Iowa Green Economy Human Capital Resources

Part Three: Current Green Construction Management Training in Iowa



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Human Capital

Section 3

Current Green Construction Management Training in Iowa: A Gap Analysis of What Companies Expect & What Is Currently Being Provided

This pilot builds on several other projects to gain a deeper understanding of the training needs of the construction industry as it competes for green business. Master Builders of Iowa (MBI) has committed substantial time and resources to improving the training capacity of Iowa's schools and post-secondary institutions to bring more workers into the industry and improve the pre-apprentice training programs. As a pilot we collaborated with Iowa Workforce Development in the process of assessing national standards for green construction and how every state is addressing them as a way to learn how well Iowa is doing and what more we can do to improve the industry. This builds on a demand-based training model that we have developed that can be used for the green construction industry and other Iowa industries that seek to improve the competitiveness of their human resources. This pilot project specifically sought to establish local employers' green construction management training needs, compare those needs to existing capacity, and outline how the state can support the industry's increased competitiveness. This was the next step in the data collection process that verified and localized industry competencies and training needs.

Focus Group Participants

We identified individuals who were currently employed as superintendents, project managers, senior project managers, or senior managers within the construction industry in Iowa. They were asked to participate in focus groups in order to identify competencies required for their specific positions and the positions that they directly supervise. Separate focus groups, for individuals in each position, were held in four communities around the state, totaling 16 focus groups.

Throughout the process of holding these focus groups project managers and senior project managers were found to have very similar job functions and duties. For this reason they will be grouped together in some sections of this report.

Data Collection from Focus Groups

Training in Construction Management

Superintendents

Superintendents that are union members have participated in construction management training offered through their local union hall and through Master Builders of Iowa. They have typically obtained their positions through years of exceptional performance in the field combined with a desire to be a leader. Superintendents that are not members of a union have obtained training in construction management through Master Builders of Iowa. They have obtained their positions either through years of exceptional performance in the field combined with a desire to be a leader much like their union colleagues or they have graduated from a bachelor degree program in Construction Management and have worked as a foreman, project engineer, and or assistant superintendent for a few years. Some indicated that instead of attending a four-year degree program they obtained an Associate in Applied Science degree in Construction Management and then worked in the field.

Project Managers & Senior Project Managers

Project managers, like superintendents, receive their continuing education training through Master Builders of Iowa. The vast majority of project managers obtained a bachelors degree in Construction Engineering or Construction Management and then worked as a project engineer, assistant superintendent, and/or superintendent for a few years prior to being promoted to project manager.

Senior Management

There is an array of education and training experiences that senior managers have participated in. Many have graduated from Construction Engineering or Construction Management degree programs. All of the individuals in the focus groups had participated in construction management trainings offered through Master Builders of Iowa. Some have also participated in training offered through the Associated General Contractors of America.

Perceptions of Training Received

Whether through the union hall, Master Builders of Iowa, or the Associated General Contractors of America all of the participants (superintendents, project managers, senior project managers, senior managers) felt that they had received quality construction management training that they were able to use on the job and were happy with their experiences. They felt that four year college training programs did a good job with many of the technical skills necessary in the field but they should work to include more field-based experiences in their programs and try to include more practical skills that are necessary for individuals to be successful in the industry. Participants also stated that some of the activities that individuals participate in as part of these training programs are outdated or unrealistic. They also felt that many of the training programs offered through Iowa's community college system have historically focused on residential construction principles and practices. Participants also felt that the training experiences occurred in an environment that didn't prepare participants for the speed and endurance required to be successful in the industry.

Green Construction

Perceptions of Training Received

Superintendents

Participants indicated that superintendents have not received a significant amount of training in green construction. The primary green training topics that superintendents have participated in are erosion control and storm water pollution prevention trainings offered by Master Builders of Iowa. They indicated that they attended these programs because the content directly impacts their role in the building process. They found the trainings to be informative and felt that they met their expectations. They indicated that the vast majority of the other green construction practices and principles that they have learned were through participation on a LEED project.

Project Managers & Senior Project Managers

Approximately fifty percent of the project managers and all of the senior project mangers that participated in the focus groups had obtained the LEED AP BD+C (Leadership in Energy and Environmental Design Accredited Professional in Building Design and Construction) credential. Those that had not obtained the credential indicated that they were waiting to see if owners were going to continue to push for LEED certification of their buildings or, if

as a result of the economy and the increased requirements to achieve LEED status, were going to shift their focus to being as green as financially feasible.

Senior Management

All of the senior manager participants indicated that they had attended some type of green construction training. As opposed to attending training related to LEED credentialing the majority of the trainings that they participated in were training conference sessions, webinars, and other short term trainings related to what green building is, how it is impacting the industry, and what general contractors should know to be successful.

National Competencies

Perceived Value of Training

The Associated General Contractors of America offers a Supervisory Training Program, a Project Manager Development Program, a Construction Project Manager Course, and an Advanced Management Program. These programs are designed for superintendents, project managers, senior project managers, and senior leaders of general contractors. The competencies that these training programs cover are consistent with the needs of commercial general contractors in Iowa. The difficulty with these programs is the ability for employees of Iowa commercial construction companies to attend these training programs.

Position Specific Competencies

In reviewing the education and training offered by the Associated General Contractors of America (AGCA), the National Center for Construction Education and Research (NCCER), and U.S. Green Building Council it is clear that green construction education is still in its infancy. The U.S. Green Building Council has developed the most comprehensive standards with its Leadership in Energy and Environmental Design credentials. They have developed a the following LEED credentials:

Green Associate

AP BD+C – Accredited Professional Building Design and Construction

AP ID+C – Accredited Professional Interior Design and Construction

AP Homes – Accredited Professional Residential Homes

AP O+M – Accredited Professional Operations and Maintenance of existing buildings

AP ND – Accredited Professional Neighborhood Development

Of these credentials the Green Associate and AP BD+C credentials are the ones most closely aligned with commercial general contractors. The Green Associate was established "for professionals who want to demonstrate green building expertise in non-technical fields of practice" (AGCA) and the AP BD+C is "for professionals participating in the design and construction phases of high-performance, healthful, durable, affordable and environmentally sound commercial, institutional, and high-rise residential buildings" (AGCA).

The Associated General Contractors of America have developed a course entitled *Building to LEED for New Construction*. According to their website this "course provides an overview of green building and an in-depth look at the contractor's role on a LEED v3 project, focusing on the information contractors need to know to effectively and efficiently build green buildings" (AGCA). They indicate that the course is designed for individual from all experience levels across a company.

The National Center for Construction Education Research will be launching a course entitled *Supervising Green Construction Projects: Principles and Practices*. They will roll this course out at the end of 2011. The focus of this course is on how to use green principles to meet the LEED rating system (NCCER).

Green Globes utilizes a different approach to green building. Rather than offering credentialing or courses in green building Green Globes is a "building environmental design and management tool. It delivers an online assessment protocol, rating system and guidance for green building design, operation and management" (Green Globes). Individuals are able to use online tools to assist them throughout the design and building process. Then a third-party review system is utilized to assess the project.

Position Specific Competencies Identified by Focus Groups

Construction Superintendents

Construction Superintendents are responsible for leading the field-based operations for a general contractor in the commercial construction industry. They work closely with the Project Manager from proposal through completion of the building project. They are responsible for supervising company field staff such as project engineers, assistant superintendents, craft professionals, and laborers and all subcontractors hired to perform work on the project. They ensure that all work performed is to plan specifications and remediate any issues that arise during the building process. They are responsible for ensuring that the field components of the project are completed on time and on budget. They are responsible for the health and safety of everyone on the jobsite. They coordinate site workflow and ensure that materials are delivered on time.

Competencies

Leadership

- The ability to effectively communicate with others
    - Individuals
        - Owners
        - Architects
        - Subcontractors
        - Project Managers
        - Project Engineers
        - Company Senior Management
        - City and State Officials
        - Anyone else they may come in contact with
    - Means
        - Face to face
            - Individual
            - Small group
        - Via the phone
        - Via written/electronic communications

- The ability to:
    - act effectively as company's front person
    - be persuasive, mediate different agendas, and resolve conflicts among subcontractors
    - build, lead, and manage teams
    - differentiate between friendship and employee when supervising people
    - effectively facilitate meetings
    - ensure that employees and subs follow all safety procedures (OSHA, etc.) and keep updated on current best practices
    - establish high expectations and then hold people accountable for maintaining them
    - help others perform better
    - identify and nurture relationships with subcontractors
    - identify quality subcontractors and employees of subcontractors and negotiate their participation on a project
    - lead others, especially from different generations
    - manage conflict with staff, subcontractors, and others on the worksite
    - mentor and grow staff
    - motivate others
    - provide positive feedback to others
    - recruit talented new staff

Project Management

- The ability to:
    - access information about potential construction products and their installation procedures
    - become familiar with BIM and how it might impact their job
    - effectively develop and manage production plans
    - effectively project out and manage a schedule
    - identify and send clear requests for information or make decisions on poor quality prints
    - identify problems at the worksite, develop potential solutions, and select the most appropriate ones
    - keep knowledgeable about common materials used and their installation procedures
    - properly document daily activities and events
    - read and interpret blueprints
    - run structured and efficient job meetings
    - stay current on best practices in safety and site security
    - understand contracts
    - use computers, basic business software (Word, Excel, etc.), and common industry software

Green Construction

- The need to understand:
    - aspects of project certifications (LEED, Green Globes) that impact the role and duties of the superintendent

- challenges associated with sourcing American made products
- costs associated with sorting and recycling products
- green products require more lead time
- green projects require more communication and documentation
- principles and practices associated with erosion control
- principles and practices associated with storm water pollution prevention
- the balance between job site space and recycling abilities

- Need to keep green construction projects financially competitive

Project Managers

Project Managers are responsible for overseeing the completion of the construction project. They work closely with superintendents and the senior leadership of their company to ensure that projects are completed on time and on budget. They are responsible for developing and co-presenting with other leadership staff proposals for prospective clients. They are responsible for developing contracts and sub-contracts for work to be performed. They are responsible for the development of project schedules and the coordination of project personnel. They are responsible for managing the project budget and ensuring that billing is accurate and timely.

Competencies

Leadership

- The ability to effectively communicate with others
  - Individuals
    - Building owners
    - Architects
    - Subcontractors
    - Project Engineers
    - Superintendents
    - Senior Project Managers
    - Company Senior Management
    - City and State Officials
    - Anyone else they may run into on a project
  - Means
    - Face to face
      - Individual
      - Small group
    - Via the phone
    - Via written/electronic communications
- The ability to:
  - build and use social capital
  - conduct effective employment interviews
  - control how a project is managed
  - develop and deliver effective presentations for potential clients to secure future projects
  - develop performance plans and provide performance feedback to staff

- engage in business development activities
- have difficult conversations
- hold others accountable
- identify potential talent and groom those individuals for advancement
- lead and mentor project staff and subcontractors
- recognize the potential impact of the content and delivery of their communications
- understand public funding and how it works

Project Management

- The ability to:

  - appropriately and accurately document daily activities
  - build realistic schedules
  - effectively use time management skills to maximize individual productivity
  - identify problems, gather information, make decisions, and take actions that are in the best interest of the organization
  - organize and prioritize work
  - read and understand blueprints including electrical and mechanical prints
  - read and understand contracts
  - understand and use existing and emerging industry technology (hardware and software)
  - understand BIM and how to use it in construction management
  - understand how to identify the most appropriate subcontractors for projects
  - understand how various technologies can improve project performance and productivity
  - understand productivity and how it impacts scheduling
  - work in an environment with no margin for error
  - write quality contracts

Green Construction

- The need to understand:

  - LEED, Green Globes, and other emerging building standards and insure that they are implemented on designated projects
  - the cost implications associated with green building
  - the impact on planning, scheduling, selection of subcontractors, oversight of installation, management of job site, and other issues associated with building a green building or one that

Senior Project Managers

Senior Project Managers are responsible for overseeing the completion of large construction projects. They work closely with project owners, designers, senior leadership and superintendents and, depending on the company structure, may also work with Project Managers. They will often be responsible for more than one project at a time. They are responsible for developing proposals, estimating the various costs associated with projects, and developing budgets for projects. They are responsible for establishing the contract and sub-contracts and coordinating the projects they are overseeing.

Competencies

Leadership

- The ability to effectively communicate with others
    - Individuals
        - Building owners
        - Architects
        - Subcontractors
        - Project Engineers
        - Superintendents
        - Senior Project Managers
        - Company Senior Management
        - City and State Officials
        - Anyone else they may run into on a project
    - Means
        - Face to face
            - Individual
            - Small group
        - Via the phone
        - Via written/electronic communications
- The ability to:
    - deal with significant problems that may arise on projects
    - develop and utilize social capital
    - develop bids for proposals
    - develop superintendents to assist in securing repeat business
    - drive others to want to advance
    - effectively and efficiently delegate work
    - effectively and efficiently manage time
    - effectively read people
    - help superintendents develop
    - identify and organize personnel into the most effective teams for projects
    - mentor and coach staff
    - pull together details and develop ideas to solve problems
    - see the big picture rather than just the project
    - show the team what has to happen and make sure it happens
    - understand and be actively involved in business development, corporate financials, and the importance of increasing corporate bottom line

Project Management

- The ability to:
    - act as owner counselor from concept through construction
    - be able to understand the quality of blueprints
    - become a LEED AP and to maintain certification
    - build budgets off limited information
    - develop and negotiate contracts

- effectively communicate to owners the challenges with building some designs
- facilitate discussion with owners regarding the balance between using or going green and the project bottom line
- identify and retain quality subcontractors
- know and understand contract language and to negotiate contracts
- learn about emerging industry technologies and how to integrate them into jobs
- learn about products and processes that no one knows about because they are so new to the industry
- manage subcontractors
- oversee and manage logistics
- oversee and manage project budgets
- oversee large projects and multiple projects at one time
- schedule manpower
- understand BIM and how it can be used as a tool
- understand building envelope and how the concept impacts the construction process
- understand financial reports and the financial health of the organization
- understand the constructability of a design
- understand the interaction between the cost of green, commodities prices, and ROI

Senior Managers

Senior Managers are responsible for the health and welfare of the organization. They are focused on the financial success and the image of the company. They are constantly working to develop new partnerships with prospective clients. They are responsible for ensuring that the organization has the manpower and resources necessary to be successful. They are responsible for establishing the culture of the organization and doing everything they can to maximize the organization's success. They must be able to see the big picture and understand the industry and interconnectedness of independent data.

Competencies

- The ability to:
    - analyze risk in all aspects of the organization
    - attract and identify talent and set them up to succeed
    - be a coach and mentor to staff at all levels
    - be an expert communicator in all situations
    - be successful at business development
    - build the company as a team
    - develop and implement a marketing plan
    - engage in succession planning
    - identify ways to do more with less
    - make money
    - manage manpower
    - manage the personnel/task matrix
    - perform human resource functions
    - see and understand the company finances
    - understand legal aspects beyond project management, such as HR and Workers Compensation

- weigh advantages of BIM and other emerging technologies against the financial investment to have and staff it

State Barriers

Training of construction management is funded through public institutions of higher education and Master Builders of Iowa. While positive comments were received regarding the two state four-year universities that graduate construction managers (University of Northern Iowa) and construction engineers (Iowa State University), concerns related to the amount of course time the universities had to devote to accreditation. Participants indicated accreditation was highly valued, and MBI contributed funds to assist one university in becoming accredited. Those standards, however, were seen as focusing on some issues that may not be relevant to the actual practice of commercial construction management. Participants recommended that more partnerships be created where employers had input into the curricula. This could take the form of additional field-based components in classes, internships, paid summer work, or training modules provided by MBI while students were in school. In some cases the needed skills lay outside accreditation requirements, potentially making it difficult for universities to find room in their curricula to train for them. State support for these universities, while important, should also be provided to augment existing instruction, possibly through expanded optional summer programming or similar options.

Participants were satisfied with community colleges when they were active partners in the design of community college construction programs, training students, and program evaluation. When construction personnel did not have input into training and evaluation, or when they played only a token role, they saw less value in the programs and the graduates they produced. Participants were concerned with how funding streams were used by community colleges in that they did not directly increase the pool of well-skilled applicants for hard-to-fill positions. Instead community colleges appeared to be offering training on the same few topics rather than developing a statewide comprehensive training plan that ensured that the broad array of industry needs would be met. State funding that was directed through employers—the end users of the training programs—would improve incentives to more effectively prepare job applicants.

Recruitment of talent into training programs is critical to addressing the serious skill shortages construction and other industries face. State-supported funding collaboration between MBI, secondary schools, and post-secondary schools to recruit for construction and other industries facing worker shortages could address this issue.

Identification, recruitment, and selection of talented personnel continue be a challenge for the commercial construction industry. Existing public and private labor exchange strategies have been ineffective in clearly articulating the needs of employers and the knowledge, skills, and abilities of applicants. As state agency budgets continue to shrink and federal compliance requirements continue to grow it becomes increasingly difficult for state agencies to effectively meet the needs of both sides of the labor exchange. This has resulted in the underutilization of services by many employers and job seekers alike. Instead, employers within the commercial construction industry have sought to develop their own methodologies for the identification, recruitment, and selection of talented personnel but since many of the companies within the commercial construction industry do not have personnel solely dedicated to this process they still continue to experience mixed success with the process.

Recommendations

Strengthening the partnerships between education and training programs, employers, and industry representatives can improve the quality of training programs and help address the need for more field-based learning experiences which, when added to the lack of soft skills of some participants, too often resulted in inappropriate and poor quality applicants. This could increase the placement rates of schools and the worker shortage of employers. Promoting this partnership and the high placement rate can address skill shortages. A strong pool of quality workers through the construction supply chain, from subcontractors to general contractors, can improve the competitiveness of in-state companies.

The state should work with employers and industry representatives to identify a better, more cost effective labor exchange process that effectively utilizes the resources available to all the parties involved in the process. One that can address the shrinking budgets of state agencies and the rising demands of the federal government, can effectively identify the needs of employers, and provides job seekers with access to the job postings they are interested in pursuing, a mechanism for assessing their capacity to effectively compete for those positions, and a mechanism for connecting them to education and training that can improve their competitiveness for such positions.

Strategic planning between state agencies and MBI can develop strategies for improving Iowa companies' competitive advantage for:

- the recruitment and retention of the high performing students (keep bright Iowans in Iowa)
- securing work within the state of Iowa (Iowa buildings built by Iowans)
- the acquisition of work outside the state of Iowa (promoting the entrepreneurial abilities of Iowa companies)

The development and execution of a focus group methodology has resulted in a richer understanding of the competency requirements and training needs for leadership positions (superintendents, project managers, senior project managers, and senior management) within the commercial construction industry in Iowa. Through the process a stronger understanding of how the State of Iowa can collaborate with a state-based employer association like the Master Builders of Iowa to create a stronger, more competitive labor force emerged. To further validate the information that has been obtained a survey that reaches all of the members of the commercial construction industry should be developed. The information obtained from the focus groups should be used in the development of the survey. The workgroup composed of commercial construction industry members established for the development and execution of the focus groups could be retained for the development of the survey instrument. The survey could then be tested with a representative sample of members across the state of Iowa. Based on the results of the sample test the survey could be modified and approved by the workgroup and then distributed to the entire state. The survey response data would then be collected and analyzed against the data collected through the focus groups. This would most likely result in the strengthening of much of the data previously collected, the weakening of some of the data previously collected, and the emergence of some data not previously discussed. This process would enable all parties involved to move forward with confidence that they fully understand the competencies required and training needed by leadership staff within the commercial construction industry.







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