

America's Construction Industry: Identifying and Addressing Workforce Challenges

***Report of Findings and Recommendations
For
The President's High Growth Job Training Initiative in
the Construction Industry***



An ETA/Business Relations Group Report

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Preface

The following report, prepared by the U.S. Department of Labor (DOL), Employment and Training Administration (ETA), details the efforts around President George W. Bush's High Growth Job Training Initiative in the construction industry. It provides an overview of the construction industry, outlines the President's High Growth Job Training Initiative in the construction industry, examines the workforce challenges facing the industry, and discusses possible solutions to address the industry's challenges.

Each year, the Federal Government invests over \$15 billion in the public workforce investment system to provide employment and training services across the United States. As part of its ongoing efforts to use taxpayer dollars more effectively and efficiently, ETA is implementing the President's High Growth Job Training Initiative. The Initiative, of which this report is a part, is designed to demonstrate the power of a demand-driven workforce system that tailors local workforce investment activities to reflect the workforce needs of local employers. Recognizing the relationship between workforce development and economic development, ETA promotes partnerships between *education, employment, and economic development*. Through these partnerships, workers can gain the skills they need to succeed through training programs designed by local employers and delivered through community colleges and other education and training institutions. Effective partnerships must be truly driven by, and responsive to, the needs of employers. The President's High Growth Job Training Initiative models the power of this approach in 12 high growth industries.

The construction industry was selected for the President's High Growth Job Training Initiative in large part because total employment in construction is projected to increase by over one million new jobs between 2002 and 2012. In addition, other industries and sectors depend on construction to build and maintain the facilities and infrastructure that are vital to their daily operations. Finally, many occupations in construction (e.g. carpenters, electricians) are also integral to other industries, so workforce solutions that target these occupations may benefit other industries as well.

The construction industry provides job seekers with extensive career opportunities. Growth is projected for occupations throughout the industry, from laborers to construction managers. These positions offer good wages and have varying education and training requirements, from short term on-the-job training to post-secondary education such as a Bachelor's degree. Further, construction is truly a national industry, with job opportunities available throughout the country.

The construction industry has demonstrated a strong commitment to workforce development. For example, key stakeholders in the industry, including trade associations, employers, and labor-management organizations, are heavily involved in apprenticeship programs, which ensure that workers have the skills that employers demand and helps them progress in the labor market. Over 6,000 apprenticeship programs for the construction industry are currently registered with DOL's Office of Apprenticeship Training, Employer and Labor Services. Further, the industry's

stakeholders have already developed a wide array of innovative solutions to address its workforce challenges. Solutions range from partnering with Job Corps to providing child care on the job site.

ETA recognizes and commends this commitment, and the President's High Growth Job Training Initiative will work collaboratively with the industry to expand its workforce development efforts. As this report details, the construction industry faces a number of pressing workforce development challenges, including boosting its image and training entry-level workers. Comprehensive partnerships among education, employment, and economic development are needed to effectively address these challenges, and ETA seeks to partner with industry to model such collaborations.

This report is a review and analysis of ETA's work with the construction industry under the President's High Growth Job Training Initiative. It is intended, in part, to provide employers, educators, the workforce investment system, policymakers, and funding sources with a strategic guide to the most critical workforce challenges facing the industry and identify some of the preliminary solutions developed through the partnership of private industry, the public workforce system, and education.

To those who gave generously of their time, effort, and other resources for this work, thank you for your thoughtful contributions. To those reading about this Initiative for the first time, ETA looks forward to your input in building a system to train a world-class construction workforce for our country.

Executive Summary

Growth Projections for the Construction Industry

The construction industry is projected to be among the economy's top ten largest sources of employment growth through 2012. The construction industry is projected to grow at an average annual rate of 1.3 percent between 2002 and 2012, adding over one million new jobs. Employment growth is projected for a wide variety of occupations throughout the construction industry.

Education and Training in the Construction Industry

Basic education and training requirements vary across the construction industry. In many construction occupations, emphasis is on “on-the-job training” and apprenticeships. Apprenticeship programs are one of the primary workforce solutions being implemented in the construction industry. Over 6,000 apprenticeship programs for the construction industry are currently registered with the Office of Apprenticeship Training, Employer and Labor Services (OATELS) of the U.S. Department of Labor (DOL). As of October 2004, 156,223 enrollees took part in OATELS sponsored apprenticeships in the construction industry. There are also a number of other post-secondary academic programs targeted at training for occupations in the construction industry that are offered by community colleges, universities, and other entities. In addition to on-the-job training, apprenticeship, and academic programs, the industry has implemented a wide array of innovative strategies to address its workforce challenges.

The President's High Growth Job Training Initiative

The President's High Growth Job Training Initiative is designed to provide national leadership for a demand-driven workforce system that ensures no worker is left behind. It is a strategic effort to prepare workers for new and increasing job opportunities in high growth/high demand and economically vital industries and sectors of the American economy. Through the initiative the Employment and Training Administration (ETA) identifies high growth/high demand industries such as construction, works with industry leaders to determine their key workforce challenges, and invests in demonstration projects that help ensure individuals gain the skills that they need to get good jobs with good wages in rapidly expanding or transforming industries. The foundation of this initiative is partnerships between the publicly funded workforce investment system, business and industry representatives, and education and training providers, such as community colleges. The purpose of these partnerships is to develop innovative solutions or replicate models that address a targeted industry's workforce issues.

Why Construction Was Targeted Through the President's High Growth Job Training Initiative

Construction was one of the industries targeted through the President's High Growth Job Training Initiative in large part because it is projected to be among the economy's top 10 largest sources of employment growth through 2012. In addition, other sectors of the economy depend on the construction industry to build and maintain the facilities and infrastructure that are vital to their daily operations. Finally, many occupations in construction (e.g. carpenters, electricians) are also integral to other industries, so workforce solutions that target these occupations may benefit other industries as well.

How Workforce Challenges and Solutions Were Identified

The President's High Growth Job Training Initiative advanced through a three-phase process to identify the workforce challenges of the construction industry, as well as potential solutions. During the first phase, an environmental scan of the industry was conducted to provide a baseline for assessing the industry's needs. ETA Assistant Secretary Emily Stover DeRocco convened five Executive Forums in Washington, D.C. with leaders in the construction industry to learn more about the industry's workforce challenges. Industry leaders informed ETA that construction is experiencing workforce challenges in four broad areas. First, the image of the industry could be improved among key demographic groups, including youth, parents, educators, and guidance counselors. Second, the industry faces recruiting challenges, including recruiting youth and individuals in non-traditional labor pools. Further, the skills of youth could be improved, and the capacity and capability of some of the education and training providers that serve youth could be enhanced. Finally, the skills of both entry-level and incumbent workers could be improved, and the capacity and capability of some of the education and training providers that serve these workers could be enhanced.

ETA then hosted a Construction Workforce Solutions Forum where approximately 60 industry leaders identified over 400 potential solutions to the industry's workforce challenges (see Appendix B for the top twenty-eight solutions identified by participants). The following is a brief overview of the four key challenges and the types of solutions identified:

1. Image and Outreach

Industry leaders noted that the industry's image could be enhanced in a number of areas, including safety, skill requirements, and corporate culture. For example, industry leaders reported that jobs in the industry are seen as dangerous. Further, industry leaders reported that the image of the construction industry could be improved among several different demographic groups, including youth, parents, educators, and guidance counselors. For example, youth and guidance counselors are not aware of the skills required by many occupations in construction.

Potential solutions for addressing this challenge include launching a national media campaign to improve the image of the industry and expanding or creating construction “career academies” in high schools.

2. Recruitment

A number of industry leaders noted that the construction industry is experiencing a shortage of workers. This current shortage is complicated by two trends: the growth of the industry, and the retirement of the “baby boomers.” Further, the construction industry has difficulty recruiting individuals from two general demographic groups: youth and non-traditional labor pools (e.g. women). The industry has difficulty recruiting individuals from these demographic groups for several reasons, including a lack of awareness of job opportunities in the industry and a poor industry image.

Attendees generated a host of potential solutions to recruit workers, such as providing offenders with training while they are incarcerated and marketing the industry at non-traditional venues (e.g. NASCAR events and rodeos).

3. Skill Development and Education and Training Capacity: Youth

Industry leaders reported that some youth lack academic and employability skills needed in the construction industry. For example, some youth lack the math and/or language skills required in the industry, while others could have a stronger work ethic. At the same time, industry leaders reported that the capacity and capability of some education and training providers that serve youth could be improved. For example, some vocational-technical high schools lack key resources, such as books and curriculum, and secondary school teachers could benefit from spending time in apprenticeship programs.

Attendees identified a range of solutions for helping youth enhance their skills, such as developing summer construction camps for kids and boosting the capacity of secondary schools by having employers “adopt” these institutions.

4. Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers

The fourth broad workforce challenge currently facing the construction industry is developing the skills of entry-level and incumbent workers, as well as boosting the capacity and capability of education and training providers that serve these workers. Attendees highlighted a number of skill development challenges facing entry-level workers, such as the safety and advancement challenges experienced by individuals who possess limited English proficiency. Other entry-level workers lack the skills to effectively use the increasingly complex technology being utilized in the construction industry, such as equipment used in heavy construction projects. Incumbent workers face challenges as well, particularly a need to boost their leadership and management skills. Some workers have little experience working with non-traditional labor pools. Further, the capacity of some education and training providers that serve entry-level and incumbent workers could be improved. For example, some community colleges lack the capacity to accommodate additional students.

Attendees identified several solutions for potentially addressing these challenges, such as developing a comprehensive, partnership-lead career academies and developing more web-based training options.

Next Steps

ETA supports comprehensive business, education, and workforce development partnerships to develop innovative approaches or replicate models that operationally demonstrate how a demand-driven workforce system can more effectively serve the workforce needs of business while also helping workers find good jobs with good wages and promising career pathways. Grants awarded under the President's High Growth Job Training Initiative will implement unique, industry-driven skills training, certification, and career ladder development programs that support identified construction workforce and economic development needs.

Based on the challenges identified by the construction industry and highlighted in this report, DOL has made a series of investments totaling more than \$19 million to address workforce needs in the areas of image and outreach; recruitment; skill development and education and training capacity of youth; and skill development and education and training capacity of entry-level and incumbent workers. The demonstrations address the needs of the industry broadly, as well as those of specific industry sectors.

ETA is committed to identifying successful models and resources through the President's High Growth Job Training Initiative in construction and sharing them with the public workforce system. Sharing these models and resources will enable industry stakeholders around the country to develop effective partnerships that simultaneously help the industry address its key workforce challenges and help prepare workers for jobs in a high growth industry that is vital to the economy.

Introduction

Through work on the President's High Growth Job Training Initiative, the Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL) recognizes that workforce development is not separate from economic development and that employment, education, and economic development professionals must work together to solve the workforce challenges of the 21st century economy.

The challenges facing construction stem in part from the demographic trends occurring in America's workforce. It is useful to understand these national workforce shifts, as they provide a context for construction's specific workforce challenges. For nearly two decades, the United States has seen a marked increase in both the size and educational level of the labor force; as a result, the country has experienced strong economic growth. The depth and breadth of the labor pool has been driven by the large numbers of baby boomers, women, and immigrants entering the workforce, as well as a substantial increase in the number of college-educated workers. The current reality is that such growth in new and educated native-born workers has ended. The number of native-born workers age 35-44 will be smaller in the next 30 years and more than 60 million current employees will likely retire during this period.¹ Further, the percentage of the workforce with college degrees is expected to grow very slowly.² The construction industry, like others, will be searching for skilled individuals or individuals with strong learning skills who can be effectively and efficiently trained.

In addition to these demographic trends, it is important to note that many industries also face a host of other pressing workforce challenges. For example, the image of the construction industry could be improved – youth are not aware of the skills required by occupations in the industry, and jobs in the industry are seen as dangerous. Further, difficulty recruiting both youth and individuals in non-traditional labor pools is an additional challenge facing the construction industry. These are just two examples from construction – many industries are also coping with a range of other workforce challenges, in addition to the demographic trends described above.

The changing demographics of the workforce and other issues create new challenges and opportunities for employers, and the President's High Growth Job Training Initiative works collaboratively with employers to address their needs by investing in comprehensive workforce partnerships comprised of key industry stakeholders. The President's High Growth Job Training Initiative promotes a demand-driven approach to solving workforce issues, working with industry leaders to identify and address workforce challenges. During Executive Forums, ETA asks industry leaders to describe current and anticipated demand for workers, skill shortages, views on pipeline capacity, promising workforce practices, and knowledge of the existing public workforce system at the local, state, and federal levels. Through Workforce Solutions Forums, ETA works

¹ Facts on Immigration, National Immigration Law Center, March 2001, page 1.

² DT Ellwood. "The Spluttering Labor Force of the 21st Century. Can Social Policy Help?" National Bureau of Economic Research, June 2001.

with a wide array of stakeholders to explore potential solutions to the industry's challenges, and ultimately invests in innovative partnerships.

While the demographic shifts in America's workforce and other trends pose daunting hiring and training challenges for employers, these challenges can be overcome through comprehensive collaborations among key industry stakeholders. Through the President's High Growth Job Training Initiative, ETA is investing in innovative partnerships in twelve high growth industries, including construction.

Overview of this report

This report is a review and analysis of the work of the President's High Growth Job Training Initiative in the construction industry. It is organized into the following five sections:

- Section I Overview of the Construction Industry and its Sectors**
Introduces the construction industry and its workforce. The overview provides background on the construction industry and its primary sectors, including job growth projections, education and training requirements, and the changing nature of the industry.
- Section II The President's High Growth Job Training Initiative**
Describes the process by which the President's High Growth Job Training Initiative engaged the construction industry and served as a catalyst to identify workforce challenges and implement solutions.
- Section III Construction Industry Workforce Challenges and Solutions**
Identifies the workforce challenges in the construction industry and reports the industry's recommendations on potential solutions to address those challenges.
- Section IV Implementation of Solutions and Conclusions**
Provides insight into implementation strategies and offers concluding comments.
- Section V Appendices**

Section I

Overview of the Construction Industry and its Sectors

Many types of businesses are involved in the construction industry, including those that construct buildings, set-up and complete engineering projects (such as highways and utility systems), prepare sites for new construction, and subdivide land for sale as potential building sites. Construction work may include new developments, additions, alterations, or maintenance and repairs.

The U.S. Bureau of Labor Statistics (BLS) identifies three primary sectors in the construction industry: construction of buildings contractors, heavy and civil engineering construction contractors, and specialty trade contractors. Construction of buildings contractors build residential, industrial, and commercial buildings. Heavy and civil engineering construction contractors are involved in building sewers, roads, highways, bridges, tunnels, and other types of heavy-construction projects. Specialty trade contractors are engaged in specialized activities such as carpentry, painting, plumbing, and electrical work.³

Construction industry representatives define the industry somewhat differently, identifying residential, commercial, and industrial as the three primary sectors. Heavy-highway construction is categorized within the industrial sector by some representatives in the industry; others identify it as a fourth sector in itself. Recognizing that construction stakeholders identify with different sector definitions, the Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL) has made every effort to include stakeholders from all sectors in the President's High Growth Job Training Initiative in the construction industry.

Size of the Industry and Projected Growth

The construction industry generated 4.4 percent of the Gross Domestic Product (GDP) or \$480 billion in 2003.⁴ This industry also employs 28 percent of those working in goods-producing industries, including manufacturing, natural resources, and mining; the construction industry employs about 5.2 percent of the national workforce.⁵ The construction industry is projected to be among the economy's top 10 largest sources of employment growth through 2012, as it is predicted to grow at an average annual rate of 1.3 percent between 2002 and 2012. BLS projects that total employment in the construction industry will increase from 6,731,700 in 2002 to 7,745,400 in 2012, an

³ U.S. Department of Labor, Bureau of Labor Statistics, "Construction Industry at a Glance"
<http://www.bls.gov/iag/construction.htm>

⁴ U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by Industry"
<http://www.bea.gov/bea/dn2/home/gdpbyindy.htm>

⁵ U.S. Department of Labor, Bureau of Labor Statistics, "Construction Industry at a Glance"
<http://www.bls.gov/iag/construction.htm>

increase of over one million new jobs.⁶ Construction is the only goods-producing industry in which employment is projected to grow over this time period.

Why the Construction Industry Will Grow

Although household growth may slow slightly over the coming decade, the demand for residential construction is expected to continue to grow. The demand for larger homes with more amenities, as well as for second homes, will continue to rise, especially as the baby boomers reach their peak earning years and can afford to spend more on housing. At the same time, as the number of immigrants increases and as the "echo boomers" (the children of the baby boomers) start to replace the smaller "baby bust" generation in the young adult age groups, the demand for manufactured housing, starter homes, and rental apartments also is expected to increase.⁷

Employment is expected to grow in nonresidential construction because replacement of many industrial plants has been delayed for years, and a large number of structures will have to be replaced or remodeled. Construction of nursing homes, convalescent homes, and other extended care facilities will increase due to the aging of the population and the growing use of high-technology medical treatment facilities. Construction of schools will increase to accommodate the children of the "echo" boom generation. Employment in heavy and civil engineering construction is projected to increase due to growth in highway, bridge, and street construction, as well as in maintenance and repairs to prevent further deterioration of the nation's highways and bridges.⁸

Employment and Salaries in Construction

As noted above, the construction industry is projected to grow at an average annual rate of 1.3 percent between 2002 and 2012 for a ten-year growth rate of approximately 14 percent. Further, it is important to note that occupations throughout the industry will experience substantial employment growth. Table 1: Occupational Statistics, Training and Earnings for Selected Construction Industry Occupations (page 5) lists various occupations that are expected to increase in employment by at least ten percent between 2002 and 2012. While these occupations have varying education and skill requirements, all are projected to experience a significant increase in total employment.

Construction workers earn more, on average, than workers in other industries. BLS reports that construction workers have an average hourly wage of \$18.51 as compared to \$15.03 for all workers in the private sector, and \$17.75 for all occupations.⁹ These figures vary by region and type of employment.

⁶ Jay Berman, "Industry Output and Employment Projections to 2012," Monthly Labor Review, February 2004, page 65.

⁷ U.S. Department of Labor, Bureau of Labor Statistics, "Career Guide to Industries: Construction" <http://www.bls.gov/oco/cg/cgs003.htm>

⁸ *ibid.*

⁹ U.S. Department of Labor, Bureau of Labor Statistics, "National Compensation Survey: Occupational Wages in the United States, July 2003" <http://www.bls.gov/ncs/ocs/sp/ncbl0635.pdf>

Table 1: Occupational Statistics, Training and Earnings for Selected Construction Industry Occupations¹⁰

Occupation	Total employment		2002-2012 change in total employment		2002-2012 average annual job openings due to growth and total replacement needs	2002 Median annual earnings (Dollars)	Postsecondary education or training category
	2002	2012	Number	Percent			
Total, all occupations	144,014,000	165,319,000	21,305,000	14.8	26,812,000	-	-
Construction laborers	938,000	1,070,000	133,000	14.2	177,000	24,740	**Moderate OJT
Electricians	659,000	814,000	154,000	23.4	71,000	41,390	*Long-term OJT
First-line supervisors/managers of construction trades and extraction workers	633,000	722,000	89,000	14.1	72,000	47,670	Work experience
Plumbers, pipefitters, and steamfitters	492,000	584,000	92,000	18.7	60,000	40,170	*Long-term OJT
Painters, construction and maintenance	448,000	500,000	52,000	11.6	73,000	29,070	**Moderate OJT
Construction managers	389,000	435,000	47,000	12.0	49,000	63,500	Bachelor's degree
Installation, maintenance, and repair workers, all other	185,000	207,000	23,000	12.2	23,000	33,010	**Moderate OJT
Roofers	166,000	197,000	31,000	18.6	41,000	30,180	**Moderate OJT
Helpers-Installation, maintenance, and repair workers	150,000	181,000	30,000	20.3	36,000	21,440	Short-term OJT
All other construction trades and related workers	110,000	146,000	35,000	32.0	19,000	22,900	**Moderate OJT
Helpers-Electricians	99,000	117,000	18,000	17.9	18,000	23,090	Short-term OJT
Helpers-Carpenters	97,000	111,000	14,000	14.0	17,000	21,510	Short-term OJT
Construction and building inspectors	84,000	95,000	12,000	13.8	10,000	41,620	Work experience
Helpers-Pipelayers, plumbers, pipefitters, and steamfitters	79,000	88,000	9,000	10.9	14,000	22,230	Short-term OJT

*More than 12 months of on-the-job training or combined work experience and formal classroom instruction. This can include formal and informal apprenticeships that may last up to five years.

** Skills needed to be fully qualified can be acquired during 1 to 12 months of combined on-the-job experience and informal training.

¹⁰ U.S. Department of Labor, Bureau of Labor Statistics, "Detailed Employment Projection Statistics for Occupational Employment, Training, and Earnings" <http://www.bls.gov/EMP/#data>

Education and Training in the Construction Industry

Basic education, skills requirements and training vary throughout the construction industry. Individuals may enter many jobs in the construction industry without any formal classroom training after high school. Most of the “skilled crafts” require proficiency in reading, mathematics, and safety training.

In many construction occupations, emphasis is on “on-the-job training” and apprenticeships. Some jobs require a few days of training while the skills required for others are substantial. Advanced skills can be learned through apprenticeships or other employer-provided training programs. Skilled workers such as carpenters, bricklayers, plumbers, and other construction trade specialists need either several years of informal on-the-job experience or apprenticeship training. Then, as they demonstrate their ability to perform assigned tasks workers move to progressively more challenging work and responsibilities and earnings increase. Apprentices may qualify for jobs in related, more highly skilled, occupations. For example, after several years of experience, painters’ helpers may become skilled painters. Another alternative is to attend skills training at a community college, vocational/technical school or other educational institution where formal classes and hands-on training are combined.

Education and Training for Construction Management

Managerial personnel in the construction industry usually have a college degree or considerable experience in their specialty. Some community colleges and four year colleges and universities provide construction programs. The American Council for Construction Education (ACCE) is recognized by the Council for Higher Education Accreditation as the accrediting agency for four year baccalaureate-degree programs and two-year associate-degree programs in construction, construction science, construction management, and construction technology. Apprenticeship programs are increasingly linked to community college programs. Many registered apprenticeship graduates can receive college credit for the education and training completed in their apprenticeship program, receiving between half and two-thirds of the credits needed to earn an Associate’s degree.

Apprenticeship

Apprenticeships are frequently used in the construction trades. Employers, employer associations, and joint labor-management organizations, known collectively as apprenticeship sponsors, provide apprentices with instruction that reflects the industry’s needs. Apprenticeship programs, which usually last between three and five years, offer classroom instruction alongside on-the-job training under the close supervision of an experienced craft worker. Minimum qualifications, application and selection procedures, training content, wage progressions, and completion requirements are determined by individual apprenticeship programs. It is estimated that each apprentice receives training worth \$40,000-\$150,000.

ETA and state apprenticeship agencies register and certify apprenticeship programs. Over 6,000 apprenticeship programs for the construction industry are currently

registered with the DOL's Office of Apprenticeship Training, Employer and Labor Services (OATELS). As of October 1, 2004, 156,223 enrollees took part in OATELS-sponsored apprenticeships in the construction industry. The construction industry contributes an estimated \$250 million annually to support apprenticeship in the industry. To identify apprenticeship programs in local areas around the country, please visit the following web site: <http://www.careervoyages.gov/skillstobuild-main.cfm>.

Industry Associations and Labor-Management Organizations

Key stakeholders in the construction industry include industry associations and labor-management organizations. Industry associations serve different types of companies and contractors, and provide their members with a wide range of services. Many industry associations are heavily involved in workforce development, from sponsoring apprenticeship programs to conducting extensive image and outreach campaigns. Labor-management organizations represent the various construction trades. These organizations have an array of responsibilities, and many form joint apprenticeship committees with employers with shared responsibility and supervision of their apprenticeship programs. Labor-management organizations are also involved in other types of workforce development initiatives, such as partnering with Job Corps centers and helping workers enter the industry through the Helmets to Hardhats program.

Innovative Approaches to Training

In addition to on-the-job training, apprenticeship, and academic programs, the industry has implemented an array of innovative strategies to address workforce challenges. An example of an innovative approach to training is the congressionally-funded Helmets to Hardhats program, which connects National Guard, Reserve, and transitioning active duty servicemen and women to jobs in the construction industry. More than 15,000 candidates have registered at www.helmetstohardhats.org.

Another example of an innovative solution in the construction industry is the ACE Mentor Program, which encourages high school students to pursue career opportunities in architecture and construction by matching them with mentors from design and construction firms. Components of the program include visits to local construction companies, field trips to colleges, and a year-long, team based design project that requires students to use skills needed in the workplace. There are many other innovative solutions being implemented in the construction industry. For more information on the ACE Mentor Program, visit the following web site: www.acementor.org.

Section II

The President's High Growth Job Training Initiative

The President's High Growth Job Training Initiative is designed to provide national leadership for a demand-driven workforce system that ensures no worker is left behind. It is a strategic effort to prepare workers for new and increasing job opportunities in high growth/high demand and economically vital industries and sectors of the American economy. The initiative is designed to ensure that worker training and career development resources in the public workforce system are targeted to helping workers gain the skills and competencies they need to obtain jobs and build successful careers in these industries. Through the initiative the Employment and Training Administration (ETA) of the U.S. Department of Labor identifies high growth/high demand industries, works with industry leaders to determine their workforce challenges, and invests in demonstration projects that help ensure individuals can gain the skills they need to get good jobs in rapidly expanding or transforming industries.

The foundation of this initiative is partnerships between the publicly funded workforce investment system, business and industry representatives, and education and training providers, such as community colleges. The purpose of these partnerships is to develop innovative solutions or replicate models that address a particular industry's workforce issues. These solutions demonstrate how a demand-driven workforce system can more efficiently serve the workforce needs of business while effectively helping workers find good jobs with good wages and promising career paths.

The President's High Growth Job Training Initiative process engages each partner in its area of strength. Industry representatives and employers define workforce challenges facing the industry and identify the competencies and skills required for the industry's workforce. Community colleges and other education and training providers assist in developing competency models and training curricula and train new and incumbent workers. The publicly funded workforce investment system accesses human capital (youth, unemployed, underemployed, and dislocated workers), assists with training programs, and places trained workers in jobs.

ETA is modeling the power of this partnership at the national level through investments in demonstration projects in twelve high growth industries, including the construction industry. Each of the 12 industries was selected because it meets one or more of the following criteria: (1) is projected to add substantial numbers of new jobs to the economy; (2) has a significant impact on the economy overall; (3) impacts the growth of other industries; (4) is being transformed by technology and innovation requiring new skills sets for workers; or (5) is a new and emerging business that is projected to grow.

Investments in these sectors are designed to achieve four broad outcomes:

1. Targeted investment of workforce development resources and support for private and public sector partnerships to ensure the development of workers' skills in demand occupations based on industry need.

2. Increased integration of community and technical college efforts with business and the public workforce system activities to meet the skills training needs of high growth industries.
3. Increased opportunities for employers to use apprenticeship training as skills development methodology, combining on-the-job training and academics, to ensure a pipeline of skilled workers.
4. Providing workers with paths to career enhancing opportunities in high growth occupations.

By expanding the local workforce system's capacity to be market-driven, responsive to local economic needs, and a contributor to the economic well-being of the community, ETA is promoting workforce quality, enhanced productivity, and economic competitiveness.

The President's High Growth Job Training Initiative Process in the Construction Industry

Construction is one of the industries targeted through the President's High Growth Job Training Initiative in large part because it is among the economy's top 10 largest sources of employment growth through 2012 (see Section I for more information on the industry's employment projections). In addition, other sectors of the economy depend on the construction industry to build and maintain the facilities and infrastructure that are vital to their daily operations. Finally, many occupations in construction (e.g. carpenters, electricians) are also integral to other industries, so workforce solutions that target these occupations may benefit other industries as well.

Phase I: Gathering Information

The first step in the President's High Growth Job Training Initiative in the construction industry was to develop an environmental scan of the industry to provide a baseline for assessing construction's workforce needs. After completing the environmental scan, staff from the Business Relations Group (BRG) met with representatives from four industry associations to validate the information gathered in the scan, discuss the structure of the industry and key trends, and begin to identify pressing workforce challenges. See Appendix A for a list of associations that participated in this meeting.

The Executive Forums

ETA Assistant Secretary Emily Stover DeRocco then convened Executive Forums with leaders in the construction industry. Held in Washington, D.C., the forums served as an opportunity for industry leaders to discuss their current and future workforce issues and concerns with ETA. There were five separate Executive Forums: one focused on the workforce challenges experienced by employers involved in the construction of buildings, two focused on the workforce challenges experienced by employers involved in heavy construction projects, a cross-sector forum was co-sponsored with the Construction Industry Round Table, and one was held with representatives from labor-management organizations. See Appendix A for a list of employers, associations, and organizations that were represented at the Executive Forums.

Forum Outcomes: Construction Industry Workforce Challenges

Industry leaders identified a wide range of workforce challenges during these forums. Examples of specific challenges which surfaced repeatedly during the forums included:

- The industry's current shortage of workers. A number of industry leaders noted that they are already experiencing shortages of workers.
- The industry's need to improve its image. For example, occupations in the industry are seen as dangerous, and there is little awareness of the high skill level required for many jobs in the industry.
- The need to improve the skills of youth. Industry leaders cited a lack of basic academic and employability skills among some youth, as well as insufficient capacity and capability among some of the education and training providers that serve this demographic group.
- The need for some entry-level workers to enhance their language skills. Individuals with limited English proficiency comprise a significant percentage of the construction workforce, and language barriers can ultimately affect the safety and health of construction workers as well as limit their training opportunities.

Based on extensive feedback gleaned through the Executive Forums from industry leaders, ETA distilled the list of challenges into four broad areas. First, the image of the industry could be improved among key demographic groups, including youth, parents, educators, and guidance counselors. Second, the industry faces recruiting challenges, including recruiting youth and individuals in non-traditional labor pools. Further, the skills of youth could be improved, and the capacity and capability of some of the education and training providers that serve youth could be enhanced. Finally, the skills of both entry-level and incumbent workers could be improved, and the capacity and capability of some of the education and training providers that serve these workers could be enhanced. These challenges are discussed in detail in Section III.

The Construction Workforce Solutions Forum

Following the Executive Forums and the analysis of industry leaders' input on workforce challenges, ETA worked with representatives from a variety of the industry's key stakeholders to validate these challenges, and explore potential solutions. On June 16 and 17, 2004, over 60 industry leaders participated in ETA's Construction Workforce Solutions Forum in Irving, Texas. Applying its demand driven, partnership-based approach, ETA invited representatives from businesses, industry associations, labor-management organizations, the public workforce investment system, educational institutions, and other entities to participate in the forum.

Attendees identified over 400 potential solutions to the industry's workforce challenges. Participants determined that 28 solutions were the highest priority and developed them in more detail. ETA has consolidated each of the promising workforce solutions identified by attendees into a single master "solutions matrix" that offers strategic guidance and suggests where public and private resources should be invested. See Appendix B for the highest priority solutions that were developed. For a list of all the solutions identified at the forum, please visit the BRG's web site: www.doleta.gov/BRG/JobTrainInitiative/.

Section III

Workforce Challenges and Solutions in the Construction Industry

Through the President's High Growth Job Training Initiative in the construction industry, the Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL) has worked with industry leaders to identify the primary workforce challenges facing the construction industry, as well as possible solutions to those challenges. Extensive feedback from industry leaders during the Executive Forums enabled ETA to determine the construction industry's workforce needs. At the Construction Workforce Solutions Forum, a wide variety of stakeholders worked together to validate the industry's workforce challenges and to identify potential solutions to those challenges. The following section of this report provides background on the four broad categories of challenges facing the construction industry and a brief overview of the solutions to each of those challenges that attendees identified during the Construction Workforce Solutions Forum.

Challenge: Industry Image and Outreach

Perhaps the most complex and pressing challenge facing the industry is to improve the industry's image. During the Executive Forums, attendees reported that the industry's image could be enhanced in a number of key areas, including safety, skill requirements, and corporate culture. For example, industry leaders reported that jobs in the industry are seen as dangerous. Poor industry image, tough working conditions, and the industry's perceived poor safety record have contributed to the decline in the number of people willing to enter and remain in the industry.¹¹ Further, the image of the industry could be improved among several demographic groups, including youth, parents, educators, and guidance counselors. For example, youth and guidance counselors are not aware of the skills required by many occupations in the industry; and young people making career choices can be highly influenced by an educational system that does not understand the industry and by parents and friends who are unaware of its many benefits and opportunities.¹²

Further research reinforces leaders' comments that youth's perceptions of careers in the construction industry could be improved. A Wall Street Journal Almanac Poll of high school-aged vocational technology students ranked "construction worker" 248th out of 250 possible occupation choices, ahead of "dancer" and "lumberjack" and just edged out by "cowboy."¹³ Further, fewer youth are involved in extracurricular activities that provide them with exposure to career opportunities in construction. According to Skills USA-VICA, which coordinates vocational clubs in high schools, fewer students are

¹¹ The Construction Industry Institute, "Report: The Shortage of Skilled Craft Workers in the U.S.," September 2003: http://construction-institute.org/services/catalog/more/182_1_more.cfm

¹² "Confronting the Skilled Construction Workforce Shortage: An Update," The Construction Users Roundtable, June 2004: Page 1.

¹³ "Causes of the Construction Skilled Labor Shortage and Proposed Solutions," Abdol R. Chini, Brisbane H. Brown, and Eric G. Drummond, The M.E. Rinker, Sr. School of Building Construction, University of Florida, Gainesville, Florida: April 1999.

learning carpentry this year than last, while clubs for computers and culinary arts have growing memberships.¹⁴

Solutions: Industry Image and Outreach

During the Construction Workforce Solutions Forum, industry stakeholders discussed strategies for helping the industry improve its image among four key demographic groups – youth, parents, educators, and guidance counselors. Rather than develop discrete strategies targeted at individual demographic groups, the stakeholders in the image and outreach workgroup chose to develop three broad solutions to improve the industry’s image that could be targeted at multiple groups: launching a national media campaign, helping supervisors and owners look proactively at long term solutions, and expanding or creating “construction academies” in high schools.

National Media Campaign

Attendees believe that a national media campaign can help improve the image of the industry. This campaign could utilize different mediums (e.g. TV, radio), and spokespersons from different demographic groups (e.g. women, Native Americans, Hispanics). The campaign could emphasize the career ladders in the industry, and provide perspectives from different types of workers in the industry, such as managers and individuals in different crafts. A number of different stakeholders need to be involved for this campaign to be successful, including associations, educators, and the media. Attendees noted that this campaign faces several barriers to implementation, including money and the ingrained stereotypes about the industry. A national media campaign could dispel many of the negative myths and stereotypes that accompany the construction industry throughout the media.

Supervisors/Owners Proactively Look at Long Term Solutions

Incumbent workers in the construction industry do not view themselves as positively as they could; their image of the industry could be improved as well. Owners of construction companies, as well as supervisors, need to identify lasting, long-term strategies for boosting incumbent workers impressions of themselves and the industry. These strategies could include ensuring that companies identify the career ladders that exist for employees and provide continuing training for workers. Owners and supervisors need to work with incumbent workers to identify and implement these strategies.

Expand or Create a Construction Academy in High Schools

Creating construction academies across the country would help ensure that students have the skills needed in the industry. Attendees believe that these academies should use a magnet school approach, provide scholarships to graduates, and utilize a nationally recognized curriculum. It is critical that a variety of groups – businesses, students, parents, educators, and guidance counselors – support the academies and

¹⁴ “Skilled Construction Labor Shortage Underscores Need for More and better Training,” Kathy Price-Robinson, The Engineered Wood Association, http://www.apawood.org/level_b.cfm?content=pub_ewj_arch_s00_help

understand the opportunities that these academies can provide. Key stakeholders in the success of these academies are associations, educators, and school districts.

It is important to note that DOL is currently involved in a project that will help the construction industry address its workforce development needs: the “Skills to Build America’s Future” initiative. “Skills to Build America’s Future,” sponsored by DOL, the Construction Industry Round Table, the National Association of Home Builders, and the National Heavy & Highway Alliance, promotes career opportunities in the skilled trades. The initiative utilizes a wide array of innovative strategies, from partnerships with schools to sponsorships with sports leagues to TV and radio ads. For more information on the “Skills to Build America’s Future Initiative,” please see Appendix C.

Challenge: Recruitment

During the Executive Forums, industry leaders reported that the construction industry is experiencing a significant shortage of workers. One reported that the industry is “starving for folks,” while another said that his company simply cannot “find enough bodies.” Industry stakeholders noted that the construction industry has difficulty recruiting individuals from two general demographic groups: youth and non-traditional labor pools (e.g. women). Some industry representatives point out that the pipeline of potential employees is essentially empty and yet demand is growing, not standing still.¹⁵ Though the industry has made extensive efforts to target youth, it is challenging for the industry to recruit them. At the same time, women and other representatives of non-traditional labor pools are not as prevalent in the industry as they could be.

Construction industry executives identified at least three reasons that the industry has difficulty recruiting individuals from these demographic groups. First, some job seekers are simply not aware of job opportunities in the industry; industry leaders reported that youth, guidance counselors, and members of non-traditional labor pools could have a greater understanding of career opportunities in the industry. Second, the poor image of the industry (e.g. dangerous working conditions, low skill requirements) hinders recruiting efforts. Third, some incumbent workers have little experience working with members of non-traditional labor pools.

Recent research strongly supports these findings, and indicates that the industry’s recruitment challenges may only grow more significant. A Construction Industry Institute study indicates that 75 percent of contractors are experiencing shortages of workers. In the face of these shortages it appears the industry will need to recruit hundreds of thousands of workers each year. The construction industry is projected to experience significant growth, as total employment increases from approximately 6.7 million jobs in 2002 to approximately 7.7 million jobs in 2012. In addition to finding workers for these new jobs, the industry will be coping with retirements as “baby boomers” leave the workforce. As a result of job growth, retirements, and attrition, the construction industry will need to attract 240,000 workers each year to replace those

¹⁵ “Who Will Build the Houses?” William H. Lurz, Professional Builder, January 1999: Page 83.

leaving the workforce or retiring, while still allowing for industry growth.¹⁶ These trends indicate that recruiting will become an increasingly prominent workforce challenge.

Solutions: Recruitment

Based on feedback gleaned through the Executive Forums, ETA asked attendees to identify potential solutions to recruiting three general demographic groups: youth, non-traditional labor pools, and traditional labor pools. Attendees suggested numerous strategies.

Recruiting Youth

Participants suggested that high school science and math courses could be created to target the construction industry. These courses could ensure that skills learned are transferable to industry, and articulate with community college and apprenticeship programs. A second strategy for recruiting youth is providing them with state-level labor market information via the Internet. It would be beneficial to offer youth information on wages, benefits, and career ladders. Finally, attendees suggested that the industry could recruit youth by partnering with local high school trade classes. Industry associations could develop internet-based and CD games about different construction occupations, while companies could provide students with tours of the job site and guest speakers.

Recruiting Non-Traditional Labor Pools

One potential solution that participants discussed is targeting training to prisoners while they are incarcerated. This solution could include starting pre-apprenticeship or apprenticeship programs in prisons, matching prisoners to employers and local Workforce Investment Boards (WIBs), and advertising the benefits of hiring prisoners to employers (e.g. tax incentives, trained workers). A key barrier to implementing this solution is the poor perception of this population. Individuals with disabilities are a demographic group that could be more prevalent in the construction industry, and a second solution suggested by participants is matching jobs that could be performed by this population with local needs. It will be important to increase employer awareness of the benefits of hiring individuals with disabilities, and involving local vocational rehabilitation staff in any collaboration.

Recruiting Traditional Labor Pools

Participants also identified several strategies for recruiting traditional labor pools. This includes efforts to market the industry, focusing on the benefits of working in the industry. Attendees suggested using non-traditional venues for marketing the industry, such as NASCAR events, rodeos, and graduations. Recruiting in rural areas and small towns could also help attract traditional labor pools to the construction industry. Strategies for recruiting in these areas must be based on solid research about rural culture and demographics, and could utilize local resources such as local chambers of commerce. Increasing industry awareness of the resources available through the public

¹⁶ "Who Will Be the Builders of Tomorrow?" Buildings.com Magazine, <http://www.buildingsmag.com?Articles/detail.asp?ArticleID=1846>

workforce investment system could also help hiring efforts. WIBs could highlight their ability to post available job openings, and industry associations could develop information about the public workforce investment system for their members.

Challenge: Skill Development and Education and Training Capacity: Youth

One of the overarching workforce challenges that emerged from the Executive Forums is that some youth lack the academic and employability skills needed to be successful in the construction industry. Throughout the Executive Forums, attendees reported that youth lack both the math and language skills required in the industry, as well as a wide range of employability skills. Several attendees reported that young people lack a strong work ethic. Loyalty was another attribute that industry leaders found lacking in today's youth. At the same time, industry leaders reported that the capacity and capability of education and training providers that serve youth could be improved. For example, some vocational-technical high schools lack key resources, such as books and curriculum, and secondary school teachers could benefit from spending time in apprenticeship programs.

Solutions: Skill Development and Education and Training Capacity: Youth

Based on this feedback, participants at the Construction Workforce Solutions Forum were asked to identify solutions in three specific areas: increasing the skill levels of youth, enhancing the capacity and capability of education and training providers, and increasing partnerships and information sharing among key stakeholders.

Increase the Skill Levels of Youth

One strategy for increasing the skill levels of youth is involving teachers and administrators in trade-sponsored externships, which could help key personnel at secondary schools, better understand the connection between education and the workplace. Teachers and administrators may need incentives to participate in an initiative like this, such as stipends or continuing education credit. Developing summer construction camps that serve youth from grade school through high school could also increase skill levels. These camps could provide youth with very interactive learning environments, offering field trips, hands-on learning exercises, and other activities. Finally, businesses could partner with school systems to help form academic and skill development curriculum.

Capacity and Capability of Education and Training Providers

Organizations that serve workers (both labor-management organizations and other entities), industry associations, and other stakeholders could work together to support apprenticeship programs. These programs need to include standardized basic skills curricula for each construction specialty. Secondary schools also need to ensure that students that do not go on to college - those that are “career-bound” - learn math, reading, and communication skills. Schools could help students acquire these skills by demonstrating their practical application, and ensuring that courses are specifically tailored for the “career-bound” as well as the “college-bound.” Employers could boost the capacity of education and training providers by “adopting” secondary schools; this would also help the industry market the construction trades to students and improve recruitment efforts. Finally, legislators need to be educated on the importance of trade and industrial classes that introduce technical skills so they can become advocates for these programs.

Partnership and Information Sharing

The construction industry can help youth develop the necessary skills by modifying training to appeal to the current generation of youth. This could include identifying innovative ways to deliver curriculum and providing flexible schedules for receiving training. Multiple stakeholders could also work together to develop a national marketing effort that is specifically designed to provide youth with select information on the construction industry (e.g. career ladders, local resources for training, etc.). Expanding on the Skills to Build America’s Future Initiative, this collaboration could include multiple stakeholders, such as employers, labor-management organizations, educators, and parents.

Challenge: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers

The fourth broad type of workforce challenge currently facing the construction industry is developing the skills of entry-level and incumbent workers, as well as boosting the capacity and capability of education and training providers that serve these labor pools.

Throughout the Executive Forums, attendees highlighted a number of skill development challenges facing entry-level workers, such as the challenges experienced by individuals for whom English is not their first language. This demographic group comprises a significant percentage of the construction workforce, and many of these workers could improve their language skills. Limited English language skills can hinder their safety and the safety of their peers, and can also check their career ladder progression.

Other entry-level workers lack the skills to effectively use the increasingly complex technology being utilized in the construction industry, such as equipment that is used in heavy construction projects. Incumbent workers face challenges as well, such as a

need to boost their leadership and management skills. Some incumbent workers have little experience working with non-traditional labor pools.

The education and training providers that serve entry-level and incumbent workers also face a range of challenges. Some providers have limited capacity (e.g. community colleges sometimes lack the space to accommodate more students). Further, while there are many different stakeholders providing education and training in the construction industry, these organizations could collaborate more frequently to provide composite training.

Solutions: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers

Guided by this feedback, participants at the Construction Workforce Solutions Forum were asked to identify solutions in four specific areas: skill levels of entry-level workers, leadership and management skills of incumbent workers, capacity and capability of education and training providers, and partnerships and information sharing among key stakeholders.

Skill Levels of Entry-Level Workers

One solution for increasing the skill levels of entry-level workers is developing a pre-apprenticeship/pre-employment program that is led, supported, and funded by a partnership. One key attribute of this program should be an assessment and screening process that identifies the most qualified candidates for the program. Candidates should be assessed in a wide range of skills, including logic and critical thinking, language skills, and mechanical aptitude. In addition to a broad based overview of the construction trades, this program could introduce trainees to several fundamental trades-related skills, such as precision measuring, reading blue prints, and safety. Key partners in the development of this program could include industry associations, labor-management organizations, DOL, and WIBs.

Leadership and Management Skills of Incumbent Workers

Industry associations could include cultural awareness, ethics, and diversity training in their continuing education and other training programs. Leadership buy-in and commitment are essential to the successful inclusion of these topics in association training programs, and these programs must ultimately be utilized by workers in the field rather than just top management. Associations could also provide enhanced opportunities and pathways to workers in under-represented groups to pursue management and leadership skills training. Role models and mentors are critical to efforts to help under-represented groups pursue management positions, and individual employees could be “groomed” for these positions.

Capacity and Capability of Education and Training Providers

Community colleges and equipment manufacturers could collaborate to create a skill training program for a specific trade. A key component of this approach would be opportunities for students to pursue employment opportunities with companies linked to

the program. A separate, though related, solution that includes variety of stakeholders – including WIBs, education and training providers, and employers – is to create a training program for the skilled trades that is based on the specific needs of a local area. This option hinges on identifying regional economic trends, including the projected growth of the construction industry and other key labor market information, and completing an inventory of providers' capacity. Developing and implementing web-based training could also boost the capacity and capability of education and training providers.

Partnership and Information Sharing

A wide array of stakeholders in construction, including industry associations, labor-management organizations, employers, and DOL, could work together to develop a comprehensive career pathway in the construction industry. This career pathway could include training options that are available for workers at different points in their career progression, from pre-apprenticeship career preparation to skill upgrading for journeymen to management skill acquisition. DOL could act as an ombudsman, distributing communications via the Internet and trade journals.

Section IV

Implementation of Solutions and Next Steps

The Employment and Training Administration (ETA) supports comprehensive business, education, and workforce development partnerships to develop innovative approaches or replicate models that operationally demonstrate how a demand-driven workforce system can more effectively serve the workforce needs of business while also effectively helping workers find good jobs with good wages and promising career pathways. Grants awarded under the President's High Growth Job Training Initiative implement unique and innovative, industry-driven skills training, certification, and career ladder development programs that support identified construction workforce and economic development needs.

Based on the challenges identified by the construction industry and highlighted in this report, the U.S. Department of Labor (DOL) has made a series of investments totaling more than \$19 million to partnerships between businesses, community colleges, workforce investment boards, and others to address the workforce needs of the construction industry. These investments address the following challenges:

- expanding the pipeline of youth entering the construction industry;
- enhancing the capacity of secondary schools to prepare youth to enter post-secondary programs and employment in the construction industry;
- providing a career lattice approach to the recruitment, education, training, professional development, and job placement of construction workers;
- helping alternative labor pools, such as women, learn about career opportunities and gain skills needed in the construction industry;
- enhancing the capacity of community colleges and the public workforce system to help alternative labor pools enter the industry; and,
- creating comprehensive partnerships that help entry-level workers enhance their skills and utilize apprenticeship and other training programs.

Solutions are national, state, and local in scope and address industry challenges in unique and innovative ways. The following are brief summaries of solutions in which ETA invested in order to address the aforementioned industry challenges. For more detailed information on these investments, including grantees, partners, and outcomes, please visit www.doleta.gov/BRG.

- Create a systemic approach to construction industry workforce development that provides a continuum of recruitment, career exploration, education, and training, beginning with middle and high school and continuing through post-secondary education and life-long learning. Ten national sites will be chosen to serve 2,500

individuals, including high school students, incumbent workers, and dislocated workers. Sites will offer training in crafts, such as carpentry, electrical wiring, plumbing, and heating and air conditioning. Develop an associate's degree or equivalent credential that incorporates the skills needed in residential construction.

- Launch an outreach campaign to attract women into the construction industry. This campaign will include professional outreach and marketing materials that focus on women, as well as orientation sessions and job fairs that focus on construction industry careers. Help women address their barriers to employment through an array of education, training, and support services, such as career planning, placement, and mentoring by women currently working in the industry. Work with One-Stop Career Centers, apprenticeship information centers, and community colleges to enhance their capacity to serve women.
- Create a Construction Academy that provides high school students with an array of construction-specific courses and career opportunities in the construction industry. Develop a standards-based curriculum that fits in with construction certificate and degree programs at community colleges. As sophomores, students will receive an overview of construction careers and begin developing construction specific-skills. Then, during their junior and senior years, students will focus on acquiring the skills needed in specific trades and occupations. Through a speaker's bureau, employers will visit schools and provide students with information on careers in the industry. An internship program also will help students gain hands-on experience.
- Train and license high school instructors in skill standard certifications so that they can teach and certify students in advanced manufacturing and construction skills. Work with employers, community and faith-based organizations, and One-Stop Career Centers to identify entry-level and incumbent workers with a strong interest in advancing their construction or advanced manufacturing careers, to enhance their academic skills and access support services, and help them enroll in an industrial mechanic program or other types of training. Create an eight-week maintenance technician training program that is accessible for dislocated workers.
- Sustain existing construction career academies in two cities, and develop additional career academies in eight local communities. Career academies will be established in communities with a demonstrated need for workers and interest among multiple partners in participating in the academy. Academies will receive technical assistance in a number of areas, such as developing curriculum and forming partnerships between businesses and educational institutions. The grantee will develop guidelines to help employers, educators, and stakeholders in local areas that are not part of the grant develop their own construction career academies.
- Develop and test an innovative, industry-driven curriculum that focuses on the traditional building arts, such as carpentry, ironwork, masonry, timber framing, plasterwork, and stone carving. Establish partnerships with industry organizations for future internship programs. Work with other national and international

organizations with shared interests in building arts to develop a sustainable and replicable training and development model that can be implemented throughout the country.

- Serve adjudicated youth through a training program that combines academic instruction with construction skill development and enables youth to build affordable housing in local communities. Provide youth with significant support systems, including: mentoring that will continue for at least a year after the program; follow-up education, employment, and personal counseling services; and participation in community service and civic engagement. Work with local One-Stop Career Centers to place youth in employment upon completion of the program.

Conclusion

The construction industry is vital to the American economy. The industry employed 6.7 million workers in 2002, and total employment in construction is projected to grow by over one million new jobs between 2002 and 2012. Further, other industries depend on construction to build and maintain the facilities and infrastructure that are crucial to their daily operations. However, the industry faces a wide array of workforce challenges, from an industry image that could be improved to difficulty recruiting youth and individuals in non-traditional labor pools. These challenges must be addressed to ensure the continued vitality of construction and other industries.

Through the President's High Growth Job Training Initiative in construction, ETA has invested in a wide array of innovative workforce partnerships. These investments were made after ETA worked closely with industry leaders to determine the primary hiring and training challenges facing the industry. These partnerships demonstrate how a demand-driven workforce system can more efficiently serve the workforce needs of business while effectively helping workers find good jobs with good wages and promising career paths.

However, these investments are just one step in ETA's ongoing commitment to the construction industry. ETA is committed to identifying successful models and resources through the President's High Growth Job Training Initiative and sharing them with the public workforce system. Sharing these models and resources will enable industry stakeholders in states and localities around the country to develop successful partnerships that help the industry address its key workforce challenges while preparing workers for jobs in a high growth, economically vital industry.

Section V ***Appendices***

Appendix A: Participants in Executive Forums and Industry Round Table Discussion

Appendix B: Construction Industry's Solutions Matrices

Appendix C: Overview of Skills to Build America's Future Initiative

Appendix A: Construction Industry President's High Growth Job Training Initiative Industry Round Table and Executive Forum Participants

November 25, 2003 (Industry Round Table)

- Associated Builders and Contractors
- Associated General Contractors of America
- Independent Electrical Contractors
- National Association of Home Builders

April 5, 2004 (Construction of Buildings Executive Forum)

- Associated Builders and Contractors
- Associated General Contractors of America
- Independent Electrical Contractors
- Mechanical Contractors Association of America
- National Association of Home Builders
- National Electrical Contractors Association
- National Roofing Contractors Association
- Sheet Metal and Air Conditioning Contractors' National Association
- Employers
 - 1st Minot Realty & Management, Inc.
 - Climate Engineers, Inc.
 - Conine Residential Group, Inc.
 - Duffy Mechanical
 - Jaynes Structures
 - L.A. Downey and Son, Inc.
 - Magco Inc.
 - Manganaro Midatlantic, LLC
 - Mitchell & Best Group
 - Zachry Construction Corporation

April 28, 2004 (Executive Forum co-sponsored with the Construction Industry Round Table)

- Employers:
 - Alberici Constructors
 - Baker Concrete Construction, Inc.
 - Cianbro Corporation
 - EMCOR Construction Services
 - Kennedy Associates Inc.
 - Performance Contracting Group
 - Rodgers Builders, Inc.
 - Sundt Construction, Inc.
 - The Thornton -Tomasetti Group, Inc.
- National Heavy & Highway Alliance

April 29, 2004 and April 30, 2004 (Heavy Construction Executive Forums)

- Associated General Contractors of America
- American Concrete Pavement Association
- American Road and Transportation Builders Association
- National Asphalt Pavement Association
- National Heavy & Highway Alliance
- National Stone, Sand and Gravel Association
- Employers
 - Bechtel Construction Company
 - D.B. Hill Construction, Inc.
 - Dan Gernatt Gravel Products, Inc.
 - Dolese Brothers Company
 - Gradex, Inc.
 - Griffith Company
 - Highway and Safety Services
 - Jack L. Massie Contractors, Inc.
 - Kiewit Construction Company
 - LG Constructors, Inc.
 - Vulcan Materials Co.
 - Washington Group International

June 2, 2004 (Executive Forum with Labor-Management Organizations)

- AFL-CIO's Building and Construction Trades Department
- Center to Protect Workers' Rights
- Helmets to Hardhats
- International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers
- International Association of Heat and Frost Insulators and Asbestos Workers
- International Brotherhood of Electrical Workers
- International Union of Painters and Allied Trades
- International Union of Elevator Constructors
- International Union of Operating Engineers
- Laborers-AGC Education and Training Fund
- United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the U.S. and Canada.

Appendix B: Construction Industry’s Solutions Matrices

Overarching Issue: Image and Outreach to the Public				
Sub-Issue: Youth, Parents, Educators, Guidance Counselors				
Solution: National media campaign that improves the image of the industry.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
Career ladders of industry Betterment of industry as a whole Representation of various sectors Managers Workers Crafts - electrical operators, laborers, etc. Different mediums Identify with spokesperson Different spokesperson, i.e. Hispanic, Native American, women, etc.	“Skills USA” Associations/industry players (inclusive) Educators (K-12) Government (DOE, DOL), manufacturers Service providers (uniforms, etc) Foundations, private industry WIBs Local elected officials	Public media Celebrity spokesman Foundations Private business Educators Insurance Manufacturers WIBs (see Stakeholders) Chamber of Commerce	Money fragmentation Stereotype Timeline (20 years sustainability) Work for betterment, not industry Lack of coordination Buy-in	Pool of industry (necessary firms, not just associations) Will work for all audience members (youth, parents, educators, etc.)

<p>Educational kits (tool kits, etc.)</p> <p>Tag-on to retailers (Home Depot, Lowes) for educating children</p> <p>Diversity in toys, children program</p> <p>ChildrenTV</p>	<p>Users of construction (airports, etc.)</p> <p>Insurance agencies</p> <p>OSHA</p> <p>Public media</p> <p>Boy and Girl Scouts</p> <p>Job Corps</p>	<p>Job Corps</p>		
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Solution Matrix

Overarching Issue: Image and Outreach to the Public				
Sub-Issue: Youth, Parents, Educators, Guidance Counselors				
Solution: Supervisors/owners proactively looking at long-term solutions.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Buying from companies</p> <p>Continuing training</p> <p>Incumbent workers have to be at the table</p> <p>Issue identified by workers</p> <p>Realize this is training to fix issues to live a better life</p> <p>Workers help solution</p> <p>Companies help with training and workers need to show up</p> <p>Companies voted as top companies to work for - what can we pull from that?</p>	<p>Incumbent workers</p> <p>Management</p> <p>WIB</p> <p>Education</p> <p>Users of construction</p> <p>Positive media (local and national)</p>	<p>WIB - incumbent workers (one-stop career centers)</p> <p>Companies - private industries - owners</p> <p>Education and training</p>	<p>Identify ROI</p> <p>Recognize as training</p> <p>Money</p> <p>Lack of understanding that employers will benefit</p> <p>Concern that employees will leave</p> <p>Guarantee on return on investment</p>	

<p>Companies need to create importance of education and training</p> <p>Display career ladders</p> <p>Eliminate the “Good Ole Boy” image</p> <p>Company looks at people as human capital</p>			<p>Recognize that lay-offs impact</p> <p>Frontline leadership</p>	
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Solution Matrix

Overarching Issue: Image and Outreach to the Public				
Sub-Issue: Youth, Parents, Educators, Guidance counselors				
Solution: Expand or create a “Construction Academy” in high schools so that it’s a “national” program so that across the U.S. construction companies would recognize what the student has completed and there is value to the company that the student has as a result of completing the academy (involves a national curriculum).				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Magnet school approach</p> <p>Scholarships for construction and apprenticeships</p> <p>National recognized curriculum</p> <p>Buy in- parents, students, educators, guidance counselors need to understand opportunities</p> <p>Local business buy-in first in addition-not a substitute</p>	<p>National Academy Foundation Naf.org</p> <p>Associations</p> <p>Educators</p> <p>Independent School Districts</p>	<p>NCCER had curriculum</p> <p>Foundations</p> <p>WIBs</p> <p>Carl Perkins</p>	<p>So many tasks to complete</p> <p>Integration with education system</p>	

Solution Matrix

Overarching Issue: Recruiting				
Sub-Issue: Recruiting Traditional Labor Pools				
Solution: Target market construction industry with focus on benefits and returns. Develop non-traditional venues for marketing; e.g. NACAR, rodeos, graduations. Include a modern image.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources for this Solution (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Being able to compile regional wage and salary data for use in marketing/advertising</p> <p>Need a means of distributing information/advertising</p> <p>Need to specify audience</p> <p>Organize trade associations to work together</p> <p>Establish a clear need and identify the return</p> <p>Explain advantages of growing into owning your own business</p> <p>Focus on the “career lattices,” not the “laborer” image. Need to define the <u>lattices</u>.</p> <p>Advertise it strongly</p>	<p>Trade associations</p> <p>Employees</p> <p>Vendors/manufacturers</p>	<p>Money- fed/local/state public and private funding targeted grants and funds</p> <p>Leadership to build effort</p> <p>Need a paid/staffed effort</p>	<p>Getting salary information from businesses to use in marketing</p> <p>Available time of employers, assistants and others</p>	

Solution Matrix

Overarching Issue: Recruitment				
Sub-Issue: Recruiting Non-Traditional Labor Pools				
Solution: Work with military to recruit recent discharges by forming partnerships with each branch of the Armed Forces to recruit already trained personnel as they are exiting the military.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Industry must identify what their needs are</p> <p>Industry must project future needs (up to 6 months) to provide time to acquire training and/or certifications</p> <p>Define the MOS (Military Occupational Specialty) that relates to the industry need and match to industry needs (translate and match skills to civilian world)</p> <p>Develop a partnership with the Military Educational Service Officer for each base and all Armed Forces to utilize the service database to identify personnel exiting the military nation-wide</p>	<p>Workforce Investment Boards</p> <p>Armed Services</p> <p>Construction industry</p> <p>Trade associations</p> <p>Unions</p> <p>Chambers</p> <p>Schools/ educational systems/ colleges</p> <p>Equipment companies (employers)</p> <p>Career development services</p>	<p>DOL/ TAP and VETS</p> <p style="margin-left: 40px;">└─> tuition assistance program</p> <p>VA (Veterans Administration)</p> <p>VETS</p> <p>Military Educational Services Officers</p> <p>WIBs</p> <p>Industry trade associations</p>	<p>Cross agency/ cross industry turf issues</p> <p>Ignorance of system</p> <p>Funding</p> <p>Staffing to do this</p> <p>Facilitating re-entry is counter productive to retention for military personnel</p>	

Advertise the system and partnership to workforce boards, military, service men and women, colleges and employers				
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Solution Matrix

Overarching Issue: Recruitment				
Sub-Issue: Recruiting Non-Traditional Labor Pools				
Solution: Target training to prisoners during incarceration, promote awareness, match employer to prisoner and the local WIB. Advertise federal incentive programs to employers (tax incentive, federal bonding, trained workers, external supervision to prisoners, subsidized work, having benefits, child support, personal esteem) and the community. Export same initiatives to Transition Homes for Monitored Supervision.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ol style="list-style-type: none"> 1. Training programs within prison and jail system 2. Industry awareness regarding the benefits for hiring an ex-offender 3. Selling, marketing successful candidates who are producers to new industry members 4. Education on risk level 5. Survey what are the # of offenders in your state 6. Industry needs to know the risk with this population <p>Employers or labor councils should participate in prisons' "pre-release" activities to assess soon to be released inmates' skills sets and recruit them into jobs that include training</p>	<p>WIB</p> <p>Jail and corrections</p> <p>Probation, parole</p> <p>Industry</p> <p>Families</p> <p>Technical colleges</p> <p>Offenders</p>	<p>Department of Corrections</p> <p>County jail</p> <p>WIB</p> <p>Industry</p> <p>(Trade)</p> <p>Churches</p>	<p><u>Long term</u> focused</p> <ol style="list-style-type: none"> 1. Maintain support- job coaching for participant 2. Employer perceived risk 3. Liability 4. Poor perception of this population 	

<p>Start apprenticeship or even pre-apprenticeship programs in prisons. Collaborate with state and local public workforce system</p> <p>Support construction education programs offered by the prison system. Be ready to provide employment after release from prison</p>				
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Solution Matrix

Overarching Issue: Recruitment				
Sub-Issue: Recruiting Non-Traditional Labor Pools				
Solution: Identify jobs that could be done by persons with disabilities and match jobs to local needs and individual capabilities.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Individuals with disabilities have skills that should be utilized in certain industries</p> <p>Establish an employer- Employer awareness Open to possibilities Have Division of Vocational Rehabilitation come to work site to conduct a screening Offer training in pre-fab or piece work that can be done at contractors shop rather than on the job site Industry develop specific job descriptions that match disabilities to increase pool of potential employees</p>	<p>Families</p> <p>WIB</p> <p>Industry</p> <p>Health and human services</p> <p>DVR (RSA)</p> <p>Hospitals and rehabilitation facilities</p>	<p>RSA</p> <p>WIB</p> <p>Industry</p>	<p>Misconceptions</p> <p>Ignorance</p> <p>Training issues</p> <p>Other employees due to special treatment</p> <p>Persons with disabilities and their misconceptions</p>	

Solution Matrix

Overarching Issue: Recruitment				
Sub-Issue: Recruiting and Traditional Labor Pools				
Solution: Recruit in rural areas and small towns at high school.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>The recruitment effort clearly has to focus on new workers for the industry, not stealing workers from existing companies. Work closely with community organizations and leadership to focus and get credibility for the effort</p> <p>Specify and explain “career lattices”</p> <p>Align opportunities with rural needs and resources</p> <p>Package success stories and get the word out</p> <p>Make sure the approach is based on solid research about specific rural culture and demographics</p> <p>Make sure you use a contemporary image when advertising</p>	<p>High schools/vocational teachers</p> <p>Local chambers of commerce</p>	<p>Demographic research so there’s a clear definition of the “target”</p>	<p>Rural people might not want to move unless the image and benefits are real clear</p>	

Define "rural" so the approach is appropriate				
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Solution Matrix

Overarching Issue: Recruitment				
Sub-Issue: Recruiting Traditional Labor Pools				
Solution: States and workforce boards should develop targeted information for distribution to construction industry concerning Internet job listings and use of One-Stop centers.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Advertise the public workforce systems</p> <p>Advertise to trade associations</p> <p>States and workforce boards need to communicate to employers and associations</p> <p>Trade associations should develop information about public workforce system for their membership</p>	<p>Boards</p> <p>One-Stops</p> <p>States</p> <p>Employers</p>	<p>States</p> <p>Workforce boards</p> <p>Employers</p> <p>Trade associations</p>	<p>Ignorance of the available systems</p>	

Solution Matrix

Overarching Issue: Recruitment				
Sub-Issue: Recruiting Youth				
Solution: Create high school math and science courses geared to construction industry techniques so skills learned are transferable to industry and articulated with community colleges for associates degrees and certification requirements and apprenticeships.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Industry to work with school district to create magnet schools concept centered on construction trade where skills learned are transferable to industry and articulated with community college and apprentice programs</p> <p>Change image of industry</p> <p>Identify and use industry curriculum</p> <p>Public education commitment</p> <p>Basic understanding by public education on <u>WHY</u> this is needed</p>	<p>Industry and trade association</p> <p>Educators and administrators</p> <p>School districts</p> <p>State education department</p> <p>Local workforce boards</p>	<p>Joint cost sharing with industry and public education</p>	<p>Lack of communication with industry and understanding opportunities by public education</p>	

Solution Matrix

Overarching Issue: Recruitment				
Sub-Issue: Recruiting Youth				
Solution: Web based data information systems, with information on wages, growth rate, benefits, and career ladder.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Accurate and timely data</p> <p>Uniform definitions on jobs and competencies</p> <p>Xbox equivalent standard in user appeal</p> <p>Pay rates and benefits</p> <p>Positive promotion of career ladder opportunities</p>	<p>Industry representatives</p> <p>Trade associations</p> <p>DOL</p> <p>State-DOLs with local boards</p>	<p>Data is currently collected</p> <p>Need usable format for positive support of industry</p> <p>USDOL laws resources sufficient to maintain this</p> <p>LMI at state level</p>	<p>Developing site that youth will use “like compete games”</p> <p>Collecting all data</p> <p>Publicizing site</p>	

Solution Matrix

Overarching Issue: Recruitment				
Sub-Issue: Recruiting Youth				
Solution: Partner with local high school trade classes. Have various construction companies adopt a class.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Communication</p> <p>Understanding and meeting goals of industry and education</p> <p>Joint ownership of programs</p> <p>Accountability</p> <p>Provide them with jobsite tours, guest speakers, and exposure to current young skilled labor-mentors</p> <p>Trade associations could develop internet based and CD games about various construction industries/skills. Make them as good as current commercial products. Give them to schools (Internet-based registration and disks); associations should sell them as commercial products for partial cost-recovery</p>	<p>All levels of industry</p> <p>All levels of public education</p> <p>Local workforce boards</p>	<p>Most valuable resources-time</p> <p>Industry act as mentors, donate equipment and instruction of current techniques, jobsite tours, etc.</p>	<p>Failure to understand the need to produce a useful product by public education</p> <p>Overemphasis of four year college career</p>	

<p>Promote development and marketing of “games” to introduce youth to the construction industry. Electronic video games as well as LEGO, Lincoln logs, electric project kits, erector sets and tinker toys</p>				
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Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers				
Sub-Issue: Capacity and Capability of Education and Training Providers				
Solution: Develop a partnership with community colleges and equipment manufacturers to create specific trade/skill training programs.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
1) Commitment of leadership of school and company 2) Opportunity for a job 3) Financial aid 4) Employer-linked recruitment at the end of the training	Community college Equipment manufacturer Employers Students	Presidents of school and company Donated equipment Jobs-OJT-expertise Employees Labor market information	Academic snobbery and culture differences between school and company Product utilization (proprietary issues) Unwilling to train and plan Image and aptitude	

Solution Matrix

This is a combination of 3 solutions that are linked

Overarching Issue: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers				
Sub-Issue: Capacity and Capability of Education and Training Providers				
Solution: Create a vocational “trade” program based on the needs of a geographical area, linking market information to deployment of resources so that there is a needs/resources balance.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
Detail regional economics within state for industry specific growth and labor market information	<ul style="list-style-type: none"> • Labor market information data from state agency • Business leader • Education providers • WIA board • Apprenticeship system • Guidance counselors • Other government training programs; YouthBuild • Dept of Transportation • Dept. of Defense 	<p>Data</p> <p>Validation of growth industries</p>	<p>Old/current data</p> <p>Data not local</p> <p>Privacy laws</p>	
<p>Create a capacity inventory specific to industry (residential, commercial)</p> <p>Specific to trade and needs</p>	<p>Same stakeholders plus students of CBO</p> <p>Education providers</p> <p>Apprenticeship programs</p>	<p>Employers, business leaders, students, CBOs</p> <p>Understand needs</p> <p>Describe capacity</p>	<p>Resistance to change</p>	

Consider labor pools including women and Spanish-speakers.				
Alignment of capacity: link high school and community colleges that offer construction, education and training				

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers				
Sub-Issue: Capacity and Capability of Education and Training Providers				
Solution: Develop and implement web-based training.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Accepting of skills training without “hands-on” experience</p> <p>Complete access to computers</p>	<p>Employees</p> <p>Students</p> <p>Delivery source</p> <p>Development source</p>	<p>\$, expertise, technical support, case studies, simulations, jobs</p> <p>Aptitude; IT access</p> <p>Multiple sourcing: DOL · gov; comm. colleges; builder groups; WIA’s Structure</p> <p>3rd party contracts; education foundations,</p>	<p>Lack of knowledge of WBT; VA value over OJT</p> <p>Lack of hands on training; hardware</p> <p>Authorization hardware access: DVD –v-on-line</p> <p>Authorship; IT protocol</p>	

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers				
Sub-Issue: Leadership and Mgmt Training Solution #1				
Solution: Leadership and Management Training Solution #1 Lobby industry associations to adopt a policy that encourages the inclusion of cultural awareness, sensitivity training, diversity issues, ethics, etc. in their industry-endorsed continuing education (CE) and other training programs.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ul style="list-style-type: none"> • Inclusive in existing CE curric. • Be measurable • Leadership commitment and buy-in and policy statement • Pre/post assessment mechanism • Develop marketing approach to gain buy in • Expand reach of training beyond mandated CE to jobsite level to field workers • Create set standardized guidelines • Train the trainer • Make training incentive based for employer via “appropriate time dedicated to training and ongoing follow up 	<ul style="list-style-type: none"> • Mgmt @ senior/ exec level • CE/licensing authority/ agency • Diversity trainers • Employers • Labor/mgmt assoc. (AGC, NECA, SMACNA) • Comm. colleges • On-line providers • Constituency groups 	<ul style="list-style-type: none"> ➤ Trainers fees ➤ Product development (curriculum online, CD, Manual) 	<ul style="list-style-type: none"> • funding trainers w/ skill set and knowledge • time to conduct training • language • mgmt buy-in • small co’s limited capacity small profit line 	

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers				
Sub-Issue: Leadership and Mgmt Training Solution #2				
Solution: Leadership and Management Training Solution #2 Lobby industry associations to adopt a policy that provides enhanced opportunities and pathways to workers in under-represented groups to pursue management and leadership skills training.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ul style="list-style-type: none"> • Mgmt commitment/policy/ leadership • Role models, mentors, job shadowing • Mentorship program • Identify performance mgmt/eval. • Set goals • Formal identification/ promotion of pathways to leadership • Targeted “grooming” • Leadership training 	<ul style="list-style-type: none"> • Employers • Unions • Under rep groups 	<p>\$</p> <p>People</p> <p>Time</p>	<p>Need research on goals</p> <p>Small co’s</p> <ul style="list-style-type: none"> • Mgmt buy in • Cultural differ • Family business 	

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers				
Sub-Issue: Partnership and Information Sharing Among Key Stakeholders				
Solution: Develop a comprehensive career pathway vision to guide the efforts of all partners in their program development/implementation.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
Identify industry needs	Trade associations	Communication: open and in-depth		
Identify possible populations	Employers	A brainstorm of all stakeholders		
Pre-employment/ pre-apprenticeship career preparation	DOL DOE	Create a “Workforce Development Czar” encompassing representatives of all appropriate agencies/departments - HUD, Justice, Education, Labor, etc.		
Apprenticeship or other skills building to be a competent worker	Industry			
Journeyman lifelong skills/ knowledge updates	Community colleges Technical schools	Develop web site and web-based communications and conferencing linkages		
Skill building opportunities for unemployed/ dislocated workers	Social agencies	Department of Labor acting as an ombudsman should distribute communications via Internet and trade journals on programs, activities, etc.		
Advanced career skills to management/ ownership/ and beyond	Training providers State			

<p>Develop a computer/web based game program that assesses aptitude and develops basic and advanced skills required for various construction trades. Game would: build a project, allow players to interact, could be used as a teaching aid</p>				
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Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers				
Sub-Issue: Skill Levels for Entry-Level Workers				
Solution: Deliver a demand driven pre-apprenticeship/pre-employment training that is partnership-led/supported/funded.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Has assessment and screening process to identify best potential candidates Assessment/basic skills: logic and critical thinking, language skills, math skills, reading skills, writing skills, hand/eye coordination, mechanical aptitude and proved “prescriptive” solutions to address deficiencies Assessment: reading, language, math, geometry, algebra and measurements</p> <p>Has curriculum that is delivered to mimic industry conditions</p> <p>Incorporates supportive service (wrap-around social support) during and post training</p>	<p>Industry/employers/trade associations education and training suppliers/ unions</p> <p>Social agencies</p> <p>DOL</p> <p>WIA</p> <p>Industrial Development Board</p> <p>Chamber of Commerce</p> <p>Philanthropic organizations</p> <p>Economic and community development organizations</p>	<p>Money</p> <p>Technical expertise</p> <p>Facilities</p> <p>State of the Art: <ul style="list-style-type: none"> • Equipment • Tools • Curriculum </p> <p>Staff</p> <p>Volunteers</p> <p>Assessment tools</p> <p>IT/IT support</p> <p>COOP/internship placements</p>	<p>Communication</p> <p>Money</p> <p>Long-term commitments</p> <p>Sustainability</p> <p>Involvement in time and money of all stakeholders</p>	

<p>Includes drug and alcohol awareness</p> <p>Linkage to currently available opportunities for direct placement upon successful completion</p> <p>Provides comprehensive follow-up support, mentorship in structured way</p> <p>Broad based overview of construction trades to build an understanding of the industry, the work environment, the expectations of an employee (a day in the life of a journeyman...) across a range of different trades. Also training in OSHA regulations, CPR, and First Aid</p> <p>Introduction to and exposure in (hands-on) general trades-related fundamental skills, i.e. precision measuring, reading blue prints, using hand tools, safety</p> <p>Team/group skills, soft skills to prepare someone to be a good candidate to enter the industry, discussion for non-traditional issues</p> <p>Develop a computer/web based game program that assesses aptitude</p>		<p>Mentors</p>		
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and develops basic and advanced skills required for various construction trades. Game would: build a project, allow players to interact, could be used as a teaching aid				
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Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Capacity/Capability of Education and Training Partners				
Solution: Partnership between local industry to secondary schools “Adopt a School;” industry investment would mean future recruitment and marketing of construction trades.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ul style="list-style-type: none"> - State demand and involvement to mandate industry involvement in schools 	<ul style="list-style-type: none"> - Subcontractors - Contractors - Education - State & local officials - Parents - Legislators 	<ul style="list-style-type: none"> - Money - Willing contractors - Lobbyist 	<ul style="list-style-type: none"> - Association participation - Available incentives - Funding for lobbyist 	<p>This taskforce recognizes the common thread in all of these issues; we believe the focus should be on foundational issues.</p>

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Capacity/Capability of Education & Training Partners				
Solution: Collaborate with labor groups – union and non-union – to support apprenticeship programs at local and state levels, especially in under-resourced areas. Support needs include: staffing/instructors				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
Standardized state introductory basic skills criteria/curricula for each construction specialty	<ul style="list-style-type: none"> - Labor orgs (union and non-union) - Contractors Associations (state and local) - Education associations - State and local D.O.L.'s 	Construction associations membership contributions of: <ul style="list-style-type: none"> - Time (mentoring) - Materials - Equipment - Cooperation - Curricula materials for K-12 (informational) 	Collaborative communication between stakeholders Time!	A lot of these activities <u>DO NOT</u> require (much!) financial support – therefore very self-sustaining Have local constructors do presentations at local elementary schools School Fieldtrips to construction jobsites

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Capacity and Capability of Education and Training Providers				
Solution: Develop a system within schools that is adhered to – ensure that students learn math, reading, communication skills. If they don't get the basics have a system that helps them – stop pushing them aside. Focus on the 3 R's.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ul style="list-style-type: none"> • Practical application of these skills • Tailor courses and skill set for “Career-Bound” to “College-Bound” in addition • Educate the educators on the issues and needs/have them buy-in/cooperate. Positives of trade skills. 	Parents Students School officials, teachers Dept. of Education States Guidance counselors	<ul style="list-style-type: none"> • Campaign to focus on early education requirements to enter the workforce. 	<ul style="list-style-type: none"> • Image • Perception • State standards to pass students to the next grade 	Gifted and talented programs could be used as a model for a Career bound program.

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Skill Level of Youth (e.g. math skills)				
Solution: Involve teachers and administrators in trade-sponsored externships.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ul style="list-style-type: none"> - Need trade and business support - Identify the “what’s in it for me” for all parties to participate - Connect the significance of what they (teachers and admin) do to real-world application through externship - Need adequate funding - Open communication from business as to their needs 	<p>Teachers Administrators Local contractors or association Apprenticeship programs</p>	<p>Need incentives for participation (e.g. stipends, continuing education credit)</p> <p>Develop curriculum</p>	<p>Time</p> <p>Understanding the benefit and reason for participating in this</p> <p>Turf issues</p>	<p>Help teachers remember why they’re doing this work</p>

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Skill Level of Youth (e.g. Math Skills)				
Solution: Develop summer construction camps for kids of all ages (grade school to high school).				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ul style="list-style-type: none"> - Need good facilitators and staff to teach - Target all ages, but design camp to break out into age-specific groups - Develop curriculum building hands-on exercises, field trips, very interactive - Outreach through schools 	<ul style="list-style-type: none"> - Contractors - Apprenticeship programs - Students - Parents - Schools 	<ul style="list-style-type: none"> - Support staff → e.g. college interns - Marketing and media support - Funding → will develop partnerships with different businesses to support 	<ul style="list-style-type: none"> • Finding adequate facilities • Funding • Getting right people to teach • Transportation to move kids to various sites • Safety 	<p>Build in measures for achievement</p> <p><i>Purpose of Camp</i></p> <ul style="list-style-type: none"> - Expose to construction - Show how math, reading skills are important in real world

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Skills Levels of Youth (e.g. Math Skills)				
Solution: Develop partnerships between businesses and the education system to inform curriculum and skills.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ul style="list-style-type: none"> - Business partners willing to participate - School districts willing to listen and make change 	<ul style="list-style-type: none"> • Business • Schools • Parents 	<ul style="list-style-type: none"> • Local business 	<p>Turf</p> <p>Constraints that schools face in terms of curriculum requirements, standardized testing, etc.</p>	

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Partnerships and Information Sharing among Key Stakeholders				
Solution: Educate legislators as to the importance of a student being able to take trade and industrial classes where technical skills are introduced and taught.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<ol style="list-style-type: none"> 1. Standardization of requirements of local and state school curriculums 2. Flexibility of programs that can be adopted for use in various curriculums 	<p>Legislative members</p> <p>Local school boards</p> <p>State school boards</p>	<p>DOL Skills to Build America's Future</p> <p>Industry partners</p> <p>Education professionals</p>	<p>Govt. entities at state and local levels</p> <p>Historic slowness of educators to respond to changing requirements of students</p>	

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Partnership and Information Sharing among Key Stakeholders				
Solution: Adopt construction/career training to “tomorrow’s” generation of youth, through a collaborative effort.				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Innovation of curriculum delivery</p> <p>Flexibility of scheduling of/for training</p> <p>Continual learning philosophy embraced</p>	<p>Trainers (providers)</p> <p>Apprentices/students/workers/present & future</p>	<p>Existing</p>	<p>Mindset – hardening of the attitudes</p> <p>Identification of future workers</p> <p>Understanding of youth’s “hot buttons”</p> <p>Mandates from govt/educ. for apprenticeships</p> <p>Generation that are making the rules</p>	

Solution Matrix

Overarching Issue: Skill Development and Education and Training Capacity: Youth				
Sub-Issue: Partnership and Information Sharing among Key Stakeholders				
Solution: Develop and initiate a national marketing effort to enhance communication between stakeholders – targeting construction career information – industry needs, benefits of career paths, local, state, national resources for training etc. piggybacking on “Skills to Build America’s Future.”				
Critical Attributes (What attributes are needed for success?)	Key Stakeholders (Who are needed for success?)	Resources (Financial, Human, and Technical)	Implementation Barriers	Anything Else???
<p>Far reaching – diversified media depth of scope – trades message – catchy web-linked drive to website as well</p> <p>Buy-in from stakeholders</p>	<p>Construction employers Labor unions Trades people Educators Parents Youth Assns DOL – govt. entities all WIB’s</p>	<p>Money for media buys Spokespeople with influence Key players - cooperation</p>	<p>Funding Turf issues</p> <ul style="list-style-type: none"> - Voctech/unions - trade to trade comp. for “bodies” 	

Appendix C: Overview of Skills to Build America's Future Initiative

The Challenge

To build America's future, we will need the skills and talents of a new generation of tradesmen and women. According to the Bureau of Labor Statistics, between 2002 and 2012, there will be nearly 1 million new jobs for workers in the skilled trades – an increase of 15% -- and more jobs will continue to open up as the men and women of the Baby Boom generation retire. To fill this demand, we must inform young people and their educators, guidance counselors and parents of the higher education opportunities, career options and earnings potential available in the skilled trades. Only through the hard work and dedication of tomorrow's skilled tradesmen can the United States maintain and improve the critical infrastructure upon which our economy depends.

Meeting the Challenge

The Employment and Training Administration has spent several months meeting with construction industry executives and human resource managers as well as labor union representatives to learn more about the industry's workforce, the job opportunities that exist and education and training required to fill those opportunities. During those meetings, it was apparent that the industry also faced serious challenges in recruiting and retaining new workers. To help meet this particular challenge, the Labor Department established a partnership among industry/labor, educators and the workforce investment system. The result is the Skills to Build America's Future Initiative.

Founding Partners

The three major sectors of the construction industry – commercial, residential and transportation – as well as unions representing the construction workers partnered with the U.S. Department of Labor's Employment and Training Administration to create the Skills to Build America's Future Initiative. The products and messages are designed for use by all construction industry stakeholders in their efforts to promote the value of and career opportunities in the skilled trades. The founding partners of the Initiative include:

- *Executive Branch:* U.S. Department of Labor, Employment and Training Administration; U.S. Department of Education, Office of Vocational and Adult Education
- *Industry:* Construction Industry Round Table, National Association of Home Builders
- *Labor:* Affiliated international unions of the National Heavy and Highway Alliance including: Laborers' International Union of America; International Union of Operating Engineers; United Brotherhood of Carpenters and Joiners of America; International Association of Bridge, Structural, Ornamental & Reinforcing Iron Workers; Operative Plasterers' & Cement Masons' International Association; International Brotherhood of Teamsters; International Union of Bricklayers and Allied Craftworkers.

The Initiative

Launched in April 2004 by Labor Secretary Elaine L. Chao and the heads of the founding partner organizations, the Skills to Build America's Future Initiative is concentrating on addressing the industry's need to attract a pipeline of new workers in order to address the current and future shortages.

The Skills to Build America's Future Initiative is designed to build national awareness of the importance of skilled workers to our economy and nation; inform people about the training, education, and apprenticeship opportunities available to those who want to join the skilled workforce; send the message that careers in the skilled trades are plentiful, lucrative and fulfilling; and invite young people and more experienced workers who are transitioning to new careers to pursue opportunities in the trades.

Action Plan

The actions taken under this Initiative by the Labor Department and partners are focused in the following seven primary areas.

- (1) Executive Agency Action – coordinate outreach efforts to educators with the U.S. Department of Education, and use the Web site CareerVoyages.gov as the home for information concerning the Initiative.
- (2) State/Gubernatorial Outreach – ask Governors and/or State Legislatures to issue proclamations promoting the skilled trades, include a link to CareerVoyages.gov on their page, and record Public Service Announcements.
- (3) Workforce Investment System Outreach – engage the national network of over 1,800 comprehensive One-Stop Career Centers, federal and state apprenticeship directors, and agency national programs (Job Corps, Native Americans) in efforts to partner with local construction training programs.
- (4) Educational Outreach – issue joint letters to guidance counselors, co-host job fairs and other events, and provide information to schools detailing the education and career opportunities available in the skilled trades.
- (5) Events – deliver speeches at middle- and high-schools, trade schools, skills competitions, and graduations; participate in ribbon cutting ceremonies; visit new construction sites, etc., to promote opportunities in the skilled trades.
- (6) Media Plan – obtain earned media through speeches, press releases, op-eds, and celebrity endorsements. The Labor Department will also purchase media time for TV ads, radio ads, and print advertising.
- (7) Sponsorships – Through Labor Department sponsorships with professional sports organizations, we will secure radio and print ads on game/race day, athlete spokesmen, opportunities for “Skilled Trades Day” activities at stadiums and race tracks with industry and educators, links from team sites to CareerVoyages.gov, and other opportunities to project the message of opportunities in the skilled trades.

Access Point for Information

<http://www.careervoyages.gov>