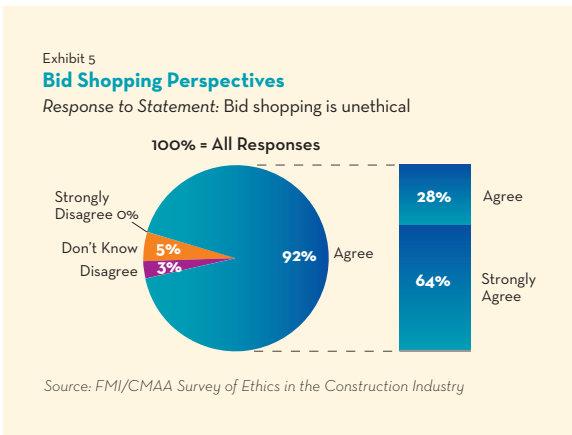
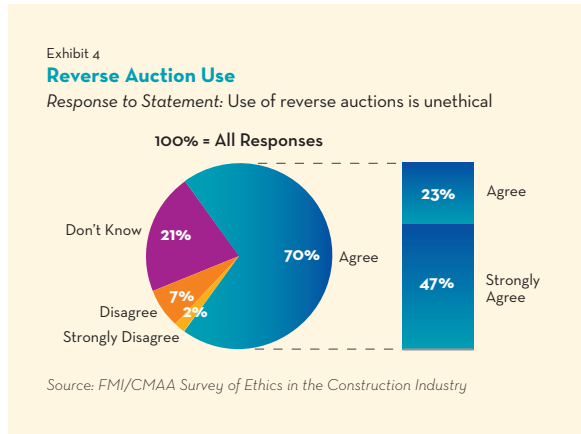
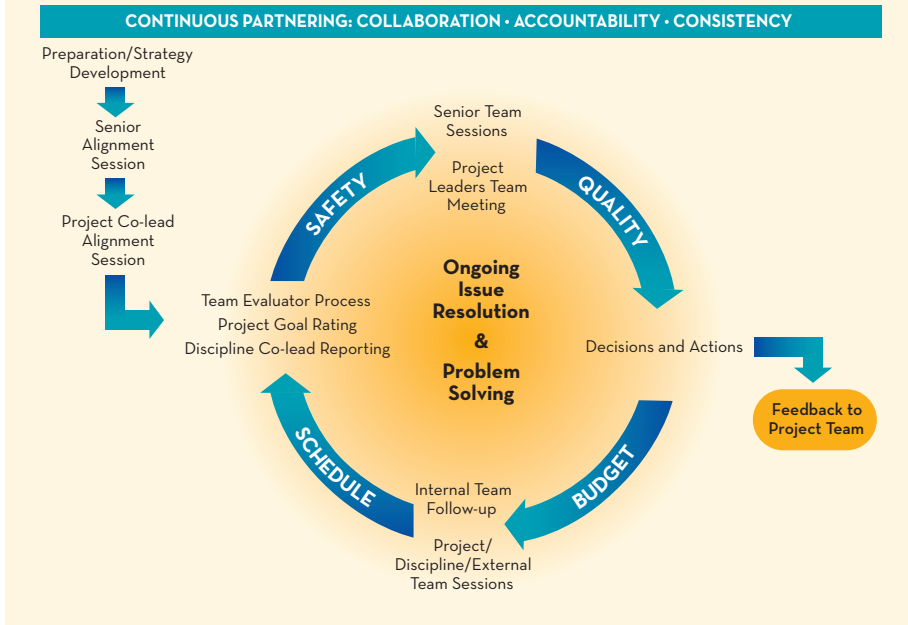


Exhibit 6

Continuous Partnering Model



OWNERS SET THE TONE

Owners set the tone of the project for the various stakeholders. Early on in the process — when designs are being finalized and construction drawings supplied for bid — service providers develop a sense of how this particular owner will behave. One survey respondent said:

“Ethical issues must be driven from owners. They must first follow their own code of ethics (enforcing the safety requirements for all bidders, [not] shopping prices after the bids [have been] submitted, honoring field orders etc.) If owners dictate ethical behaviors and practices, general contractors and their subs will follow or be pushed out.” — Anonymous respondent to the FMI/CMAA Survey of Construction Industry Ethical Practices

FMI’s research mirrors this sentiment. Without leadership from the owner, specifically at both the senior leadership and owner’s representative level, it is much more difficult to set the tone for the construction project. In addition, FMI consistently observes that successful construction owners rely upon the selective use of collaboration and partnering to achieve successful projects. One model of this approach, titled *Continuous Partnering* is illustrated in Exhibit 6. This approach is founded on integrity and demonstrated through ethical behavior. The result is trust, making collaborative relationships work. What can innovative and progressive owners do to ensure ethical behavior?

1. Establish a code of conduct or set of ethical practices.
2. Publish this code to design/construction service providers.
3. Incorporate this code into contracts or general conditions.
4. Review annually to audit compliance.
5. Measure both the cost of compliance and the improvement in performance.

It is FMI's belief and experience that any investment in "ethics" will result in the foundation of a culture built around "No, it does not depend" and accrue the financial gains available. ■

*FMI plans to update its research on ethics in the construction industry during 2007. If you would like to participate in this research, please contact **Mark Bridgers**, consultant with FMI Corporation. He may be reached at 919.785.9351 or via e-mail at mbridgers@fminet.com.*

¹ Dick Armev served 18 years in the House of Representatives for Texas beginning in 1984, including eight years as the House majority leader from 1995 to 2003. Armev has written four books, *Price Theory: A Policy-Welfare Approach* (1977), *The Freedom Revolution* (1995), *The Flat Tax* (1996), and *Armev's Axioms* (2003). He is currently chairman of the think-tank, FreedomWorks.

PROJECT DELIVERY

Now is the Best Time for Productivity Improvement

It seems that, with the economy humming along at a good pace, most contractors don't believe they have time to invest in productivity improvement programs despite the fact that many of those same contractors could use the increased capacity in order to meet tight deadlines. So, when exactly is the best time to work on improving productivity? This very moment is a great time. Not because business is booming, or because it might slow down, but because productivity improvement should be a regular program built into any contractor's strategy. Why should productivity improvement be a strategic concern? Profit margins are lower than expected. Contractors are experiencing labor shortages. Competition is tough, and owners keep looking for ways to decrease their capital expenditures. Improving productivity can help contractors make progress with all of these concerns.

Companies without a formal approach to productivity improvement often try to tackle the task reactively, which usually happens to be the most inefficient time. For example, after the project or a major phase of the project is over, or at the end of the fiscal year when reports show lower profit margins, are often when productivity is addressed. However, wouldn't it have been great to affect those negative projects before they disappointed? Because they could have been impacted ... provided there was a formal plan in place to handle the process. Recent research on contractor productivity conducted by FMI found that only 29% of the contractors surveyed had formal strategies or plans to improve productivity. The lack of consideration for productivity in the overall strategic plan is often reflected throughout the organization from the top

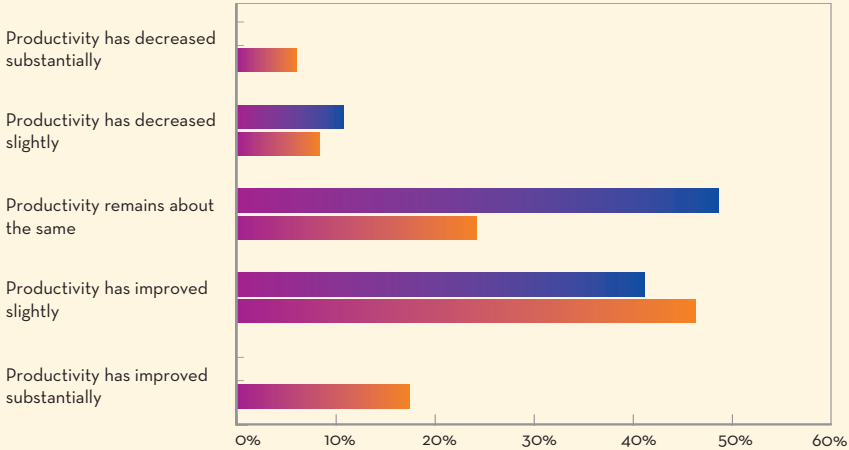
Companies without a formal approach to productivity improvement often try to tackle the task reactively, which usually happens to be the most inefficient time.

Exhibit 1

Productivity Trends

Which of the following best describes the productivity trend in your company over the past several years?

■ No formal plan to improve productivity
 ■ Formal plan to improve productivity



Source: FMI's 2006-2007 Contractors Productivity Survey

executive to the field level. Consider that 80% of FMI's 2006-2007 *Contractors Productivity Survey* respondents said they thought that they could save a minimum of 5% of their annual field labor costs through better management — it's hard to see why anyone wouldn't want to start immediately to improve productivity. Not doing so is like burning up one's profits.

PLANNING FOR PRODUCTIVITY

In the labor-intensive construction industry, missing the labor estimate can severely affect a project's profitability. Companies that struggle with productivity reported higher-than-average labor cost overruns, while companies with improving productivity reported a lower percentage of their jobs that overran their budget. (See Exhibits 1 and 2.) Self-performed projects may have labor costs equal to between one-quarter and one-half or higher of the overall project cost. On a million-dollar project, a 10% difference in budgeted labor could mean a difference of \$50,000 to the bottom line.

Most contractors agree that they need to improve productivity, but most are unsure where to begin. Since productivity is so closely associated with field labor issues, contractors often blame the field for low productivity — especially in companies that only think to improve productivity after the job has been completed. However, poor productivity levels are more often symptomatic of poor planning throughout the organization. The tools that are lacking are not the latest labor saving machines and gadgets, but the management tools for planning. For instance, if someone forgets to schedule the materials to arrive when they are needed, nothing will be done on time. No gadget is going to magically call a supplier to make sure the job site is fed; that requires humans and planning. Companies without a formal plan for improving productivity are also less likely to have a formal process for pre-job planning, which appears at the field level too. For example, a lack of planning for the resources necessary to perform the

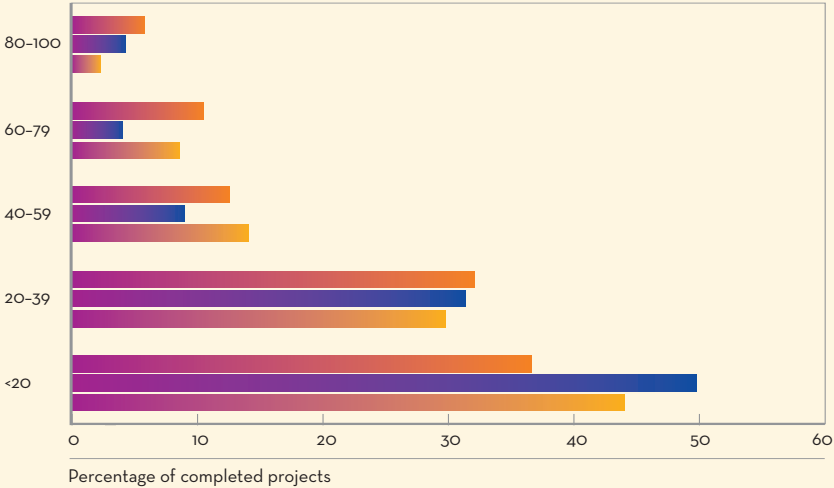
Exhibit 2

Project Profitability

Approximately what percentage of your completed projects run over the labor estimate/budget?

- Productivity Decreased Substantially
- Productivity Improved Substantially
- 2006 All Responses

Percentage of responses



Source: FMI's 2006-2007 Contractors Productivity Survey

job results in non-productive time and confusion on the job site. (See Exhibits 3 and 4.) It is just as important to plan the business of construction as it is to plan the structure that is being built. In this sense, company leadership includes the project architect or engineer.

PRODUCTIVITY IN ACTION

While we stress that productivity improvement should be a key part of a contractor's strategic plan, optimization does not occur if the plan is not communicated and translated into action plans throughout the company. When we asked participants to our construction industry productivity survey to tell us the one thing that they could do to improve productivity, the majority of comments regarded the need for better communication and coordination. For instance, productivity could be improved through:

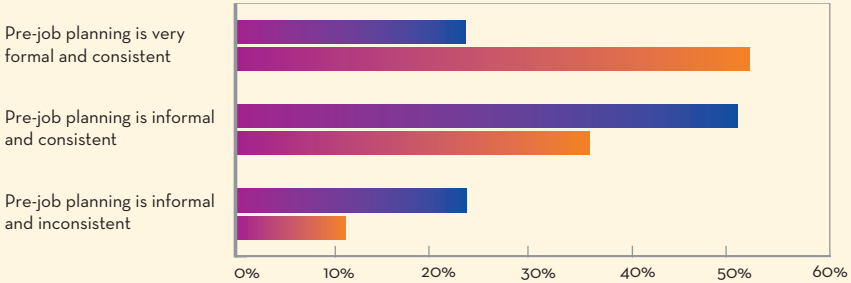
- "Better pre-planning and information flow to the field from the office, and better communication from the field to office (make the field/office relationship seamless from pre-planning forward)"
- "Better communication with customer and general contractor"
- "Complete understanding of targeted production rates by field management and craft-level employees."

In fact, the first step a contractor can and should take to improve productivity is to put together a strategy and action plan for improving productivity continuously. That plan should touch every level of the organization and include measurements to validate the improvements or lack thereof, processes to update actions taken, and methods to communicate progress made. To put the

Exhibit 3
Pre-Job Planning

Describe your company's pre-job planning process.

■ No formal plan to improve productivity
■ Formal plan to improve productivity

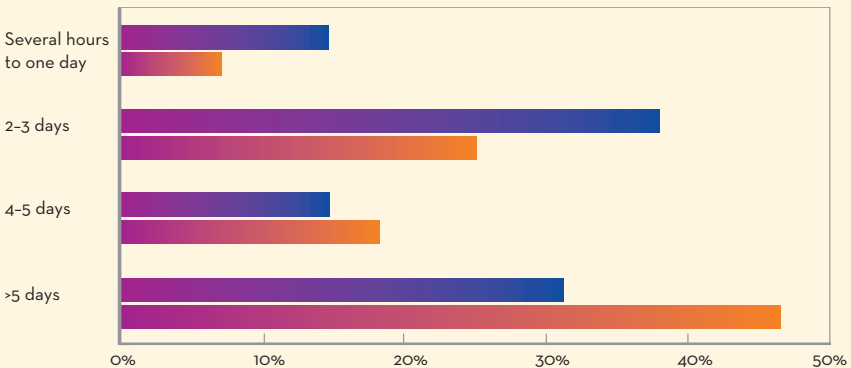


Source: FMI's 2006-2007 Contractors Productivity Survey

Exhibit 4
Resource Planning

On average, how far ahead do your field managers plan and communicate resources such as labor, tools, equipment, materials etc?

■ No formal plan to improve productivity
■ Formal plan to improve productivity



Source: FMI's 2006-2007 Contractors Productivity Survey

measurement systems in place, there will likely need to be better documentation, reporting, and communication of information between the office and field. Of the companies reporting improved productivity, 65% noted that they “have a great history of successfully implementing new ideas and sticking with them,” while only 27% of companies with decreasing productivity had success implementing new ideas over the long-term. The successful companies are those that both plan and execute plans to improve productivity. Once that culture is in place, there is a better chance that productivity will continue to improve.

ENCOURAGING AND REWARDING PRODUCTIVITY

When companies only do one thing to improve productivity, often that thing is to make changes to the compensation system. The most obvious change is to pay bonuses based upon performance. On a high-level, that often makes sense. However, how will you determine what percentage to dole out? Should

superintendents get X% and project managers get Y%, or should they get the same? Moreover, a percentage of what? A percentage of the amount by which the final project gross profit beats the estimate or a percentage of the company's overall profitability? These questions require considerable thought; however, if they are tied to the company's productivity strategy, they can be powerful tools. From FMI's survey, the companies experiencing the most success with their bonus/incentive programs were those that based them on measurable objectives or performance-based formulas. It is difficult to make that approach work without a plan that addresses productivity measurements, and measurements require good information to and from the field. Companies using that approach pay somewhat higher bonuses, but they also enjoy higher productivity. However, if the incentive plan is not carefully created, communicated, and administered, trying to implement new ideas will become more and more difficult, and may be worse than not having an incentive plan in the first place.

STARTING NOW TO IMPROVE PRODUCTIVITY

Contractors have found that the traditional admonition of "work harder" doesn't work very well with today's workforce. Productivity improvement is a process and not something that can be relegated to being improved after the job is finished. Improving the productivity process takes careful planning and coordination among various departments, and improvement depends on good, regular communication, including meetings, reports, and reward systems. In FMI's research and work with contractors, we find that every contractor wants to improve productivity, but many are confused as to where to begin. There are at least as many reasons that productivity improvement fails as there are excuses for poor productivity, and that causes a good deal of frustration within the organization. This frustration may be one reason that contractors fail to make formal plans to improve productivity. Another reason may be that everyone wants to improve productivity immediately with immediate results, when real, lasting improvement only comes when it is planned and there is the necessary communication, leadership, and training for process improvement that embraces the whole organization. Contractors can start to improve productivity now by planning and acting on those plans, but seeing measurable and sustainable improvement will take more time. ■

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ZURICH CONSTRUCTION

Contractors Stress Safety as a Retention Strategy

Spurred by an increase in commercial building, construction work stands alone in the U.S.'s goods-producing job sector as a strong growth industry. But as the demand for work increases, the industry is struggling with an acute shortage of skilled craftsmen and experienced workers. This trend is requiring contractors across the country to be more selective about the projects they accept, and in many cases, it is forcing postponement or cancellation of jobs.

Although it's unlikely that the industry will face an actual shortage of bodies, the scarcity of adequately trained, skilled, and productive persons in the construction industry is a very real problem.

So what are contractors doing to address the workforce talent drain? For the most part, they are "growing their own" through a combination of recruitment and retention efforts — and making sure that these new employees are adequately trained on job skills and safety skills.

A CONVERGENCE OF TRENDS

The skilled labor shortage is nothing new to construction; the industry has been wrestling with the issue since the residential building boom of the late 1990s, which initially raised concerns about attracting new entrants. But the situation is more acute today. A convergence of trends, including demographics,

The aging workforce trend is even more pronounced in construction since job demands include not only physical stamina, but seasoned skills.

education, and market demand, has contributed to the situation where construction is facing the loss of 95,000 skilled craft workers through retirement or attrition over the coming decade, with fewer younger workers coming up through the ranks, according to the Bureau of Labor Statistics (BLS).

DEMOGRAPHICS: AN AGING WORKFORCE

The graying of the American workforce — due to the massive baby boomer generation now edging into retirement — cuts across all industries, but is especially pronounced in construction. Over the next five years, 10- to 24-year-olds

will increase by 2.5 million; 25- to 42-year-olds will decrease by 1 million, and 43- to 65-year-olds will increase by 8 million, according to the U.S. Census Bureau. This will affect all businesses with labor shortages.

The aging workforce trend is even more pronounced in construction since job demands include not only physical stamina, but seasoned skills. According to the Construction Labor Research Council, construction has more workers in their prime working years (age 25 through 44) than other industries — and they are getting older. In 1988, the median age of all construction craft workers was 33; it was 37 in 1997 and 38 in 2003. While construction gets its share of new entrants, they are less likely to remain in the industry through what is generally considered their full working life.

EDUCATION: WHATEVER HAPPENED TO SHOP CLASS?

Construction has traditionally relied on high school vocational education programs to help turn out graduates ready to join its workforce. But many of today's high schools have shifted the focus of their vocational education programs to general business and computer training instead of emphasizing hands-on

occupations like carpentry and electrical work. While about 15,000 secondary schools offer vocational education courses, and approximately 20% of all high school coursework is career- and technical-education related, not all of these courses are geared toward craft careers or preparing students for construction work.

The construction industry relies on apprenticeship programs to train and hire new skilled workers.

There are an estimated 225,000 people currently enrolled in government-registered apprenticeship programs, according to the Department of Labor's Office of Apprenticeship Training, Employer, and Labor Services.

Many construction firms administer their own training programs. The U.S. Department of Labor Employment and Training Administration assists employers in launching and administering these training programs. From 83 offices in all 50 states, technical assistance is provided to current and planned training efforts, including identifying training needs, developing a recordkeeping system, identifying related instruction sources, and coordinating program sponsor services with other federal training programs.

The construction industry relies on apprenticeship programs to train and hire new skilled workers.

MARKET DEMAND: BEYOND THE RESIDENTIAL BUBBLE

According to the BLS, construction is the only job sector currently showing positive employment growth, adding 792,000 jobs at a 1.1% average annual growth rate. The BLS projects that construction will see an estimated 1.1 million new jobs, 1.4 million retirements/defections, and 2.5 million replacements/new entrants through 2012.

Although the residential building bubble may have shrunk, new construction continues to grow in the commercial and government sectors. Underperforming residential over most of the last decade, total nonresidential construction is expected to grow by 38% during the 2006 to 2010 period. Propelling this growth is the delayed replacement and remodeling of industrial plants; greater demand for aging-population-related nursing, extended care, and high-technology medical facilities; and the need to construct new schools in faster-growing regions of the United States.

Among the major subcategories of total construction spending, the biggest growth was in lodging, up 48.5% year-to-date. The next highest growth categories were: manufacturing, 23.1%; amusement and recreation, 20.2%; and sewage and waste disposal, 19.5%. Highway and street construction rose 15.9% year-to-date, and conservation and development construction are both up at 13.1% and 13.0% respectively.

BUILDING SAFETY INTO THE MIX

Along with a shrinking workforce, the construction industry must also contend with the indirect cost of on-the-job injuries and lost time. Statistics

show that inexperienced workers are more likely to be hurt — or even killed — on the job.

Construction mishaps accounted for 20.3%, or 1,121, of all occupational deaths in 2002. U.S. construction also has one of the highest rates of occupational injuries and illnesses compared with other industries and with construction in other developed countries. From 1980 through 1995, at least 17,000 workers died from injuries sustained on the job. It is physically demanding work with a high burnout and injury rate.

Construction loses more workers to traumatic injury deaths than any other major industrial sector. Falls account for 31% of fatalities and 21% of non-fatal injuries. There are also a myriad of health risks involved with individual construction tasks, including cement dermatitis for brick and stonemasons and exposure to wood dust and plaster dust for drywall installers.

CULTURAL CHANGE AND THE HISPANIC SOLUTION

In the U.S. today, construction employs a larger share of Hispanic workers than any other industry except agriculture. This is part of a larger cultural trend since the 23% growth rate of Hispanics in the general population is almost four times that of Caucasians, according to the Construction Labor Research Council. The Hispanic population in the United States is expected to double over the next half century, from 12% in 1999 to 24% in 2050.

The construction industry began turning to Hispanics to fill the labor gap in the 1980s and 1990s. In the mid-1990s, Hispanics represented 10% of all workers in the construction industry; by 2001, the percentage reached 18%, or 1.3 million, an increase of more than 100% over the past 10 years. From 1996 to 2002, Hispanics made up 13% of the total U.S. population but supplied 51% of new workers to the industry. Hispanic workers held more than 17% of all construction jobs in the U.S., although they comprise only 11% of the total workforce.

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ILLEGAL IMMIGRATION: THE ELEPHANT IN THE ROOM

Hispanic employees have proven to be an essential part of the construction industry. Contractors who are desperate for laborers have been known to be less than meticulous about determining the legal status of their Hispanic labor force. According to the Pew Hispanic Center, the construction industry may employ as many as 1.4 million illegals, which would make it the single-largest employer of unauthorized workers.

Under increased political scrutiny, contractors must employ only naturalized Hispanics or face the possibility of severe fines. Proposed House and Senate immigration bills would dramatically increase civil and criminal penalties for “knowingly” hiring unauthorized aliens, with fines as high as \$50,000 per employee. The construction industry has taken an active role in the federal immigration debate. The Associated General Contractors (AGC) and other industry groups support comprehensive reform that both improves border security and supports the creation of a new guest worker visa program.

“Though construction jobs vary widely and provide good pay, we continue to struggle to attract a sufficient workforce,” the AGC said in its position statement on immigration reform. The AGC supports creation of a new guest worker visa program that would:

- Be valid for a minimum of two years
- Be renewable for a total of six years
- Provide a way to sponsor employees for permanent residency
- Provide a flexible cap based on marketplace needs, if needed
- Require individuals using the visa to stay with the sponsoring employer for a certain amount of time
- Apply all labor and employment laws.

“A guest worker program would begin to address the problem of future illegal immigration,” the organization said. “Establishing a way for undocumented workers to get on a legal path toward citizenship would benefit workers, employers, and would prove to be safer for all citizens by having legal aliens in the workforce.”

WORKING TOWARD A SOLUTION

It’s clear that this combination of trends presents a challenge to the construction industry over the next 10 years. Two companies shared their ideas on how they are recruiting, retaining, and training new employees.

Sundt: Growing Their Own

The Sundt Companies Inc., based in Tempe, Ariz., provides general contracting, construction management, and design-build services for private and public sector clients with budgets ranging from \$50,000 to more than \$200 million. With much of its work coming from commercial building, military housing, underground, and heavy highway construction, Sundt is slated to undertake almost \$800 million in projects in 2006.

The skilled labor shortage has definitely impacted new work for Sundt, said Brian Murphy, Sundt’s associate vice president and safety officer. The company is becoming far more selective about the number of jobs they take

The construction industry has taken an active role in the federal immigration debate.

and is actually turning down projects because of a lack of workers and qualified supervision, he said.

“Our biggest problem is that our really skilled guys are getting ready to retire, and there’s nobody with comparable experience to take their place,” Murphy said. “For example, one of the company’s top crane operators just retired at age

72, leaving a position that won’t be filled until an apprentice or another qualified person fulfills a 20-hour crane safety program to become qualified to operate the particular type of equipment.”

To address this need, Sundt’s strategy calls for setting up its own apprentice programs. Although it has been training apprentices since 1986, the dearth of skilled workers has spurred the company to make the program more formal in recent years.

Sundt uses materials provided by the AGC and the Associated Builders and Contractors’ Wheels of Learning program, which allows users to choose module materials from a curriculum as needed. Sundt spends about \$400,000 a year on craft training alone and a total of about \$3 million on all educational programs, including safety instruction.

In 2005, Sundt’s two-year apprentice programs for heavy

equipment operators and carpenters turned out about 20 graduates, with other individuals coming up through the system. There are now 22 enrollees in the program, including men and women ranging in age from 18 to 40-something.

Recognizing that another source of talent lies in the Hispanic community, Sundt is also working with Arizona State University and Hispanic organizations to promote bilingual education programs and address immigration issues. Like the AGC and other industry associations, Sundt supports the creation of a new guest worker visa program.

“There is a wealth of willing labor across the border,” Murphy said. “If we can train them before the guest worker program is enacted, we’ve got a ready and willing workforce.”

Sundt is also committed to a focus on safety as part of its overall training program, as evidenced by the many awards they’ve won for their efforts. The company focuses on pre-planning all work from a safety and health standpoint. Sundt apprentices are educated in loss control techniques and are held accountable for performing their jobs safely, Murphy said.

Since about 68% of accidents happen during an employee’s first 60 days on the job, new workers at Sundt job sites wear yellow hardhats for their first two months on the job so they stand out. This makes it easier for supervisors

Recognizing that another source of talent lies in the Hispanic community, Sundt is also working with Arizona State University and Hispanic organizations to promote bilingual education programs and address immigration issues.

to ensure that the workers on a job are a blend of seasoned and new laborers.

Sundt workers get on-the-job mentoring, including a site orientation, introduction to the foreman, and inclusion in all five-minute “safety huddles,” where safety, gear, and other daily concerns are discussed.

Safety training is especially critical for immigrant workers, who often come to the United States with a poor understanding of workforce health and safety practices, little or no experience in the building trades, and from regions where the government did little to enforce safety regulations.

These cultural issues make immigrants especially vulnerable to injury and even death on the job. According to the BLS, the fatality rate for Hispanics in all industries — 5.2 deaths per 100,000 workers — is about 20% higher than the rates for Caucasians and African-American workers, which are 4.4 and 4.1 deaths per 100,000 respectively. According to OSHA, 1,126 Hispanic deaths occurred in the construction industry in 2003.

To address this issue, contractors must help non-English-speaking workers on construction sites to understand the importance of safety and the need to follow safety policies. The first critical step is finding and using the skills of a translator who can communicate safety policies — taking into consideration the difference in dialects, which vary by region and even town. Having a full-time safety coordinator on the construction project who is bilingual will likely yield the best result.

Sundt is careful to include its Hispanic workers in training and safety programs. The company has three employees who are qualified to conduct 10-hour OSHA training classes in Spanish, and they also developed Spanish-to-English dictionaries, which they provide to employees. Sundt also teams Hispanic workers with Spanish-speaking foremen and provides tuition reimbursement to workers who take English as a second language class, which is taught in-house. Sundt is also working with a group from Mexico City to create a 10-hour online safety class in Spanish.

It's evident from Sundt's injury statistics that this program focus on safety works: In the 3 million man-hours clocked on jobs in 2005, Sundt had an OSHA injury incident of 2.65 and loss-time rate of .075 — roughly three or four times less than the national average.

Sundt is careful to include its Hispanic workers in training and safety programs.

**PCL Family of Companies:
Building a Culture of Safety**

The PCL family of companies is the largest general contracting company in Canada and the 10th largest in the United States. With three divisions (civil, industrial, and buildings) directed out of 27 major locations, PCL specializes in a wide range of construction projects

including bridges, piping, petrochemical, and general commercial building throughout North America, the Hawaiian Islands, and the Bahamas.

While the shrinking labor force is a huge issue for PCL, the company is equally concerned about the retirement of senior staffers. “Many of our

employees, from senior management to job superintendents, have been with the organization for 20 to 30 years,” Robert Saiz, PCL’s director of health, safety, and environment, said. “We have a number of jobs that are ready to start, but we are struggling to staff the projects with seasoned PCL employees.”

PCL recognizes that Hispanics are a large portion of its workforce especially in areas like Florida, where Haitians, Cubans, Mexican nationals, and workers from the Dominican Republic are part of the mix, Saiz said. To address the language issue, PCL initially enrolled its foremen in Spanish lessons but quickly learned that conversational Spanish is far different from the language needed to convey instructions on a construction site. To remedy this, PCL hired more Hispanic foremen and targeted younger workers,

To protect its employees from being pirated by other contractors, PCL, a 100% employee-owned organization, has implemented stay-on bonuses based on position, availability, and location.

training them to become foremen. Translation needs differ by region and site; for instance, PCL’s Orlando office produced a step-by-step instruction program on how to erect a scaffold in picture format for its Latino workers, Saiz said.

To protect its employees from being pirated by other contractors, PCL, a 100% employee-owned organization, has implemented stay-on bonuses based on position, availability, and location. For instance, a crane operator at a particular job site can earn a bonus if he or she stays on the job until completion, Saiz noted.

PCL is also increasingly turning to recruitment at the high school and college levels. The company employs a full-time college recruiter and is a regular presence at job fairs and career days, targeting young people who want good careers but don’t necessarily want to go to college.

Once its new hires are in place, PCL puts them through a strict safety program, which includes a job-site mentoring system where new workers are teamed up with seasoned professionals. This is critically important since sometimes even graduates of apprenticeship programs do not have practical experience.

By applying strict loss control standards, PCL has significantly reduced its injury rate over the past two years, Saiz noted. PCL’s most recent total recordable incident rate for North America is 3.66, and its lost-time frequent is .29, based on about 13 million labor-hours.

To enhance its loss control program, PCL is currently developing a weeklong “boot camp” at corporate headquarters in Edmonton, Canada, where all operations employees, no matter their background or experience, go to learn the company’s culture and procedures. While safety is a component of the

camp, there are a number of other core elements, including storytelling to convey company vision and values as well as a focus on estimating, scheduling, and preconstruction skills. The program's first test run will be conducted before year-end 2006, and the program will be formally introduced in early 2007.

Proactive methods, such as those employed by companies such as Sundt and PCL, can mitigate industry workforce weaknesses introduced by worker shortages, lack of skills, difficulties of language, and educational shortfalls. ■

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Quarterly Interview

Hank Harris

FMI Corporation

**Surprises
of the New
Executive**

“One of the things that really comes home to you is the same thing that starts to come home to you as you get older: most of life’s great truths are very simple. All the clichés are true, but that doesn’t make any of them easy.”

FMI Quarterly: Hank, as an FMI consultant for more than 20 years you've dealt with managers and leaders moving up the organization in hundreds of companies. You've also been in your current role as CEO of FMI for three years. From these experiences, share some stories with us. What are the surprises for which new executives need to be prepared?

Harris: The answer is somewhat different whether you are talking about a seasoned executive with a significant amount of managerial experience who then ends up in the CEO role vs. somebody who hasn't been a manager. The surprises are unique to those two situations. Let's talk about becoming CEO or president under the first scenario.

FMI Quarterly: Are there some things in that top job that were surprising to you — surprisingly better or surprisingly worse or just different from what you expected?

Harris: Yes, there were some surprises. One of the things that really comes home to you is the same thing that starts to come home to you as you get older: most of life's great truths are very simple. All the clichés are true, but that doesn't make any of them easy. A lot of what you see as life's lessons are relatively obvious things, but you gain real insight into how hard they really are. They are

Hank Harris has served as FMI Corporation's CEO for the past three years. Prior to that, he consulted with hundreds of construction-industry leaders serving in the top role. Harris candidly shared with *FMI Quarterly* the surprises of the new executive — **what outside observers can't know and book knowledge doesn't show.** We thank Hank Harris for sharing his insights. We know our readers will find them of interest.

the classic lessons like getting people in an organization to get the big-picture message. For any organization of size, it is a huge challenge. We've all read Jack Welch. He has said that he talked about the message so often and for so long that he became nauseated listening to himself. Honestly, it is that terribly difficult, and it can be discouraging. You are beating your head against the wall, and just about the time you think you have made some progress, you have an interaction with someone, which suggests you haven't progressed at all. This is a non-stop battle, and it is a little surprising that it is so difficult.

FMI Quarterly: You mean that something you thought about for days, weeks, even months, and finally craft into a message ... that the telling of that message one time, even with a splendid kick-off session, doesn't make it happen?

Harris: (Laughter) No, it doesn't even get it started, and it is surprising because you think, 'Well, you tell somebody one time, and it doesn't get across; let's tell them five times.' But you still haven't even started to get through at that point. There was an interesting *Wall Street Journal* article about human communication and why organizations have so many difficulties with this. The *Journal* explained that we all process things differently. We hear a message, and we automatically delete words, add more words, etc. It is the old school-kids game of Gossip. After only three people pass it along, the message comes out garbled. You see it play out in real life, and it is a hard task to combat

that. Whoever is in that top chair should spend a lot of their energy getting everybody on the same page. That's a challenge in any organization of size.

Whoever is in that top chair should spend a lot of their energy getting everybody on the same page. That's a challenge in any organization of size.

FMI Quarterly: Sometimes horses, when they come out of the gates, they stumble. Sometimes when executives start their tenure, they screw it up. Have you seen people make a bad first impression and then regain their footing and become very successful?

Harris: Absolutely, and it is situational. The ability to recover depends on what kind of pressure the organization is under, and therefore, what degree of forgiveness

is present for the CEO as he is getting his arms around the position. There have been plenty of instances, especially in privately held companies without quarterly stock pressure, where people have said, 'it is better the devil we know than the one we don't.' If the new CEO has to spend some time learning, or the company has to spend some time teaching him, there is a certain amount of forgiveness that will be extended by the troops. They may say, 'We are a little frustrated that this is not going as well as we'd like it to, but let's give it a little more time to see if we can get some traction.' If you've never had the job before, there is

going to be some learning involved. No question about it.

FMI Quarterly: Is there more or less forgiveness in the organization if the last name of the new president is the same as the last name of the prior president?

Harris: In most cases, I think there is less forgiveness because companies don't generally handle this transition well. If they handled it well, I think there would be more forgiveness. Twenty years of watching family succession would tell me that the old son of the boss routine is the S.O.B. If you are family, you are going to have to swing harder to prove yourself than if you are not family, unless the family succession

was handled well. There are certainly some cases where this transition is handled very well, and by the time that family member takes over, he or she may be revered inside the company.

FMI Quarterly: Do you think most successor sons or daughters, for that matter, understand that they have to work harder and do it better perhaps than dad or mom did simply because they are the son or daughter of the boss?

Harris: This is probably a normal distribution. There are 20% or 30% of the second-generation folks who understand that very well and do a tremendous job. There are companies we know where the son or daughter took a modestly sized organization and turned it into something that their forefathers never even dreamed of. We all know examples like that. I think that's 20% or 30% of the second generation. There is another 20%, the other end of the normal distribution, who would say, 'If you guys would just send the check to me at home it would be that much easier.'

FMI Quarterly: A high sense of entitlement?

Harris: A very high sense of entitlement. Then, you've got that murky middle. For the most part, these folks in the middle of the bell curve don't understand it as well as they should. They may have some sense of it, but because so few companies really put second-generation people through what they should be putting them through, they tend to get a little bit of the

“silver-spoon syndrome,” a sense of entitlement, or whatever you want to call it. Some of it may not be a lack of a work ethic; a lot of it is a lack of information.

FMI Quarterly: As you look over the people you have known who have assumed the mantle and for whatever reason didn’t last, what accounts for *short* tenures?

Harris: Short tenures occur in companies in crisis or where there is an inordinate amount of pressure for some reason. Again, you could go back to a publicly

The keys to long tenures are basically fitting the role and gaining the confidence of the people in the organization. I think longevity is more related to the human dynamic side vs. money.

held situation where capital is not patient and somebody is probably not going to have too much forgiveness from Wall Street. The board may or may not back them, depending on the dynamics there. But since we deal mostly with privately held companies, it is either going to be a gross and obvious miscasting — in other words, you are 60 or 90 days in and everybody is going, ‘This was a big mistake,’ for whatever reason — or, the company has some sort of crisis, and whoever is in the leadership role is not able to deal with it.

FMI Quarterly: What’s the worst mistake you have ever seen a new executive make?

Harris: The most egregious error I’ve seen is the arrogance of somebody who says, ‘I am not going to take the time to really understand this business, and by the way, I really don’t like where the business is located so I will live in another state and fly in or have you guys fly over and see me.’ That’s probably the most dramatic example I know.

FMI Quarterly: Making oneself an absentee landlord, so to speak, is a mistake. Other than lots of stock, what are some keys to *long* tenure?

Harris: The keys to long tenures are basically fitting the role and gaining the confidence of the people in the organization. I think longevity is more related to the human dynamic side vs. money. Obviously, motivations vary, but if you accept the fact that anybody doing the job is going to be reasonably remunerated, then he or she has to enjoy that role, and the people being served have to feel like they are being served effectively.

FMI Quarterly: Does tenure also line up with profitability of the company, or is it somewhat disconnected in the closely held company?

Harris: In the closely held company it is certainly not as connected as it would

be on Wall Street. At the same time, most people are still going to have a business mind toward longevity, and if somebody isn't performing over the long haul, then that is not going to sustain itself.

FMI Quarterly: Which do you think is easier to lead: a self-performing trade contractor or a white-collar team of construction managers, or for that matter even, a bunch of management consultants?

Harris: There's no question in my mind that the higher the education levels are in an organization, the more difficult that organization will be to lead. There is an inverse relationship for all the obvious reasons.

FMI Quarterly: Because everyone thinks they can do it too, or even better?

Harris: Absolutely. My fantasy is to run a self-performing trade contractor. (laughter)

FMI Quarterly: In your personal experience, what has been harder to accomplish in your first few years than you expected during your first term, if you will?

Harris: I'm probably a good example of somebody who did a lot of stumbling early on. There were a lot of things in the first six months that I was not prepared for, and I underestimated and probably misplayed a number of things. I'm tying this to your earlier question about stumbling early on. I think if you are going to stumble, early is good because people will forget those stumbles as you get better. Obviously if you don't, you are not going to last.

I underestimated or probably didn't give credit to the fact that once you are in that top chair, putting on the black hat is not a good idea. Every once in a while whoever is the CEO or president needs to take the black hat out in a specific situation, for example, if the organization has a crisis. This is a real difference between being in the top chair vs. being in the chair one click down. It doesn't pay to put the black hat on often, and this is where I made probably one of my biggest mistakes. You let other people do that as much

I think if you are going to stumble, early is good because people will forget those stumbles as you get better. Obviously if you don't, you are not going to last.

as you can because the guy in the top role needs to be less a disciplinarian and more of a cheerleader/coach. Let's talk about how things are going to get better. Let's talk about where we are going. Let's put the spotlight on all the positives we have. It doesn't mean that you don't discipline people, but — and this is where the cliché of “discipline in private and praise in public” comes in — the CEO needs to get his lieutenants to do the bulk of the disciplining.

FMI Quarterly: Do you think some of the things that look like mistakes early on to the organization will be seen by both the executive and the organization as the right thing to do, a few years later? That, they will both say with the perspective of distance, ‘You know at the time that looked bad, felt bad, we-all-smell-mistake was really the right thing to do. It was awkward, but it was still the right thing to undertake’?

Harris: I think so. Our perspective has always modified with the passage of time. There are going to be some things you and everybody else looks back on and says it didn't feel good at the time, but it probably was the right thing to do. I think there will be some of the other too — where you look back and say you know it was a mistake after all! (laughter)

FMI Quarterly: If you had your path to walk again, what would you do to prepare yourself more fully for the role you are in?

Harris: That's a great question. I think in my case, I should have spent more time doing what you are doing right now, which is to talk with some people who had the role and really get some counsel on what are the surprises, what I should expect, and how I can hit the role as aggressively and productively as possible.

FMI Quarterly: Are you saying to find some mentors, create some even, early on in a new role? If they don't necessarily want to be mentors, sort of extract it from them?

Harris: Absolutely. It could be as simple as more conversations with colleagues who had the role. It could be more conversations with people running other consultancies or other professional services companies. Having had a lot of them as clients, I probably assumed that just because I had watched it for so long I knew what I was getting myself into. Academically, I had the answers. But it is one thing to academically or third-party observe something, and it is another thing to live the role.

FMI Quarterly: That's perhaps one of the great roles of trade organizations, too — where you have an opportunity to mix it up with other people in similar positions and similar situations.

Harris: I would encourage others to take advantage of it.

FMI Quarterly: What's been your most rewarding moment to date from the early part of your tenure?

Harris: One of my clients told me — and I have found this to be very true — that one of the intriguing things about earning the CEO role is that you see the very best of what the firm has to offer, and you also see the very worst. So if there is a dramatic service failure or some piece of ugliness that takes place between your staff or whatever it may be, you find yourself having to deal with that in some way ... the hugely disgruntled client or whatever it might be. But you also see the best that the firm has to offer, and so it is a somewhat unique position. One of the most rewarding moments I've had, and maybe it is because it is fresh on my mind, was on Friday afternoon. I got an e-mail from one of our administrative assistants in Denver who said that what I had to say in a company-wide staff meeting was great. She went on to praise how motivational I was to the organization. If I reached an admin in Denver over the video hook-up, I consider that victory. That was a rewarding moment.

FMI Quarterly: If a father asks you, 'How should I prepare junior to take over this business someday,' how would you answer him?

Harris: This is where so many of our clients don't do the job. The worst thing you can do is to let junior wander into the business. Ninety-nine out of 100 kids don't know what they want to do upon exiting college. I sure didn't, and most of the people I know didn't. There is probably one out of 100 kids that has known since he was 12 that he wants to be a transplant surgeon or a trial lawyer or whatever, but 99 out of 100 have to find their way. I think it is a huge mistake to let a kid come into a business because it is convenient or because he doesn't know what else to do. If you really want junior to take over the business, you need to do something like R.H. Donnelly has done with the golden goose philosophy, which says if you are ever going to look after the golden goose you have got to be really qualified. None of my sons would come into the business until they had some sort of advanced degree. It would probably not be engineering; I think engineering is a great undergraduate degree because of the discipline and the math skills and all those things that are very important, but I would want either a law degree or an MBA or maybe both. And I would want them to be successful someplace else for six or seven years. This holds true for most of the businesses we are dealing with. There are some small businesses for which that may be overkill, but you could certainly modify what it represents to fit the situation.

Clearly, going through some hoops and getting yourself qualified and gaining respect in the eyes of the people that you are going to lead is important. I think in today's society — I don't agree with it — graduate business degrees

Remember that truth inside the company is now not going to come your way. You have to aggressively dig it out because you are sure not going to get it. People will spin things.

don't mean much to somebody in the construction industry. For whatever reason, people think a law degree makes you uniquely smart. It is an erroneous view, but it does say something about somebody's ability to go out and walk in a prospect's door with something the other people don't have. There is a certain amount of respect that comes with that. Now, obviously you have to deliver once you are in the workplace or organization, but the point is not to have the kids just stroll in.

FMI Quarterly: If the child were female, would your answers differ?

Harris: Not at all. Obviously because of the nature of this industry, females will have some other challenges, but we have some clients who have second-generation daughters doing very well running their companies. I think developmental needs are the same for both genders for the most part.

FMI Quarterly: If you were to give new executives five rules, what would they be?

Harris: No. 1: Remember that truth inside the company is not going to come your way now. You have to aggressively dig it out because you are sure not going to get it. People will spin things.

No. 2: Remember that your pants go on one leg at a time just like everybody else's, and a lot of the treatment you get, which may be better than other people are getting, is not really you. It is just the fact that you are in that role. Don't let that go to your head. I think this is a good rule.

No. 3: Don't pick too many battles. Be careful; there are a lot of battles that you are tempted to get sucked into, and if you step back you will realize that most of them are going to solve themselves. There's some that you really need to pick, but be careful about the battles you pick.

No. 4: Know your business. I don't think there is any substitute. You need to know the business that you are trying to lead. There is a view in publicly held companies that if you are a great enough CEO, business knowledge is one thing you can

transport. With a big enough company, there is perhaps some viability to that notion, but I think CEOs in those settings do a lot of spade work to get to know the business they are about to lead. Know the nuts of bolts of the business. We've all seen what's happened to public company CEOs who didn't know the numbers and found themselves pilloried accordingly.

No. 5: Don't try to do everything yourself. Leverage yourself. Leveraging yourself is hugely important as an executive. If you get mired in the detail, trying to do everything yourself and not delegating, you will get consumed. You can't do it. That's a big one.

FMI Quarterly: In other words, use delegation effectively? What is key?

Harris: Hire to your weaknesses, and make sure you've got support structures around you. A pretty good degree of self-awareness is important here. If you separate out administrative skills, financial skills, people management skills, and leadership of people skills and put all those things in potential subcontracting categories, leadership skills are probably the toughest thing to subcontract. It's probably the one you *can't* subcontract. It is the toughest one to outsource. You can't. You are in the role. It is expected, and so if you can't pony up to that one, you are going to struggle.

FMI Quarterly: Hank, thanks for sharing those experiences and insights with our readers. ■

Rooting Out the Problem

An examination of the industry's labor shortage reveals three main roots to the problem — the industry's image, current career and education trends, and workforce demographics.

By Hoyt Lowder and Jay Bowman

A plant's root system is often difficult to see and unappreciated, yet it provides the plant's foundation. Much can be learned about a plant by examining its roots, including its overall health, longevity, and history. In this way, we attempt to examine the roots of the current and impending labor crisis within the construction industry.

A proliferation of articles exists on strategies for dealing with the crisis. However, we wanted to start at the origin of the problem and consider the three primary sources, or roots, which exist for this issue: the industry's image, career and educational trends, and demographics. It is our hope that this article will provoke a thoughtful discussion within your company's ranks as to the causes of this overarching and potentially debilitating industry issue with the end goal of rooting out the problem.

INDUSTRY IMAGE AND SELF-IMAGE

For a couple of decades the construction industry has attempted several different initiatives aimed at improving the image of the industry. The premise is that if the image of the industry were upgraded to "more attractive than that of migrant workers" the difficulty in recruiting individuals to choose a career in construction would be reduced, implying there would be more people attempting to get jobs in construction.

Recent research and observations conclude that the image of the industry cannot be “promoted” to a sufficiently improved level for people to be motivated to consider this occupation as a career choice for intelligent, capable, and well-educated professionals. In fact, some describe the industry image as so negatively engrained that only those with a sufficiently low self-image and limited options would even attempt a job in construction, suggesting that this industry offers opportunities at the bottom for those who cannot succeed elsewhere.

The perceptions of the industry leadership could use a makeover. If we really believe that this is an industry that is the epitome of our free enterprise system, and that we have a profession in which we should take pride, then we should start treating our employees, associates, and peers as needed and trusted professionals.

We in America need dedicated people who believe in the American Dream, to join us in “building America.” During the depression, hundreds of people joined the Civilian Conservation Corps and the Works Progress Administration (two of Roosevelt’s New Deal measures to provide economic relief). The facilities and infrastructure built during this period are some of our nation’s most treasured facilities. In addition, the documentaries of these projects clearly show that these individuals had a true sense of accomplishment, self-worth, and a resulting “can do” attitude.

Perhaps this sense of accomplishment and associated self-worth holds the potential for recruiting and retaining the workforce participants that are passing up the construction industry today. By providing a proven vehicle for building physical value that also builds a sense of accomplishment and self-worth, the construction industry can become the place to start for any career one chooses.

When John Kennedy stated, “Ask not what your country can do for you, but what you can do for your country,” he solidified a theme that ignited thousands of young Americans. Many of these young people joined the Peace Corps so that they could help those in need around the world. And, with few exceptions the Peace Corps volunteers benefited greatly from the resulting sense of pride for commitments made and kept. And those they aided benefited from their gifts of time, energy, and insights for improved quality of life.

The construction industry is an industry of “doers.” Young people today want to make a difference, on their terms. They want challenges and recognition for their accomplishments, not their tenure. The adopted theme for the Gulf Coast Workforce Development Initiative, *I am GREAT*, has some of these attributes. This initiative could serve as a model to demonstrate the basic idea that building something of value is one of life’s most rewarding accomplishments.

Another perspective is that of the immigrant. For many immigrant workers today, especially those who have come into the United States from Mexico and Central America, the image of the construction industry is a relatively small concern. Being able to get into the United States and being able to get a job, any job, is a

The shortage of available workers in construction is also the result of the industry's historically low wages, adding to the lack of skilled workers.

bigger issue than the issue of which job is most attractive. Construction is readily seen as more attractive than working in a poultry processing plant. In addition, it is recognized as an even safer industry than the poultry processing industry. The industry's safety record will serve as a key recruiting tool in the near-term and holds the potential to aid in the upgrade of the industry's overall image since those outside the industry often perceive it to be a dangerous one.

The shortage of available workers in construction is also the result of the industry's historically low wages, adding to the lack of skilled workers. In the past,

the industry successfully suppressed both real wage growth and available/required training. These two factors together have provided the exclamation point on the relative unattractiveness of the industry. Those who can imagine themselves employed in a more attractive industry do not have a low enough self image to actually seek a job at the bottom of this industry as a laborer, helper, or apprentice. Therefore, the solutions become apparent by identifying the problems.

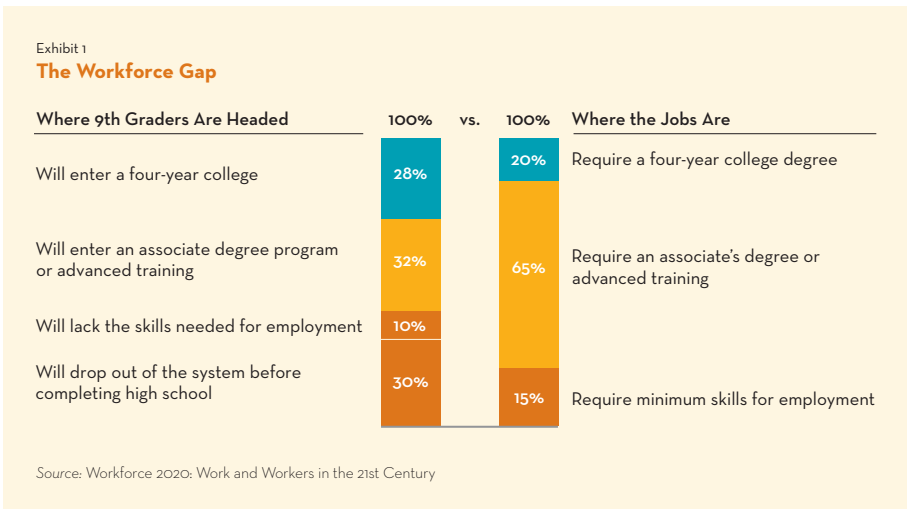
Better trained, more highly skilled workers will come from individual companies investing in solving the industry's need for labor by requiring their employees and recruits to improve their individual abilities, skills, and productive abilities, which justifies higher compensation, assures career development, and enables longer-term individual and organizational success. More training pays-off the workforce with a greater sense of self worth and the pride of personal accomplishment.

The solution to workforce recruitment and development lies in the work itself. Committing to a career in the construction industry can provide the labor required to rebuild our infrastructure in transportation, water, energy, and low-income housing. The result may well be the building of self-worth, pride in a sense of accomplishment, and a significantly improved industry image in the process.

CAREER CHOICES AND EDUCATION TRENDS

Another major root of the construction labor shortage is the decline in the number of students preparing for work in the industry either through vocational education and training or through university coursework in an engineering discipline.

For example, 8% of high school students in 1994 (the latest year for which data are available) took three or more courses in trade and industry programs, which includes courses



in construction, compared to 16% in 1982. These data from the National Center for Education Statistics reflect a general decline in student interest in vocational courses and a shift toward college-prep curricula.

The pipeline is also tightening on the management side. According to the National Science Foundation, the number of students enrolled in an engineering program has declined 1.9% annually since 1983. From its 1983 peak of approximately 441,000 students, undergraduate engineering enrollment declined to about 361,000 students by 1999. Graduate engineering enrollment declined from 129,000 in 1992 to approximately 105,000 by 1999. While these figures have rebounded some recently, they illustrate a general trend among youth today to focus their educational studies more broadly. Exhibit 1 shows how these enrollment figures don't match up with what's needed in the general workforce, creating a gap.

The decline in vocational and technical education and training can be traced back to cultural and value shifts occurring within the current era. In the past, construction represented positive growth, progress, and evolution. Perhaps the best illustration of this is found in old photographs of railroad workers during the Industrial Revolution, standing triumphantly atop their latest built section. This stands in stark contrast to the image of construction growth today. A majority of our current society thinks of urban sprawl, traffic congestion, increased pollution etc. when talking about construction growth. These negative associations, inevitably, get translated to construction. Construction, for many people, represents a past tradition or bygone era.

What's more is that the construction industry doesn't fit with today's Information Age values, which are focused on cutting-edge technology. High school students largely desire a college education and then a professional or management position in a field where they can work with their mind and the latest technology, not their hands. The truth of this shift is proven out simply by asking any eight or 10-year-old, "What do you want to be when you grow up." The oft-heard

response is a doctor or a lawyer. Much of this comes from parents and society who place emphasis and value on obtaining a traditional, four-year degree as the ticket to a better, nicer life. This, of course, leaves those entering the construction trades feeling less successful. Ironically, the average construction job now pays 23% more than private-sector jobs overall, according to the Bureau of Labor Statistics.

So part of the problem is the image of the construction industry. Many programs are in place today to work on improving this image, such as those developed by the Associated General Contractors and the Associated Builders and Contractors. These programs help to educate high school guidance counselors, for example, about the career opportunities available in construction. The long-term goal of this image work is to inform and enlighten: the reality is that construction is one of the few careers where you can potentially own and manage your own company with or without a formal education, within a short time of entering the field, and where the average job pays higher than other industries with a myriad of opportunities for women, minorities, youth, and others.

What this image work can't do is change the reality that construction work is dirty, physical, risky, and unstable in terms of job availability. Moreover, workers are often exposed to the elements and viewed as having a low status. Finally, while the industry has many opportunities, there is not a clearly defined career path to the top. The industry will need to work on changing the nature of its work through steadier, less seasonal work, better leadership and management, and training in non-skill related areas to keep employees challenged and fulfilled.

Another reality is that an actual shortage of "bodies" is not likely in the future. The "labor shortage" for the construction industry really refers to a dearth of adequately trained, skilled, and productive workers. The real problem stems from the percentage of bodies headed towards a career in construction. The low demand for vocational programs in high schools and community colleges has led to their near extinction. More technical crafts, like electricians, require strong math and science skills, making training for these positions expensive and time-consuming. There is also a declining interest in these technical-based programs. At the college level, students are often intimidated by math and science courses, and after the dot-com bust, hesitant to limit their studies. This is partly why construction management programs have become so popular. These programs are not as technical as an engineering degree, yet they are more focused than a traditional business degree.

A main impediment to training is a lack of necessary resources. High-school and

The industry will need to work on changing the nature of its work through steadier, less seasonal work, better leadership and management, and training in non-skill related areas to keep employees challenged and fulfilled.

community college vocational programs often lack basic resources such as books and curriculum, and at the university level, public funds are decreasing. This need has become so clear that the government has authorized appropriations of more than \$11 billion through 2012 via the Vocational and Technical Education for the Future Act. Construction-industry firms are also starting to take some of the responsibility for educating and training future employees through private donations and sponsorships.

These programs are what the industry needs to pump up the pipeline, ensuring the industry will be appropriately staffed in the future.

WORKFORCE DEMOGRAPHICS

Since 1970, the United States has witnessed unprecedented economic growth. Although the United States represents less than 5% of the world's population, it accounts for more than 30% of its economic output, by far the largest.¹

The construction industry has benefited greatly from this economic growth, with strong demand for new buildings (work and home) and infrastructure. This level of demand is expected to continue through the next decade, and with it, the need for more workers. Total employment in the construction industry is projected to increase by more than 1 million from 2002 to 2012. This represents an annual

growth rate of 1.5% (16.4% overall). At this rate, by the end of the projection period, the construction industry will rank fifth among the economy's top-10 largest sources of employment growth.²

During this time period, 50 million jobs have been created, and with it, significant changes to the demographic make-up of the nation's workforce, including more women and minority participation than ever before. But perhaps the most discussed change is the aging workforce. With such a great need for workers, contractors will be increasingly challenged by

Total employment in the construction industry is projected to increase by more than 1 million from 2002 to 2012.

these changes — primarily age, gender, and ethnicity — in the demographic make-up of the workforce. To be more precise, the traditional construction worker is a 43-year-old white male that is getting older but working longer.³ The young man or woman who will replace him, typically possesses less education and fewer skills, and attracting women to the industry may prove difficult despite women representing almost half of the U.S. workforce. Last, foreign-born workers, primarily of Latino descent, will make up the difference. The reduced education and lowered skills of this demographic will likely result in greater costs to the contractor (e.g., recruiting, training, health care) and a loss of productivity.

Age

Surprisingly, the average age of a person working in construction is not much different than other industries. The Construction Labor Resource Council (CLRC) states that the construction industry in 2005 had more craft workers in their prime

working years (ages 25 through 44) compared to other industries. However, these workers tend to leave construction at an earlier age than do their cohorts in other industries, largely due to the working environment and physical demands of their jobs. Considering the current make-up of the construction workforce, the implications are clear. A large number of skilled and experienced workers will need to be replaced over the next 10 years.

Changing attitudes towards retirement, however, may lessen or delay the immediate need to replace these older workers and fill the skill and experience gaps they will leave. The age at which craft workers typically retire may be increasing as more people, regardless of industry, are extending their working years past retirement age. The reasons for this vary from increased life expectancy to economic need.

AARP reports that 69% of employees over age 45 plan to work past 65, and by 2010 more than 51% of the workforce will be 40 years or older, a 33% increase since 1980.⁴ Still, there are potential negative consequences associated with an older workforce, especially in one as physically demanding as construction.

The National Organization on Disability reports that people aged 45 to 54 have an 11.5% chance of developing a disability, a number that nearly doubles to 21.9% for those aged 55 to 64 (2001). The most common disabilities involve changes in vision, hearing, and manual dexterity. The potential impact on workers' compensation costs are significant. Although research indicates that older workers experience fewer injuries, when they do, they are typically more severe. Another potential cost to contractors will be additional investment in enabling technology to assist and accommodate older workers.

Since not all older workers are expected to delay retirement, they will need to be replaced with younger workers. The chief problem among the young is skill; many may enter construction jobs without any formal classroom training beyond high school, although construction work is becoming more difficult. Given that the industry has become increasingly complex with the proliferation of advanced technology and tools employed on job sites, the need for highly skilled workers is vital. Unfortunately, the young people typically considering craft work lack the necessary math, communication, and technical skills required — leading to increased training costs and decreased productivity.⁵

Gender

Despite representing almost half of the entire U.S. workforce, women continue to be underrepresented in the construction industry. According to the Bureau of Labor Statistics (BLS), women made up 46% of the employed civilian labor force in 2005. Yet in construction, one of the top-10 employment industries, they are only 16%. The construction industry cannot afford to overlook this segment of the population; however, until a critical mass of women on construction jobs can be reached, recruiting them will prove challenging.

The role of women in the workforce will be increasingly prevalent, in numbers, education, and skills. Consider the following statistics from the Bureau of Labor Statistics.⁶

- Women held half of all management, professional, and related occupations in 2004.
- Nearly 33% of women age 25 to 64 years held a college degree in 2004, compared with about 11% in 1970.
- Among 2004 high school graduates, young women were more likely than young men to enroll in college (72% vs. 61%).
- Nearly 60% of women who worked at some time in calendar year 2003 worked full-time and year-round, compared to 41% in 1970.

Ethnicity

Much has been reported recently regarding immigration. Hispanics represent the fastest growing ethnic group in the United States. From 1990 to 2000, the number of Hispanics increased by 58% to 35.3 million compared to 9% for non-Hispanics.⁷ From 2000 to 2020, Hispanic residents are expected to double, accounting for 46% of total population growth during this time period.⁸ Needless to say, the growth of the

Hispanics represent the fastest growing ethnic group in the United States. From 1990 to 2000, the number of Hispanics increased by 58% to 35.3 million compared to 9% for non-Hispanics.

Hispanic population has been significant to construction employment, filling much of the needed laborer and craft worker positions.

According to the BLS, Hispanics accounted for about 20.3% of the workforce in the construction industry in 2003 and 21.4% in 2004. The CLRC's Craft Labor Report (2005) estimates Latinos represented almost a quarter of all construction craft workers in 2003. In other areas of the country, this percentage can be as much as 65% or more.⁹ Of the roughly 1 million additional workers in the 2012 construction industry (above that of 2002), FMI projects that more than 33% of these new workers will be Hispanic.

The most obvious challenge this poses is the communication barrier. Seventy percent of Hispanic construction workers were born outside

of the U.S., and fully one-third speak only Spanish.¹⁰ But the communication barrier is more than language. A significant portion of Hispanic construction workers are illiterate in their own language. This makes even translated documents and signs useless. The major impact of impaired communication are job-site accidents.

Job-site injuries have been in decline for several years in the construction industry. But among Hispanics, injuries increased 22% from 1999 to 2004.¹¹ And although

Hispanics represent anywhere between 20% and 25% of the construction workforce, they lead the industry in injuries. In 2003, Hispanics represented 56% of lost-time injuries according to the BLS.

Hispanic culture may also lead to greater injuries. The countries many immigrants come from have little or no governmental enforcement of safety regulations. Moreover, cultural traits such as a hesitancy to disagree with or challenge authority can result in failure to report dangerous conditions or incidents.

Despite the communication challenges faced by Hispanics and their impact on the construction industry,

this may be a short-term phenomenon. Births to Hispanic immigrants, rather than immigration itself, will be the key source of population growth among this group. So while most foreign-born immigrants do not speak English, the likelihood for native-born Hispanics is much greater. In fact, the percent of first-generation Mexican children that speak English well or very well is 79%.¹²

The traditional workforce of the construction industry is unlikely to continue in the future. Demographic changes among the United State's civilian labor force include older workers and a large contingency of women and minority workers. In the short-term, as contractors adjust to managing these changes, operating costs are likely to increase, including training and insurance costs. In addition, productivity is likely to suffer. However, the benefits that will emerge at the end of this period will far outweigh the challenges, offering opportunities for dramatic gains.

How will the industry solve the labor crisis? The proposed strategies vary, but the solutions will only become apparent through extensive study and evaluation of the root problems. ■

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¹ U.S. Department of State (<http://usinfo.state.gov/products/pubs/oecon/chap1.htm>)

² Bureau of Labor Statistics

³ Bureau of Labor Statistics

⁴ AARP research report "Staying Ahead of the Curve," Sept. 23, 2002

⁵ ETA/Business Relations Group report "America's Construction Industry: Identifying and Addressing Workforce Challenges," December, 2004

⁶ Bureau of Labor Statistics report "Women in the Labor Force: A Databook," 2005 (www.bls.gov/cps/wlf-databook2005.htm)

⁷ Bureau of Labor Statistics report "The Hispanic Population of the United States," 2000

⁸ U.S. Census Bureau

⁹ University of North Carolina report, "The Economic Impact of the Hispanic Population on the State of North Carolina," January 3, 2006

¹⁰ Center to Protect Workers' Rights "The Construction Chart Book," 2002

¹¹ Bureau of Labor Statistics

¹² Richard Alba, Lewis Mumford Center for Comparative Urban and Regional Research, State University of New York at Albany "Bilingualism Persists, But English Still Dominates," February 1, 2005

The ACE Mentor Program, Coming to a Town Near You

The ACE Mentor Program of America plays a crucial role in attracting young people to the fields of architecture, construction management, and engineering.

By Kelley Chisholm

As the war for talent wages on, the fact that there is a shortage of qualified people in the fields of architecture, construction management, and engineering should be no surprise to anyone in this industry. Universities and colleges, especially engineering schools, are concerned with the declining number of students, particularly among minorities, who are enrolling in their programs.

The National Science Board validates this concern in its 2004 *Science and Engineering Indicators* report, saying that the number of U.S. citizens who are training to become engineers is declining, whereas the number of jobs requiring science and engineering training continues to grow.¹ Recruiting qualified people into construction-related positions has never been more critical, and it is becoming an even-more crucial concern that the industry demonstrate to secondary school-age students just how exciting and rewarding careers can be in architecture, construction management, and engineering. Since its beginnings in 1991, the ACE (Architecture, Construction, and Engineering) Mentor Program of America has been doing just that.

The principals of several leading design and construction firms in New York City founded the ACE Mentor Program as an innovative way to introduce and attract high school students to career opportunities in the industry. Charles H. Thornton, Ph.D,

P.E., founding principal of Thornton-Tomasetti Group, an international design firm, is considered the driving force behind the program. After several years of experimentation with various mentoring models, the independent nonprofit ACE Mentor Program was officially created in 1995 when 17 firms banded together into three teams, each organized like a typical design and construction team, and “adopted” about 90 students from local high schools. Volunteers from each of the firms served as mentors and worked directly with the students to introduce them to the broad range of people and projects within the construction industry. Students gained first-hand insight into the industry by selecting a design project, touring project offices, and visiting active construction sites. Over 20,500 students have participated in the ACE Mentor Program in the past decade, and over 90% have gone on to college. In spring 1995, ACE held its first fund-raising event to establish a scholarship program for ACE graduates. Since that time, scholarships totaling \$5.4 million have been awarded.

ACE continues to grow, both vertically and laterally. Affiliates are “under construction” in cities across the United States, and existing affiliates continue to add new mentoring firms and improve the quality of their programs. It takes the dedication and efforts of a number of people

to make ACE the winning program it is today. From its board of directors and executive staff, to the firms and national sponsors who participate by providing mentors, financial support, and internships, to the mentors who are the backbone of the program, and finally the students themselves, for whom the program was developed — each group is vital to the continued success of ACE.

FMI Quarterly spoke with several people affiliated with ACE in a variety of capacities, including Charlie Thornton, founder and chairman of the program; Pam Mullender, executive director of ACE; and Ricardo Anderson, Adam Snavely, Tom Lynott,

and David Gaudreau, who are all with ACE’s Baltimore affiliate. *FMI Quarterly* also interviewed Nubia Castano, former ACE student, current ACE mentor, and one of ACE’s numerous success stories.

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HOW ACE WORKS

Charlie Thornton and Pamela Mullender oversee the executive responsibilities of ACE. Thornton currently spends about 20 hours a week on ACE, making phone calls and developing new concepts. “I talk to Pamela at least 10 times a day,” Thornton said. “I wake up with new ideas; she wakes up with new ideas, and we strategize how we’re going to get the heavy hitters of the industry. We’re focusing on legends of our industry who have attained recognition and success for funding, and strategizing on all fronts. I’m a creative person and like to come up with new ideas. It’s fabulous

SAMPLE STUDENT PROJECTS

- A barbeque pit, in which the pit was built into the side of a slightly graded hill using industry secrets and intensive labor to complete the task
- An atrium-domed recreation center, which included tennis courts, a track, pool, fitness center, basketball court, dance studio, and internet café
- A two-story community center with a basketball court, pool, rock wall, tennis court, track, and more
- An outdoor performing arts venue, which included an amphitheater, boat rental spaces, a night club, and retail stores
- Architectural schemes programmed with condos, nonprofit office space, music studios, and a night club — all to serve U2 frontman Bono; the design featured green roofs, green streetscapes, and other sustainable elements to improve the building and blend into the neighborhood
- A destination resort in the form of a medieval castle on the south shores of Whidbey Island with hotel rooms as well as a comprehensive sports facility/arena, 200-seat restaurant, club, and public area

having Pamela there because she knows exactly what to do with those ideas.”

ACE consists of affiliates that serve students within a specific city. Each affiliate is made up of a board of directors, executive director, and a number of design, construction, and engineering companies. The companies join teams that are organized similarly to project teams. These teams usually consist of an owner firm, a design firm, an engineering firm, and a construction manager or general contractor, as well as participants from a local college or university with programs in architecture, engineering, or construction management. Each team takes on approximately 20 to 30 students for most of the school year. Students are recruited from public and private high schools, and special efforts are made to reach women and minorities who may not realize the opportunities and rewards of a career in the design and construction industries. ACE Executive Director Pamela Mullender explained: “Our goal is to not only introduce career possibilities but to teach the

students about communication, meeting deadlines, and working as team members — the interpersonal skills that are necessary in business today.”

Teams meet at least 15 times during the school year. Each team selects a design project and goes through the entire design process, with the tasks they perform for their clients modeled on the real-life activities of their mentoring firms. The school year ends with a major culminating event where the teams present their projects. In addition, the students take field trips to local colleges and construction sites.

SPOTLIGHTING ACE'S BALTIMORE AFFILIATE

David Gaudreau, principal, Gaudreau Architects, is president of ACE's Baltimore Affiliate, and has been involved with it since its inception three years ago.

According to Gaudreau, the Baltimore city schools have been very helpful in promoting ACE to students. The Baltimore affiliate holds

a recruitment night, where they provide interested students an introduction to the industries. In addition, the ACE affiliate markets to parents by showing them that the program is viable since it is endorsed by the city schools; students can obtain a great academic education; and incentives exist for finishing a four- or five-year post-secondary program and having a career at the program's end.

Forty companies participate in the Baltimore affiliate, and just organizing the mentors takes a lot of work. Gaudreau said that in addition to a feeling of great satisfaction that the mentors receive working with the students, they also form valuable business relationships, making it a win-win situation for everyone involved. He estimated the mentors' donated time to be approximately a quarter million dollars. The students learn more about their own worth from the mentors; these relationships are personal and long-lasting. Gaudreau also said the mentors are constantly finding innovative ways to get and keep the students interested in the program.

Presentation night, where the students showcase their team projects, is the best part of the program's season for Gaudreau. "The students become the mentors," he

said. "They see the value in being part of something larger than themselves."

One of the best aspects of ACE is the fact that it is an evolutionary program; it morphs into something new each year. This is especially valuable for returning students since it offers them new and different experiences each year.

The students learn more about their own worth from the mentors; these relationships are personal and long-lasting.

It's all about the students

Ricardo Anderson is just one of ACE's success stories. Anderson grew up in Baltimore and attended high school at Baltimore Polytechnic Institute. He was one of the first

students to participate in Baltimore's ACE program, after learning about ACE from his high-school advisor. "It sounded like a good idea," Anderson said. "As a kid I played with puzzles and Legos® and liked to take things apart and put them back together." He attended the kick-off meeting, was impressed with what he saw there, applied, and was subsequently accepted into the program.

In addition to learning how a design project breaks down into the different areas of architecture, engineering, and project management, Anderson said one of the biggest things he took away from ACE was the importance of teamwork. "If the team didn't come together, things wouldn't get done," he said. The first project Anderson worked on was the re-design for a hospital area with small rooms and a lack of space for patients' families. His team's plan incorporated a common area for the family and visitors so they would be more comfortable. Anderson's initial experience with ACE inspired him to return the second year, where his team designed a high-end retail multiplex building, using the London Eye (the largest observation wheel in the world) as inspiration.

Anderson is currently a sophomore at Drexel University in Philadelphia and is using a scholarship from the ACE program to help fund his education. As part of

the scholarship, he has been an intern for the past two years at Poole and Kent, a mechanical contractor located in Baltimore. Tom Lynott, vice president of pre-construction, heads the company's estimating department where Anderson has been working summers as a project engineer and assisting project management staff. Lynott said he saw "lots of enthusiasm," upon first meeting Anderson. In addition, he felt he was capable educationally as well as being very focused and determined, especially for his age. "I've watched Ricardo grow from being unsure of how Poole and Kent fits into the industry and market to understanding this, as well as all of the daily procedures," Lynott said. "Ricardo has worked very well with the group and fits in well."

Anderson said he is enthusiastic about his work at Poole and Kent. This summer he worked on a multi-use building in Baltimore's Inner Harbor and was involved with many different aspects of the job. He enjoyed the hands-on work, problem-solving, and seeing the building "happen." Anderson said he now feels his resume has more of an edge.

"I would definitely encourage other students to consider the ACE program," Anderson said, "as it allows one to take the childhood fun of taking things apart and putting them back together, and translate that into a career." Another reason Anderson gave for recommending the program is the networking aspect and the ability to call on these industry contacts one day in the future. Anderson said the following knowledge-areas from ACE will stick with him: teamwork and collaboration, industry understanding, and the ability to develop a presentation from ideas on paper. He still isn't completely sure of his near-term career goals and choices, but Anderson said he certainly feels much better equipped to make the right career choice thanks to the ACE program.

Lynott echoed Anderson's sentiments about the ACE program. "Our industry is struggling from the construction aspect, and we need younger people stepping up and filling positions, especially in the Baltimore and Washington markets," he said. "It's a great time to be in construction; there's more of a



Ricardo Anderson is an ACE success story.

team spirit, and a great amount of opportunity and available work.” Adam Snavely, president and CEO of Poole and Kent, also agrees. “ACE gives students an early introduction to the industry,” he said. “It’s a rather unique program in which students get to participate in a case-study and peer environment that normally would not be presented to them until their later years in college. Mentoring is a big part of Poole and Kent. Enthusiasm is contagious, and this is a two-way street.”

MENTORS ARE KEY TO ACE’S SUCCESS

ACE relies on mentors who are successful professionals from leading design and construction firms. Mentors devote countless hours and energy, and help the students determine what careers are available and a good, individual fit for them. “Our success is, in large part, a tribute to the dedication of our 1,800 mentors and 800 participating firms,” Executive Director Mullender said. “These mentors really demonstrate the spirit of the organization. Whether they give a few hours a year or a few hours a week, these individuals have found a way to change the lives of many youths.”

ACE Founder and Chairman Charlie Thornton said that many of the students who have been through ACE eventually become mentors. “They’re coming back in droves,” he said. “Some of them take a year or two when they graduate to get their positions within their firms established.”

SPOTLIGHTING NUBIA CASTANO, FORMER ACE STUDENT AND CURRENT ACE MENTOR

Nubia Castano is an assistant project manager with Mancini Duffy, a leading design firm headquartered in New York City. She will graduate in December 2006 with a construction management degree. A former ACE student, Castano is now a mentor with the New York City ACE affiliate.

FMI Quarterly: How did you learn about the ACE mentoring program?

Castano: I had just arrived from Colombia in 1999, and my high-school advisor suggested the program as a way to help me overcome my shyness. I decided to enroll and see what it was all about.

FMI Quarterly: When you arrived in the United States, were you already bilingual?

Castano: Yes, but I was very shy and didn’t like to talk much.

FMI Quarterly: Did you have any experience with or interest in the construction industry before the ACE program?

Castano: I liked construction because I was surrounded by people in the field ever since I was little. When I came to the United States, I decided to pursue my

interests because I really liked design and thought I wanted to go into architecture. Once I got into ACE, I realized that I liked the construction side better, and now I'm pursuing my degree in construction management.

FMI Quarterly: What was your experience like as an ACE student?

Castano: I was very, very shy, but the mentors were very open with me. I was going through cultural shock at the time and didn't know exactly what to expect. For example, in my country you learn the theory and then apply it after you graduate. Here, you gain the experience [through internships] to help you decide on a career field.

FMI Quarterly: What was your group's project?

Castano: We were building two commercial towers: a typical city building, multi-use with retail and residential. We were building models, and the mentors were guiding us and giving us ideas as to what we could do. Students tend to be very wild with their design ideas, and the mentors would bring us back to earth and keep us on track.

FMI Quarterly: What was your biggest success as a student?

Castano: I think being recognized and not forgotten because as a student you often feel insignificant — nobody is going to care about me, etc. But many people know me or recognize me from ACE, even though it's been a long time. That really makes it a good experience.

FMI Quarterly: Did participating in ACE have any impact on your college career/major?

Nubia Castano is an ACE mentor and former ACE student.



Castano: It did, especially because when I decided to go back to school, I had been really isolated and wasn't working in the field, and I was trying to figure out how I was going to get back into it and who I was going to contact to help me. One of my professors who was trying to help me get into the field felt I needed some

What helped me a lot when I was a student was being involved in the program because if I hadn't had this experience or exposure to the field, I wouldn't have been able to tell for sure if this is what I wanted.

experience so I mentioned to him my internship and being involved in the ACE program. A couple of weeks later he told me that he had gone to one of the ACE meetings and had run into someone who knew me and told him about me. And that's how I got back into contact with ACE. Later I attended one of the ACE luncheons and met some of the principals of the firm where I'm now working, and they offered me a job. So yes, ACE has had a great impact.

FMI Quarterly: How long have you been an ACE mentor, and what can you tell me about the experience so far?

Castano: This is my first year. I think it's great because I've been there, and I know what students need. Some of them are shy; some have so many ideas and need some guidance on just how far they can go with them. They

need motivation, and they need to be certain that this is what they want to do. What helped me a lot when I was a student was being involved in the program because if I hadn't had this experience, or exposure to the field, I wouldn't have been able to tell for sure if this is what I wanted.

FMI Quarterly: How did you get involved in the mentoring side of ACE?

Castano: ACE contacted me and asked me if I wanted to be a mentor, and I said "Sure!" I felt it was the least that I could do.

FMI Quarterly: How much time do you spend being an ACE mentor?

Castano: A couple of hours a week.

FMI Quarterly: What's your favorite part of being a mentor?

Castano: Being able to help and answering questions.

FMI Quarterly: How many students have you mentored, and what was their project?

Castano: Fifteen, and it was a variety of grade levels from sophomores to seniors. They were doing a ticket purchase place in Times Square. They loved the

project and were so enthusiastic. First, they picked a theme, and it took a couple of sessions to agree on it. The next stage was doing sketches of ideas and developing a program. Next, they started designing and figuring out what materials they needed, considering the weather, the field, traffic, etc. Finally, they started doing the model. They split into groups and chose to do whatever they do best, depending on their skills.

FMI Quarterly: How did the final presentation go?

Castano: They were so happy and very proud of their project. They did very well. It was very different from when I was a student because everyone then was very shy, and nobody knew CAD. Now, they all know CAD. They know more than what we knew at that time.

FMI Quarterly: I understand that some of the students drop out of the program before they complete it. What are your thoughts about that?

Castano: The thing that they learn from this experience is if this is what they really want. It saves them time, and maybe money (if they've started college and then learn that's not really what they want to do). It's a great way to test the field and see if they like it. Part of the reason for people dropping out is when you're in high school there are many other activities, and social life plays a very big role.

FMI Quarterly: Do the mentors as a group have any type of planning sessions?

Castano: Each group has an engineer, a contractor, and an architect on board. All the participating firms get together and start talking about ideas for the program and how we are going to plan the session and who's going to attend. The workplace is very hectic and everyone has deadlines so we have to accommodate people's schedules and work around them. In every single session there are at least two mentors available to the students.

FMI Quarterly: What type of support do you receive from your company?

Castano: I receive a lot of support from time to the space — anything that's necessary to accommodate the students as well as my schedule. They're very flexible. There are also a few other people at Mancini who are involved with ACE.

FMI Quarterly: If you were going to a high school to promote ACE, what would you tell the students about the program?

Castano: There's so much to tell. From my experience, I've gotten so many benefits, including a great network of people that I can contact for business or

anything; they provide great knowledge and guidance, and if I have any questions I can always contact them, even on a personal level. It's a great learning experience as well.

FMI Quarterly: What do you see as the major benefit(s) of the ACE program for the industry as a whole?

Castano: The internships for one, and the amount of people you, as a mentor, can recommend because companies in general benefit from the students (labor-wise). Plus, students tend to come back to the industry after they graduate, so that helps with the turnover rates.

FMI Quarterly: What would you change about the program, both from a student's and a mentor's perspective?

Castano: From a student's perspective, perhaps having more trips to the field would be helpful. I wouldn't change anything from the mentor's point of view. The people who become mentors really want to be there to help and to guide. I am really grateful for the program, and I wouldn't be where I am today without ACE.

To build tomorrow's world, the skills and expertise of a new generation of men and women will be needed. According to the Bureau of Labor Statistics, by 2012 there will be approximately one million new jobs for workers in the construction industry. In order to satisfy this demand, the construction industry will need to become very creative in attracting and keeping talent.

To build tomorrow's world, the skills and expertise of a new generation of men and women will be needed.

ACE Founder and Chairman Charlie Thornton said he feels that the ACE program is in the catbird seat right now because everybody is accepting responsibility for the industry's labor challenge. "Our major donors are increasing; we just picked up two more, and our fund raising is going well," he said. "One of the reasons why the fund raising is going so well is because there are 60 more cities that want the [ACE] program ... which is making our life a little bit easier. In 2001 when

Engineering News-Record put us on their cover, we were in three cities. We had asked *ENR* to do a major feature on ACE a couple of years earlier, and [they] said only if we took the program national. So, we did. The following year we were in 16 cities, and the year after that we were in 28 cities, and the rest is history. It's working."

What does the future hold for the ACE Mentor Program? Thornton said he expects the program to have 100,000 kids in the next five years. “There’s no doubt in my mind that we’ll be in every city in the United States, big, small, etc.,” he said. “We really have some fantastic people backing this program.” And that’s good news for the industry, as ACE continues to play a crucial role in attracting young people to the fields of architecture, construction management, and engineering.

FMI Quarterly thanks all of the people we spoke with about ACE for their time and their insights. For more information on the ACE Mentor Program, please visit their web site at <http://acementor.org> ■

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¹ National Science Board (2004). An Emerging and critical problem of the science and engineering labor force. Retrieved from: <http://www.nsf.gov/statistics/nsb0407/> on Oct. 6, 2006.

Evolving Project Observers into Project Leaders

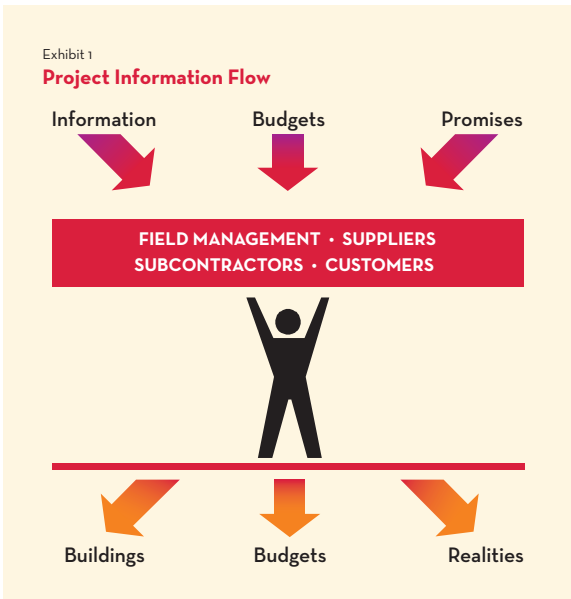
Organizations with superior operating procedures within the spheres of planning, communicating, and business acumen will be able to hire, retain, and cultivate project leaders.

By Gregg Schoppman

If you ask seasoned veterans of the construction industry the origin of project managers, they would all agree project managers came about because superintendents hated doing their paperwork. “Construction is about building things, not shuffling paper,” grumbles the stodgy construction curmudgeon.

Enter the project manager. Submittals, shop drawings, change orders, and schedules became the primary duties of a group of individuals trained at universities and building schools across the country. Textbooks, lectures, and labs replaced the real-world lessons amid rebar, concrete, and stale trailer coffee. Within this evolution, project managers became the de facto leaders of the operations component of the business — driving every process and often becoming the customer’s main point of contact. Supporting the field and serving the customer remains the most challenging balancing of duties for which any individual could be responsible. Like sand through the throat of an hourglass, information flows up and down through the project manager to the project team. As Exhibit 1 depicts, project managers are the linchpin of every project, controlling every aspect of how the building of projects occurs.

With the massive responsibility of managing the many construction dollars, project managers are criticized for their inability to move the project along and their role as a bottleneck in this pipeline. Plan revisions sitting in the manager’s office, unanswered RFIs, and unapproved change orders all flatten the wheels of progress.



There is also the project manager who operates like an open conduit, allowing information to pass through his or her office without screening or actively participating in the process. In many cases, this type of project observer serves more as a historian of projects rather than actively leading the process. Leading the process requires a proactive mindset and a willingness to make change for better results. These diametrically

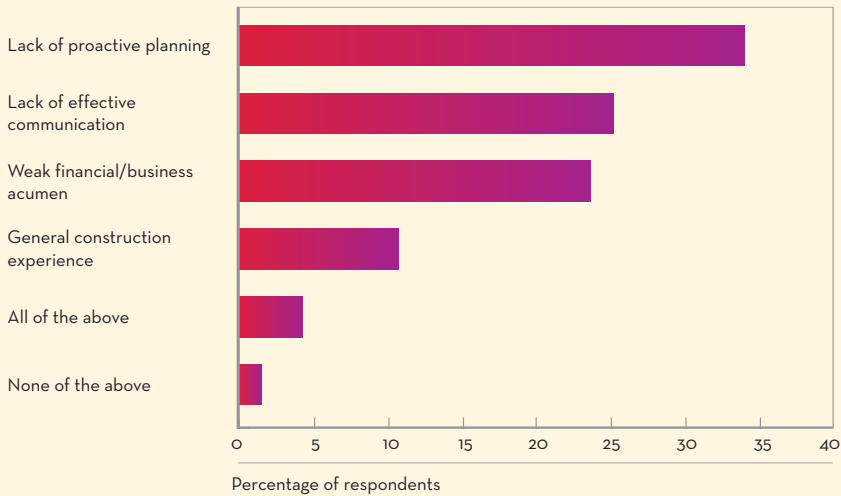
opposed management styles beg the following questions: What traits should the ideal project manager have, and how can an organization develop a corps of proactive project leaders?

PLANNING, COMMUNICATING, AND BUSINESS ACUMEN

True project management is an amalgam of strong technical acumen and highly developed interpersonal skills. There is usually no shortage of managers that understand their trade. Knowing how buildings and systems are constructed is easy to teach and learn. The challenge lies in finding project managers who either know how to or can be developed to communicate, plan, and financially manage their projects. Project failures rarely are the result of someone not understanding how concrete cures or drywall is hung. Furthermore, training managers in the technical aspect of the business is common and relatively simple to implement. Rather, failure stems from managers' inability to identify project hazards early, adequately plan all resources, comprehend the financial implication of decisions made, and manage expectations through timely and effective communication. For example, understanding how concrete cures is less important from a project management perspective than the questions of: What impact does the curing have on the rest of the project, and how should these impacts be communicated? According to *FMI's 2006 Project Management Survey*, the areas causing the greatest pain to construction organizations are project managers' lack of proactive planning, lack of effective communication, and weak financial/business acumen. (See Exhibit 2.)

What does this glaring absence of specific skill sets indicate about the current state of project management within the industry? For

Exhibit 2

Weak Project Management Areas Causing Greatest Pain to Organizations

Source: FMI's 2006 Project Management Survey

many years the emphasis was always placed on the construction process or cultivating the “builder mentality.” Technical skills were heavily stressed, and in many organizations, junior managers or project engineers were exposed only to this side of the business. There are several root causes for this gravitation away from the planning, communicating, and business acumen. First, young managers have often blurred the lines between planning and scheduling. Drafting a Gantt chart in MS Project or Primavera became the minimum level of planning for a project. In many cases, developing this schedule was simply a mandate by the customer so the bare minimum of information was provided to satisfy a mere specification requirement. Second, communication has suffered because of e-mail, faxes, and two-way radios. With a world abundant in communication tools, project management operates as if it were using two tin cans connected by a string. In this paradox of technology, managers at all levels use e-mail, faxes, pages, and chirps as a reaction to activity rather than a proactive measure. In many cases, communication has deteriorated to the point that phone calls and face-to-face meetings are used as last-ditch efforts to solve problems that have escalated to a boiling point rather than preemptive strategies to avoid the problem in the first place. Lastly, the financial component of project management has only begun to take its rightful place in the priorities of managers. Understanding cash flow and the financial implications of all decisions made were once duties relegated to the accounting staff. Incorporating these tasks and responsibilities into operations is slowly becoming a priority even though many organizations are seeing a pushback from their project managers. Many managers believe financial management is not part of the building process and give it lip service during the times of the month when pay applications and projections are due. Collecting the money is viewed as a distraction to actually putting the work in place. In each case, planning, communicating, and financial acumen are talents that can be honed and developed.

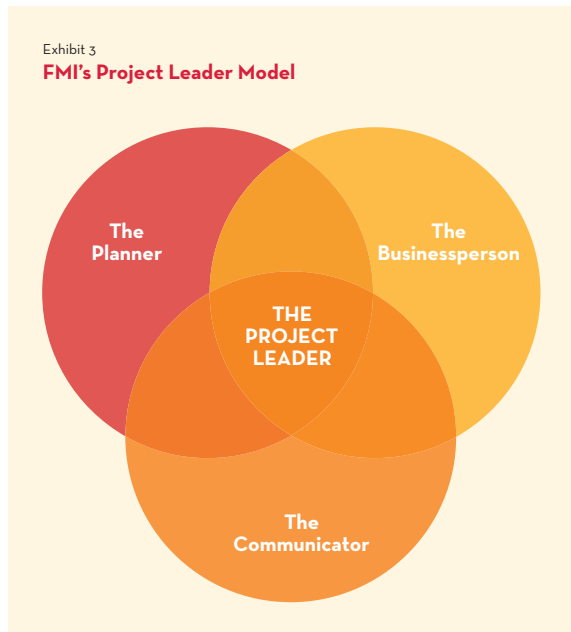
While they may have faults, project managers have an awesome responsibility in an often thankless and grueling environment.

THE PROJECT LEADER MODEL

While they may have faults, project managers have an awesome responsibility in an often thankless and grueling environment. Project management requires a strong individual who can multi-task and lead the frenetic activity of the most complex projects with the sensory perception of a wild-game hunter and the resilience of an offensive lineman. In many cases, project managers will excel in one of the aforementioned areas. Some are exceptional planners, preparing well-scripted plans of attack

for every phase of work. Others rival the great accountants of the world and can account for every cent of cost and profit on their projects. However, while some are exceptional in certain areas, they lack the ability to utilize the aspects of the other two areas. And while they may have a plan, they fail to communicate it to the rest of the team, and they fail to consider the financial implications of their plan. The “Project Leader” model is an embodiment of all three traits acting in trinity. The Planner, Communicator, and the Businessperson comprise the spheres of the ideal project manager, as illustrated in Exhibit 3.

Within each sphere, duties and responsibilities exist that are commonly associated with the project aspect. For instance, financial management falls under the auspice of the businessperson. However, it is important to note that none of these duties are done without the influence of the other spheres. Consider project scheduling. Developing the schedule falls under the planner sphere. However, the project leader involves and receives feedback from subcontractors, field managers, and suppliers to properly develop the baseline schedule and to effectively communicate it back to the project team (the communicator). Lastly, the schedule must be developed in concert with a strong understanding of the resources needed to complete the work as well as the expected return on those resources (the businessperson). A schedule without these other components is devoid



of substance and is simply a decorative wall covering. The subsequent sections in this article examine the spheres of the project leader model and several of the management processes that comprise each. These sections will also examine the organization's need for consistent management processes to support the project leaders within operations.

The Communicator

Without fail, "communication skills" remains at the top of every list for the most sought after traits when hiring managers. Employers want managers that understand the message and that know how and when to effectively deliver it. The greatest communicators know how to disseminate information and repackage it for their audience. Project management is no different. Audiences can be as diverse as the project designer to the CEO of a Fortune 500 company or the foreman on a sewer crew. In many cases, the message may be the same, but how it is conveyed and the timing of its delivery can profoundly impact the project.

Organizations typically use organizational charts to establish lines of authority and communication. Projects also require this level of detail. Project leaders not only establish roles and communication channels, but they understand who needs the information and when. They understand the customer's needs and actively involve them in decisions. Most importantly, they know the decision maker and institute measures to ensure timely resolutions are made for everything from color selections to change orders. The project managers of old perceived the customer as an impediment to progress. Marketing and business development managed the customer, not the project manager and superintendents. Project leaders today recognize their project delivery affects not only the firm's ability to get more work, but it also affects how they sell on their project. They understand selling change orders, schedules, materials, ideas, and processes can be almost as important as selling the initial project.

Project leaders are also great listeners. They hear not only what their customers say but also what their team says. They hear the needs of the field manager and accounting. They understand the value of managing these internal customers with the same respect and dignity that the external ones receive. Project leaders actively process what they hear to not only deliver a better product but also to improve the organization. They recognize areas of improvement and focus on implementing new ways of building projects and relationships rather than holding onto tired and stale conventions. Communication comprises more than talking to the project leader. It is a mechanism for receiving and processing information efficiently and a driver of the project's planning and financial management.

Project leaders today recognize their project delivery affects not only the firm's ability to get more work, but it also affects how they sell on their project.

The Planner

Many project managers evoke the image of the firefighter. Their desks are ablaze with so many emergencies, and their phone is ringing as if it were a six-alarm emergency. Alas, in many cases, the frenzied activity is the reaction to a problem or challenge. Reactive management is merely a defensive maneuver that occupies time and detracts from high return activities on a project. While no manager can

completely plan for every emergency, reactive managers are simply one emergency away from project ruin.

Proactive management is well telegraphed and calculated. Like a chess master, project leaders plan stages of projects well before their start. Project leaders subscribe to Covey's principle of "beginning with the end in mind." Not only have they communicated the end vision with the team and customer, but they meticulously plan the beginning of the project to provide

for the highest return. Throughout the project, project leaders have accounted for "rocks in the road" and developed suitable contingencies to protect their assets. Lastly, each project has an exit strategy to avoid the downward spiral of never-ending and margin-eroding punch lists. Project leaders recognize that customers may not remember how the project began, but they are sure to remember its completion.

Planning begins with a comprehensive pre-job planning meeting that involves the project team. It extends to defining the quality of the project and how the budget will be crafted. The project plan identifies and quantifies risk and develops strategies to avoid it. Careful planning of the purchase and award of materials and trade contractors protects against project delays and scope holes. Managers often think that planning is simply a precedence diagram or bar chart that adorns the trailer wall. But planning involves scripting the project with reasonable confidence and communicating the plan to the players responsible for executing it. Championship sports teams spend many hours planning the game at every level and within every position. They continue to plan during the game, reacting to problems and challenges as they arise to mitigate their impact. Project leaders are the coaches of championship projects that may lack a trophy but offer all the return and reward.

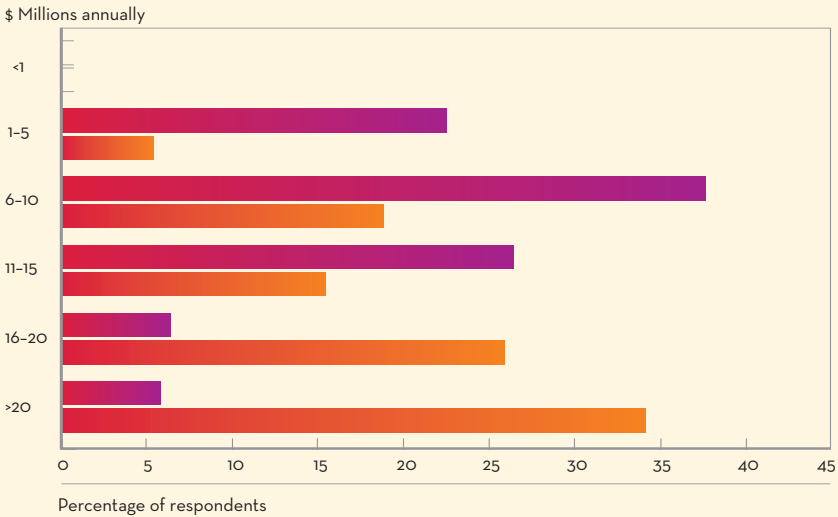
The Businessperson

Construction firms often use the word "entrepreneurial" to describe their organization's project managers. In effect, each project manager is responsible for the execution of not only a project but also the equivalent of an average U.S. business' operations.

Project leaders are the coaches of championship projects that may lack a trophy but offer all the return and reward.

Exhibit 4
Dollar Volume Expectations of Project Managers

■ < \$200 million revenue
 ■ > \$200 million revenue



Source: FMI's 2006 Project Management Survey

Exhibit 4 illustrates the typical volume of a project manager at any given time.

Project leaders understand the difference between the “business of construction” and the “construction business.” As businesspeople, project leaders understand the fundamentals of cash flow and the importance of collecting receivables. Project leaders not only manage the finances acutely but also act as if they are personally vested to the profits and losses regardless of their firm’s compensation system. Buyout is not simply the exercise of drafting subcontracts and writing purchase orders, but an efficient and ethical way of scrutinizing scopes and budgets to determine the highest value to their organization and the customer.

Key performance indicators provide essential feedback on the project leader’s business processes. Days of aging receivables, overruns in labor, recordable incidents, and time of retention collection, benchmark project and firm performance. They serve as guideposts and milestones for a project and help identify areas that require improvement. As a physician examines a patient for symptoms, project leaders use these metrics to prescribe corrective action before a benign problem grows to malignancy.

Project leaders view projects more as a journey for their organization rather than a one-time destination. Project leaders incorporate their vision as part of their project. They view projects as growth engines of an organization as well as enablers of the grander strategic plan. Projects become opportunities to enter new markets or niches and grow the business. It is no wonder that many strong project managers with this entrepreneurial instinct become executives or leaders in their organizations.

DEVELOPING PROJECT LEADERS

Defining the ideal project manager is easy. The ultimate in operations excellence — the planner, communicator, and the businessperson — may appear more like fantasy than reality. The reality is that project leaders do exist, and many managers

have the potential to become one. A small minority of managers appear genetically wired to perform at this high level, embodying each sphere of the project leader model with every idea, conversation, and meeting. Rather, the vast majority of managers are capable with the right operational structure. Many project managers begin to develop habits, good or bad, at a very early stage in their career. Their exposure to the right systems, processes, and tools will help inculcate them in correct project leader behaviors before they become firefighters. Within the *2006 Project Management Survey*, FMI examined firms that consistently finished their projects on time and on budget. As demonstrated in Exhibit 5, more than 60% of firms that historically finished projects on time and on budget have consistent, company-wide processes and tools to support the construction process. Conversely, firms that relied on individual and inconsistent, ad-hoc management systems stated they typically did not finish their projects on time and on budget.

So many organizations rely heavily on the strength of individuals rather than the strength of their processes. Joe or Jane's project management style defines firm successes or failures rather than that of a unified process or system. Great organizations employ a consistent and well-defined process or tool for every phase of the project management process. The firm then measures individual and team performance to provide constructive feedback and opportunities for development. Great firms also use this system of consistent processes as a platform to train new individuals and teams. Critics argue that this mindset stifles creativity and restricts management's mobility. Arguments like this are uninformed as to how processes are created and the importance of the composition of the team doing the developing. Constructing best practices requires patience and commitment of the processes' practitioners to provide the greatest long-term successes.

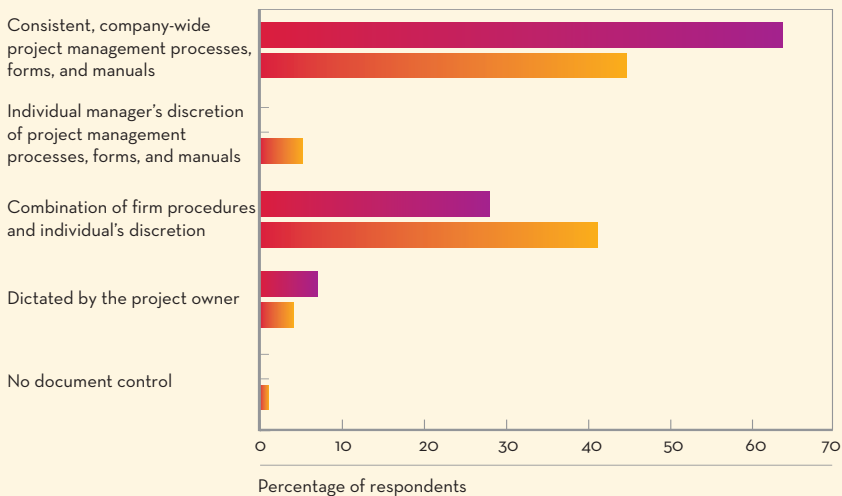
Developing consistent and standardized processes within the project leader model

Exhibit 5

Analysis of Consistent Project Management Process and Controls

■ On time, on budget

■ Not on time, or on budget



Source: FMI's 2006 Project Management Survey

Developing the process for every operations activity is challenging and menacing.

receivables of 70 days, first identify each step in the accounts receivable/collections process regardless of how minute or inconsequential it might appear. Next, identify the areas that appear to be the impediment in the process, and consider a methodology that will help reduce the collection time. The operations managers and staff that are directly involved in the process must be the authors of the process. They understand the obstacles and complications within each process. Furthermore, project managers' likeliness to use a process they created increases the probability of sustaining it. Their buy-in is essential to ensuring the long-term success of the process. Lastly, do not be tied to typical or traditional conventions when developing processes or tools. Some of the greatest ideas come because leaders are not willing to accept the status quo of project management.

Developing the process for every operations activity is challenging and menacing. It is not often that businesses are able to call a timeout during day-to-day operations to create these processes. Developing them in tandem with current projects and using the projects as pilot studies not only provides real-time feedback, but it also provides a sense of realism in the process' capabilities. Focus on the highest priority and highest return activities early. If the pain in the organization is starting projects, focus on pre-job planning. If it is managing trade contractors, focus on a subcontractor coordination process. Regardless of the process, attack the process with the greatest and quickest opportunity to impact performance.

Developing the processes is only the first step in developing project leaders organically. With processes in place that support the cultivation of project leaders within the organization, the emphasis must be on constant and consistent reinforcement. Having processes in place is not enough. Reinforcement must come in the form of measurement, training, and firm leadership.

Profitability, safety, and productivity are several of the items construction firms should be measuring with consistency and precision. Consider the processes that are important to successful operations. Within each process, some metric should be defined and benchmarks established for individual and project performance measurement. When discussing scheduling, seek to measure days ahead or behind the critical path, duration of project closeout, or the frequency of project updates. Within financial management, measure the average aging of the accounts receivables per project as well as the process used to generate the invoice or pay application. In both cases, examples exist of upstream and downstream metrics. By measuring the upstream process or behavior, firms have a greater control over the downstream result. For

is critical for the organization's long-term success. Examine past project failures and shortcomings to isolate the root causes. Ask the questions: Why did this project lose money, why did this project not finish on schedule, and why did this customer relationship fail?

Whether it is a customer management plan or financial management process, determine the measurable steps to achieving specific goals or milestones.

If the organization historically has aging

example, measuring labor overruns on a monthly cost report provides a historical snapshot of project performance (downstream metric). On the other hand, measuring a project manager's compliance with the commitment to hold a pre-construction conference will serve to reinforce the need to have such meetings and also positively affect labor performance (upstream metric). While examining labor costs is important, this is simply a reaction to historical data rather than proactive management. Develop metrics that make sense for the organization and help support the project leader processes. Without them, there will be no consistency of process.

The newer generation of employees are demanding training be incorporated within the organization's personnel development plan. Trial by fire does not provide long-term success as the methodology for developing new associates. Firms need to spend time and resources on developing skill sets in all facets of the construction process. Managers not only need training to properly introduce them to the firm's systems and tools, but they also need a forum for sharing their experiences and learning from the firm's collective intelligence. Training also enables scrutiny of

Firms need to spend time and resources on developing skill sets in all facets of the construction process.

the process and refinement. Processes always require revisiting to ensure their capabilities and efficiencies. Great organizations are never satisfied with the status quo. They realize that customers will expect more and the competition will improve. Most importantly, training allows for the perpetuation of project leader processes from generation to generation.

It sounds redundant to state that a reinforcement of the project leader model is leadership. Firm leadership provides strategic direction for the organization. Presidents, executives,

senior managers, and steering committees need to continually reinforce the practices and stand resolutely behind them. Without strong leadership, processes will wilt and die. They become lip service spewed to a customer as some contrived sales promise but more likely resemble a series of expectations that no one follows. Process and policy become mere suggestions as project managers follow their own lead. Walking the talk starts with senior leadership. Not only do they set the standard, they reinforce the behaviors that drive great project performance. There are no double standards but a single, firm standard that defines how project leaders operate.

Senior leaders understand that the processes' end users should be developing them. Project managers are more apt to buy-in to a process or tool if they have been able to touch it and customize it to suit their needs. All project leader processes are the result of channeling creative energy from the management team. Leadership reinforces through development and use of the process and tools. Consider how many companies purportedly have a policy that states no work shall begin without a signed change order. How many companies actually stand behind this policy? By no means is this policy wrong, but does the leadership of the organization send the wrong message when they make exceptions to maintain the flow of work or sanctity of the

relationship? How many companies preach safety and quickly look the other way when it means higher costs or delayed schedules? Without the integrity to stand behind the processes, there is no substance to the process. Without leadership's endorsement, the process is only a musty and clichéd manual that barely leaves the bookshelf.

Technology continues to play a role in the evolution of the project manager. Document control systems, cost accounting systems, and scheduling systems have flooded the marketplace with a bounty of tools to help project managers control their projects. With the abundance of tools available, why are so many projects failing to meet their schedule or budget? Many managers find these software packages to be complex and challenging. Intimidation by the sheer magnitude of the scheduling package's capabilities becomes the project manager's crutch. Other managers believe the programmers of the technology included some automatic mechanism for schedules to update and documents to process themselves. While the software has streamlined many of the cumbersome and time-consuming tasks, it will never replace the human management of today's construction projects. Software has enabled project leaders the ability to become more efficient and better custodians of project information. Primavera, Project, Prolog, and Expedition are all effective and powerful tools, but without a process to govern their use, they are simply expensive filing cabinets. RFIs are suggestions on a cocktail napkin because the questions lack the substance of viable options and cost effective solutions. Gantt charts become glorified trailer wallpaper because managers do not routinely update a schedule to inform the project team and customer. Project leaders rely on management basics to govern their projects and use technology to improve the quality of their communications, planning, and business perspective. Technology will continue to improve and provide additional platforms on which to operate. Project leaders evolve with the technology and use processes to maximize their effectiveness.

Many great project managers operate within the construction industry today. More exist but fail to grow into project leaders because they lack the necessary processes and tools to be successful. Planning, communicating, and business acumen are not new, revolutionary concepts to operating a profitable and sustaining organization. The construction business has evolved into the business of construction. Managers will continue to evolve into project leaders to survive within this new vision for the construction industry. Organizations that have best of class operating procedures within the spheres of planning, communicating, and business acumen will be able to hire, retain, and cultivate best of class project leaders. ■