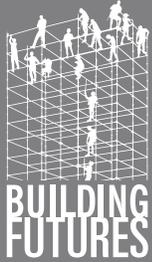


SKILL GAP STUDY

BUILDING FUTURES

BUILD



Phase I – Skills Gap Analysis RI Construction Trades April 25, 2008

About Building Futures

Building Futures, launched in May of 2007, has three principal partners: The Providence Plan, YouthBuild Providence, and Build RI. Its mission is to help the construction industry meet its current and future labor needs, while creating career opportunities for low-income adults from the urban communities of Rhode Island. Recruiting, evaluating, supporting and counseling of candidates for registered apprenticeships programs of building trades is part of an effort towards the larger goal of systemic change within the industry.

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Today's Vision... Tomorrow's Opportunity.

Supported by the Rhode Island Governor's Workforce Board Industry Partnership Program, April 2008

Executive Summary

Filling the commercial construction industry's future needs for a skilled workforce will require a significant increase in the number of individuals achieving journey-worker status through registered apprenticeships, due primarily to the aging of the workforce. In 2006 half of Rhode Island construction workers were over age 45 and 14% were over age 55.

The analysis in this report concludes that from 2009 to 2018 Rhode Island will need approximately 6,250 new journey-workers: 2,000 to cover industry growth and 4,250 to replace older union journey-workers leaving the field. Demand will likely be modest in 2009 and 2010 because of a cyclical slow down in construction contract activity, but accelerate rapidly as soon as the economy picks up. U.S. Dept of Labor data indicate that from 2002 to 2007 an average of 209 registered apprentices completed per year in Rhode Island inclusive of all trades. To meet the current and future need for skilled workers, Building

Futures proposes coordinated recruitment efforts, an expanded pre-apprenticeship program for adults, focus on improving registered apprentices' completion rates, and policies to increase employer support of apprenticeship programs.

Our interviews with key informants revealed a strikingly consistent message about the barriers to hiring quality entry level workers as apprentices. Candidates for apprenticeship are often physically and intellectually able to rise to the challenges of learning a given trade, but on the job, social issues frequently interfere with a new hire's ability to be on time and on task for forty hours per week. The number one issue reported by informants is candidates' understanding of and responses to the unique construction industry work culture, and a seeming lack of motivation, maturity, and responsibility. From the employers' perspective, issues of responsibility and maturity are also measured by the apprentices' ability to follow the unwritten code of conduct on the job, as well as performance of needed tasks. New workers need mentors who can provide guidance around the nuances of these implicit rules.

TOP FIVE WORKFORCE CHALLENGES

CHALLENGE 1: The Skill Gap: Motivation, Maturity and Responsibility

CHALLENGE 2: Aging of the Labor Force

CHALLENGE 3: The Image of Construction Careers in the Eyes of Motivated Young Adults

CHALLENGE 4: Insufficient System to Recruit or Prepare People for Apprenticeships in the Construction Trades.

CHALLENGE 5: Employer Participation in Training Future Workers

The construction industry is facing this motivation, maturity and responsibility skill gap among young recruits in the context of a national trend of disengagement of young men. Not only is the current generation of young adults 40 percent smaller in numbers than the baby boom generation, but there is also a decline in the percent of men entering the workforce with a strong motivation to learn and pursue ambitious careers. Construction trades are competing with universities and careers held in high prestige for a shrinking number of motivated candidates.

While registered apprenticeships are a well accepted and quality training model that prepares people to the highest of industry standards, there is no organizational infrastructure in Rhode Island to recruit or prepare workers for employment as apprentices in the building and construction trades. On the contrary, recruitment of the future workforce, when it happens at all, takes place through the individual efforts of apprenticeship programs with a lack of coordination between them.

Through lessons learned in Building Futures' first phase of a comprehensive Skill Gap Analysis, five key areas emerge as needing careful consideration, planning, and action if the workforce challenges identified by this analysis and our Industry Partnership are to be addressed effectively.

-
1. **Recruitment**
 2. **Preparation**
 3. **Training**
 4. **Retention**
 5. **Employer participation**
-

Introduction

PROBLEM STATEMENT

Twenty-two thousand Rhode Islanders work in construction and that number is forecast to climb to 25,280 by 2014. Of those 22,000, roughly 10,000 are journey-level members of construction trade unions and an estimated 900-1,300 are registered apprentices. For most of a decade, the construction industry in the U.S. has faced a growing shortage of skilled craft workers that is arising from multiple factors. The factor most directly felt in Rhode Island is the increasing difficulty in recruiting as construction apprenticeships have to compete with college for a shrinking number of successful, motivated high school graduates. The second important factor is the aging of the work force which is only beginning to be felt by employers. Over half of Rhode Island's workers in construction trades are over age 45 and 14 percent are over age 55. The impending retirement of the baby boom generation could dramatically reduce the pool of skilled construction journey-workers. A third issue is uneven investment in training future workers between the growing non-union sector and the significant investments by unions and signatory contractors. While these trends create an imperative for Rhode Island to improve recruitment numbers and apprenticeship completions over the next 5-10 years, the industry is facing cyclical slow down.

THE BUSINESS CYCLE
Rhode Island Construction Employment



Within this context, Rhode Island informants in the construction industry cited multiple barriers to hiring entry level workers, including:

1. Cyclical lack of work
2. Transportation to job site
3. High school diploma or GED
4. Work ethic (social skills)
5. Lack of recruitment other than friends and family
6. Understanding of the responsibilities to the employer
7. Understanding of the responsibilities to the trade
8. Awareness of career opportunities
9. English language

To begin to meet long-term needs for a skilled workforce in the construction sector, Building Futures proposes stepped up cooperative recruitment efforts, an expanded pre-apprenticeship program for adults, efforts to increase completion rates, and policies to increase employer support of apprenticeships. In the next 2-3 years the focus will be on preparing applicants to succeed in apprenticeship programs and increasing the completion rates among apprentices. This will lay the foundation for efforts to dramatically increase the number of apprentices in 3-10 years to replace retiring journey-workers.

METHODOLOGY

This skill gap study is based on a review of existing data sources, similar studies from other states, and the first hand experiences of professionals working in the recruitment and placement of construction trades entry-level employees. The Advisory Council of Building Futures served as a key informant group. Most importantly, Building Futures draws on the knowledge gained through its first year of experience in recruiting, screening, and coaching to prepare urban residents for construction trade apprenticeships. Within the construction sector, the commercial sub-sector builds the most complex projects and has the highest requirements for skilled labor. Most of this analysis has relevance for the construction industry as a whole, but the focus is on the commercial construction sub-sector and that focus is reflected in the selection of key informants. Furthermore, the data collected often reflects the total construction labor force; therefore certain assumptions contained in this analysis may not provide for accurate estimates of apprentices needed to meet projected demand. Given this, we look forward to the second phase of the analysis, in the hopes that through the combined efforts of RI DLT and independent data collection, accuracy as to the appropriate scale for the apprenticeship system can be determined relative to our industry.

THE CONSTRUCTION INDUSTRY'S IMPORTANCE IN RHODE ISLAND'S FUTURE

The construction sector will play an important role in shaping Rhode Island's future and has the potential to capture a growing share of middle-wage jobs in the metro economy. The potential to employ Rhode Islanders in the construction trades is not limited by the scale of construction happening in Rhode Island; it is a regional job market. The potential exists to expand earnings opportunities for Rhode Island urban residents by proactively being a supplier of skilled construction trades people in the region. On the flip side, if Rhode Island does not train sufficient numbers of journey-workers, Rhode Island buildings will be constructed by Massachusetts and Connecticut residents and other "travelers" with the earnings flowing out of state. Appendix F illustrates that the industry understands

it can draw on more than 37,000 additional union workers in the region. This creates an imbalance in motivation between construction employers and the economic interests of Rhode Islanders.

Productivity in the construction sector is an important component of the business climate in Rhode Island. A pipeline of skilled workers is vital to quality and cost of construction projects. In addition, the construction trades will be at the forefront of implementing solutions to some of the innovation challenges of the next century: energy costs, projected sea-level rise, and increased frequency of storm events. Our construction firms will be building greener and more resilient buildings. Because Rhode Island's is already extensively developed, future construction is inevitably shifting from Greenfield development, primarily suburban in nature, to the creative redevelopment of sites and buildings in the urban communities of Rhode Island. Urban infill and redevelopment are more complex than Greenfield development. The bottom line is that well trained construction workers will be more important than ever.

Workforce Challenges

CHALLENGE 1: The Skill Gap – Motivation, Maturity and Responsibility

Construction can be strenuous, dirty, dangerous, and seasonal as well as requiring a broad range of technical knowledge and problem solving skills. Apprenticeships are the predominant form of workforce development in construction. Our informants felt that overall apprenticeship programs are well designed to impart all the technical knowledge and know-how necessary to progress from apprentice to journey-level worker. Because of the 3-5 year on-the-job component of apprenticeships and mentoring by journey-workers, the skills taught in apprenticeships remain current with the demands of the industry. The completion of a certified apprenticeship is recognized as a valuable credential that indicates mastery of trade skills. Our research did not uncover any trade specific skill gaps; rather we found all our informants highlighted personal, social and motivational issues of apprenticeship applicants. In addition, pre-requisite math skills are a barrier to success particularly for electrician and carpentry apprentices.

Motivation

The number one issue identified by informants is candidates' sincere willingness to work, because everything else follows having dedication and maturity. Signs of this lack in maturity include sloppy work, laziness, or poor attitudes. "Candidates for apprenticeship need to understand this is a commitment. There is a big pay off financially and there is a lot of personal satisfaction and pride in mastering a trade, but you can't just treat it like a 'job'."

Accepting the Demands of the Industry Culture

The demands of the commercial construction sector are very stringent compared to many other industries as well as to non-union residential repair work. There is a "no excuses" culture with regard to not showing up for work. There is little flexibility for union trades apprentices to take time off to deal with personal or family matters. There is an implicit expectation that workers won't call in sick and typically cannot take vacations, especially during peak construction. Needed production, contract deadlines and availability of work drive when workers get down time. Workers are subject to seasonal and cyclical layoffs. Workers can be assigned to worksites around the region and are generally not consulted in these assignments. Workers need mentors who can provide guidance in all the nuances of these implicit rules, especially through the first year of apprenticeship.

The issues many apprentices have with meeting workplace demands go beyond not knowing the unwritten rules and extend into basic issues of motivation and maturity. If you

are the new person, you have to be willing to let other people tell you what to do, and often that delivery is not gentle. Apprentices run into trouble for a litany of reasons relating to a lack of a stable home life and reliable transportation; showing up on time; maturity to get enough sleep or pass the drug test; maturity to manage money for the inevitable down time.

“Apprenticeship candidates come on strong and then fall back into old habits of tardiness, not coming for weak excuses, attitude, letting the outside world interfere with being on task 40 hours per week, and getting a chip on their shoulder because they think they are being picked on. The construction trades are very structured in some ways and give a lot of freedom in others and apprentices need to learn the culture. Projects carry very high hourly costs for work so employers really want to see people on time and on task 40 hours a week. On the other hand there is behavior that is tolerated in the building trades culture that would not be allowed in many other workplaces. New recruits have to put up with a bit and learn the ropes. For example, taking time off for a medical appointment at 10:30 am is unacceptable whereas with advance notice you can get permission to take off an hour early if necessary for a critical appointment. People in the trades know to make their appointments late afternoon or weekends so they won’t interfere with work.”

Workers are particularly critical to the success of the construction industry. Employers in the sector drive employees to work hard because the only way to increase profits is through the productivity of the worker. Material costs are a given and the labor cost per hour is fixed so the difference between a profitable and non-profitable job is the time it takes to complete the work.

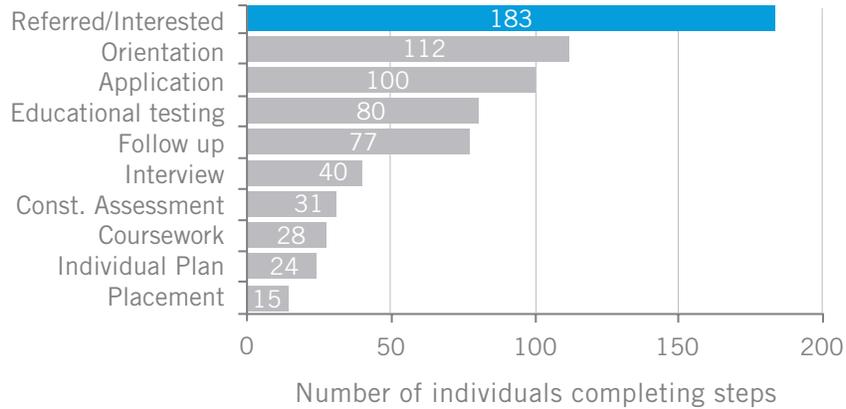
Literacy and Math

Proper education through the public school system is an issue raised many times by our informants, but these skill deficiencies are easy to screen for and relatively straight forward to remedy. Additionally, electrician apprentices have to be able to do algebra. “Remedial math is a barrier and a few unprepared apprentices can slow the whole group down.” One informant raised literacy as an issue: “You can’t do things any old way. Workers need to be able to read the directions.”

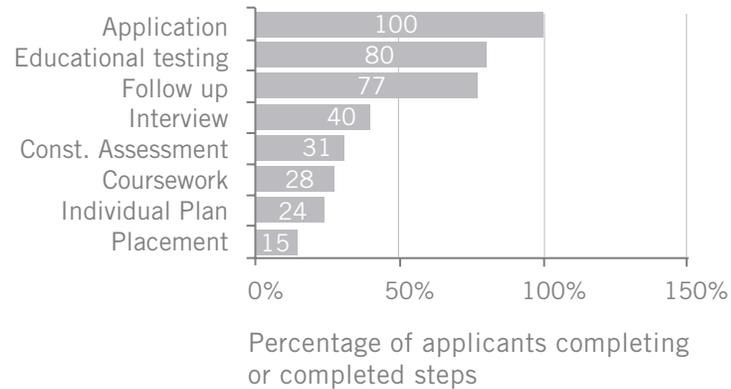
Building Futures has been assisting potential apprenticeship candidates overcome these barriers through a nine step process ending with placement in an apprenticeship program. To date, in its first year 15% of the candidates who complete applications were deemed ready for placement in apprenticeships. The accompanying charts show the number of candidates that successfully completed each step. The “Candidate Pipeline” chart below indicates the individuals who have dropped out at each step; all other individuals are considered “in process” and hopefully will complete further steps. Building Futures has received calls from 183 interested people, which represents another 71 individuals on the waiting list for an orientation, the first step of the process.

CANDIDATE PIPELINE

Building Futures – Pilot Year Experience as of April 25th



COMPLETION OF STEPS TOWARD APPRENTICESHIP PLACEMENT AS A PERCENT OF INDIVIDUALS WHO ATTENDED ORIENTATION



Building Futures plays an important role in increasing qualified applicants to apprenticeship programs by screening, evaluating, and informing candidates. The experience gained in the pilot year shows that the majority of candidates have a need for training in order to be ready to start an apprenticeship. Soft-skills, including showing up consistently, are the most difficult to overcome skill gaps even for those 15% who have been placed in an apprenticeship. Building Futures operates with a clearing-house model that is inadequate to bridge the skill gaps of the majority of the people referred to the program. When an evaluation shows skill gaps, there is no pre-apprenticeship training program to refer people to if they are over age 24.

“I want a better candidate to emerge because the apprenticeship programs can’t afford bad stories. If one of our apprentices is tardy or lets the real world intrude in being on task then the contractor becomes wary of taking future apprentices.”

– Scott Duhamel, Business Manager for Painters, IUPAT District Council 11

Building Futures guides adults through the tangible apprenticeship prerequisites such as GED completion, obtaining a drivers license, and the CAT (Construction Assessment Tasks) but for many individuals the soft skill requirements of the apprenticeship require more intensive instruction. One of the few options is the YouthBuild Providence program, which offers comprehensive pre-apprenticeship training to young adults age 16-24. It is a model recognized by the RI construction industry and elements could be adapted for older adults. Participants attend 40 hours per week for 40 weeks alternating between on the job training and the classroom. The YouthBuild Providence program prepares youth for apprenticeships in the construction trades with an education model that combines GED preparation and construction trade experience with personal and professional development. YouthBuild Providence helps foster motivation, “awareness of self and community,” and “positive ownership in city neighborhoods.” Program participants have been successfully placed in apprenticeships, college, or other careers. Some limits of the program are depth and length of the program, and the scale. Currently YouthBuild can only serve 30 students per year, despite up to 300 on waiting lists. Building Futures helps place young adults from YouthBuild Providence into apprenticeships, but many people get serious about pursuing a career in the union building trades at an older age.

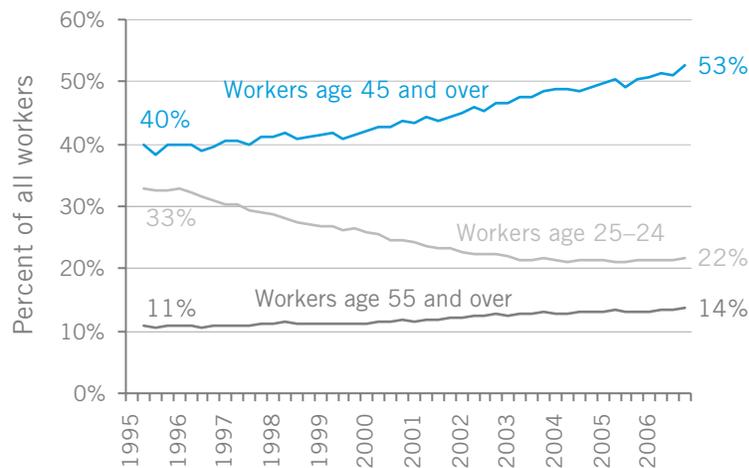
The construction industry faces these skill gaps in the context of a national crisis of disengagement of young men. Not only is the current generation of young adults smaller in numbers than the baby boom generation, but there is a decline in the percentage of men with the motivation to learn and pursue ambitious careers. The percent of Rhode Islanders with a BA or above is lower for young adults than for baby boomers. The majority of young men who entered college in recent years dropped out without completing a degree. Nationally, standardized tests of learning, such as 11th grade NAEP scores, show declining educational mastery of basics by young men and a widening gap in achievement by gender. Labor force participation and employment rates show a disturbing growth of disengaged young men. As we address the construction industry’s ability to compete against going to college and other career opportunities, we are competing for a smaller pool of motivated young men.

CHALLENGE 2: Aging of the Labor Force

The existing workforce is aging. As of 2006, over half the workers in the construction trades were over 45 years old. This imbalance will result in a spike in demand for skilled labor as retirements hit the industry over the next ten years in addition to the skilled labor demands from industry growth.

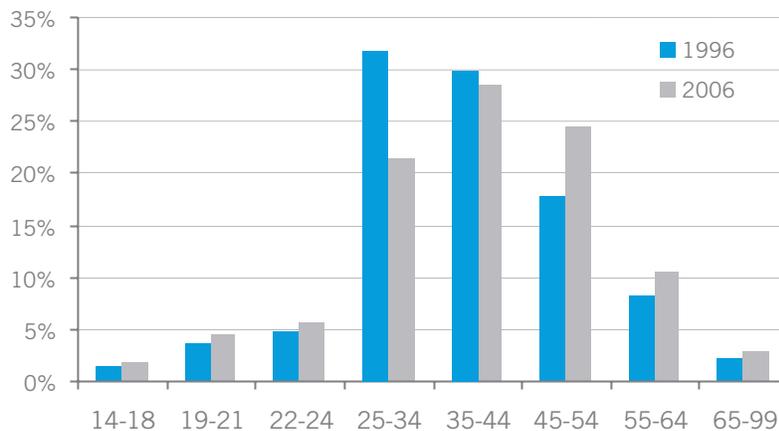
Based on the age of construction workers in Rhode Island we can estimate 9,300 of the 22,000 will retire in the next ten years. We do not have age data specifically for journey-workers in trade unions, but applying construction workforce age data to this group we would estimate 4,250 journey-workers to retire or leave the profession because of age in the next ten years. To replace those retirements over the coming decade may require up to 425 new journey-workers emerging from apprenticeship or other training programs per year in addition to the estimated 200 new workers per year demanded by growth of the industry.

AGING OF THE CONSTRUCTION LABOR FORCE



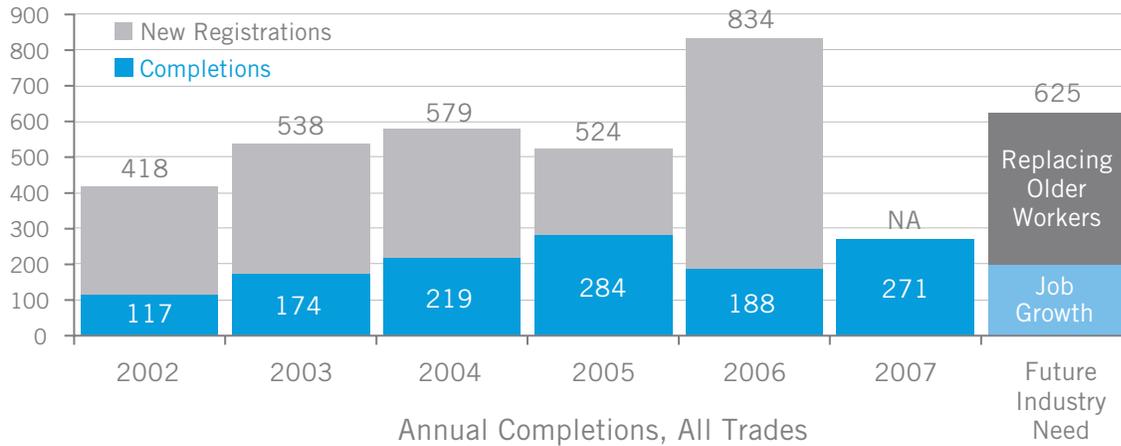
Source: U.S. Census Bureau, Local Employment Dynamics, Quarterly Workforce Indicators Online. <http://lehd.did.census.gov/led/datatools/qwiapp.html>.

TEN YEAR CHANGE IN CONSTRUCTION LABOR FORCE BY AGE



Source: U.S. Census Bureau, Local Employment Dynamics, Quarterly Workforce Indicators Online. <http://lehd.did.census.gov/led/datatools/qwiapp.html>. Q3 1996 compared to Q3 2006.

RHODE ISLAND APPRENTICESHIP COMPLETION AND PROJECTED AVERAGE CONSTRUCTION INDUSTRY NEED 2009–2018



Sources: U.S. Department of Labor Employment and Training Administration. Apprenticeship Statistics. Accessed on the web on 4/17/08. The 2007 completions figure is from David Francis, RIDLT, personal communication 4/23/07. These completion and new registration figures are for all trades, including some non-construction apprentices. Figures were not available by trade, but the majority in RI is thought to be in the construction trades. The sources for the 2009-2018 average annual industry need for journey-workers are detailed in Appendix G.

CHALLENGE 3: The Image of Construction Careers in the Eyes of Motivated Young Adults

Construction careers have an image problem that is a barrier to recruiting enough apprentices. The most often cited evidence of this image problem is that union journey-workers are encouraging their children to go to college instead of into apprenticeships. A 2000 Clemson University survey of 1,800 construction craft workers revealed that 70 percent did not want their children to take up their career path. Every industry has a mix of skilled and unskilled labor and it is important from a recruitment perspective to help people see the career employment opportunities that offer training and advancement. There is the potential to develop many positive angles on construction careers, including: 1) upward mobility, 2) an opportunity to contribute to something larger, and 3) a pathway to post-secondary education that allows for earning.

The fact that construction journey-workers are solidly in the middle class and able to send their children to college is a good selling point. Building Futures is having success marketing the upward mobility potential of the construction trades to young adults from urban communities who are less affluent. Rather than take out large loans for college, you can start earning money right away while getting an education that will only increase your earning power.

From an image standpoint, YouthBuild Providence understands the importance of helping people feel part of something larger than themselves: from being part of their communities and teamwork, to the tangible accomplishment of building a home for a low-income family.

Building Futures could also market the ways the building trades contribute to solving important issues of our time: from energy independence and climate change, to having skills important in society and the ability to support families.

A 2002 study in Pennsylvania recommended that construction careers be made more attractive to young people and more acceptable to their parents; apprenticeships should be made easier to combine with a college degree. Thirty-five percent of construction workers nationally have some college education. Union construction workers have higher levels of educational attainment than non-union workers. The national trend is toward unionized construction workers combining apprenticeships and post-secondary education. “Construction unions have facilitated access to higher education for their members by negotiating agreements that provide some college credit for the classroom component of apprenticeship. In addition, many joint apprenticeship training funds pay for workers to continue on after apprenticeship to acquire a college degree.” In Rhode Island, some apprenticeship programs including the IBEW Electricians Apprenticeship Program are recognized as the equivalent of the first two years of college for students entering RIC or URI. The fact that some students and/or their parents are willing to pay \$35,000 a year to attend New England Institute of Technology in preparation for an electrician’s license speaks to the value that is placed on the college degree since the same license can be obtained with no charge through the IBEW apprenticeship program while earning family sustaining wages. Rhode Island could improve the marketing of apprenticeship programs using access to college as a selling point.

CHALLENGE 4: Insufficient System to Recruit or Prepare People for Apprenticeships

This skills gap study identifies a mismatch between the apprenticeship program completions and projected industry needs for the next decade. There are a number of data limitations that we had to work within and we want to acknowledge that the RI DLT is already working on creating a more robust information system for monitoring apprenticeship program metrics going forward. Comparing these numbers shows that the need for journey-workers in construction over the next ten years cannot be met at the current rate of apprenticeship recruitment, placement, and completion. Potentially, even doubling the number of apprentices may not exceed the long-term industry demand.

Looking at the number of new apprenticeship registrations and completions in all trades between 2002 and 2006, Rhode Island has an overall completion rate of 34% for all approved apprenticeship programs.

This rate is below average nationally, but higher than Rhode Island's regional neighbors. Massachusetts ranks seventh lowest for completion at 25% of registered apprenticeships and Connecticut is the lowest in the nation at 13%. Nationally, three-quarters of all apprenticeships are in construction trades, but in Rhode Island the proportion may be higher (see 50 state comparisons in Appendix E).

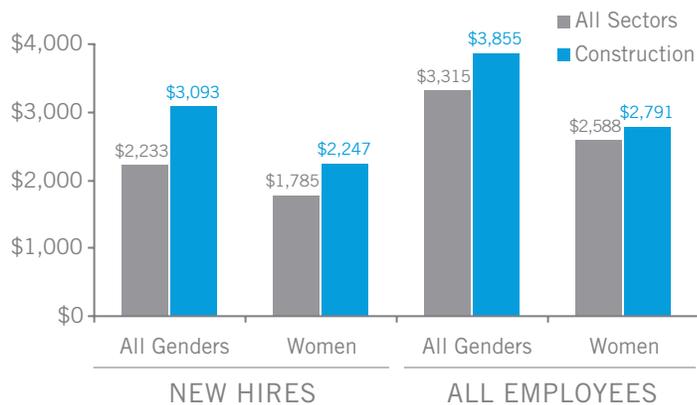
One challenge to creating an effective recruitment system is that most registered apprenticeship programs are very small. Most of the 360 registered apprenticeship programs have zero to one apprentice at any given time. There is no way programs at that scale can mount an economically effective recruitment effort. Feeder programs such as YouthBuild Providence and Building Futures, as well as employer associations that raise awareness of the building trades, need to play a significant recruitment role. The largest quantity of apprenticeship programs are in the electrical trades, but the IBEW program illustrates a successful recruitment effort. For example, IBEW staffs 6-7 job fairs a year and makes contact with 15-20 different high schools. Additionally, they organized a group of female electricians for an interactive demonstration at the Women and Construction Saturday hosted by CCRI.

There are eight career and technical centers in RI that could be considered a pipeline to apprenticeships. However, most offer construction programs focused only on home building and cabinet making and just one center is located in Providence. Completion rate data for specific programs within the career and technical centers was not available to this study. Further, although five of these vocational centers offer programs to adults, none offer construction programs to adult students. Three sites in Rhode Island provide post-secondary training in construction, NEIT, MTTI, and Lincoln Technology Institute. These programs can cost up to \$11,000 and are therefore not appropriate for the population that Building Futures serves.

Occupation Outlooks Impact on Recruitment

The long-term occupational outlook for the construction sector is good. Construction employment increased 21% between 2001 and 2006, a period when Rhode Island private employment grew just 3%. Construction of Buildings and Specialty Trade Contractors are expanding industries in Rhode Island. It is also a dynamic industry that is constantly hiring people for new jobs even when employment is steady or declining. In 2006, the average new hire in construction earned 39% more than the RI all industry average for new hires. Women hired by construction firms earn 26% higher earnings than the average new hire wage for women. Construction workers earn \$560 more per month than the average wage in Rhode Island, and new hires in construction typically earn \$860 more than the average new hire across industries.

MEN AND WOMEN EARN MORE IN CONSTRUCTION JOBS



In 2006, the average new hire in construction earned 39% more than the RI all industry average for new hires. Women hired by construction firms earn 26% higher earnings than the average new hire wage for women. Compared to the average for jobs in Rhode Island, construction workers earn \$560 a month more and new hires earn \$860 more than the average new hire across industries.

Source: U.S. Census Bureau. Local Employment Dynamics.
LEHD Rhode Island Industry Reports - Quarterly Workforce Indicators.
<http://lehd.did.census.gov/led/datatools/qwiapp.html>

Recruitment Potential of Declining Occupations

Out of 22 occupations that are projected to lose more than 100 workers from 2004-2014, 12 (or 55%) are machine operators/tenders/setters within the manufacturing cluster (e.g. press machine operators, textile, metal, etc). Projected total lost jobs in these 12 occupations from the manufacturing sector is nearly 2,700 (2,681).

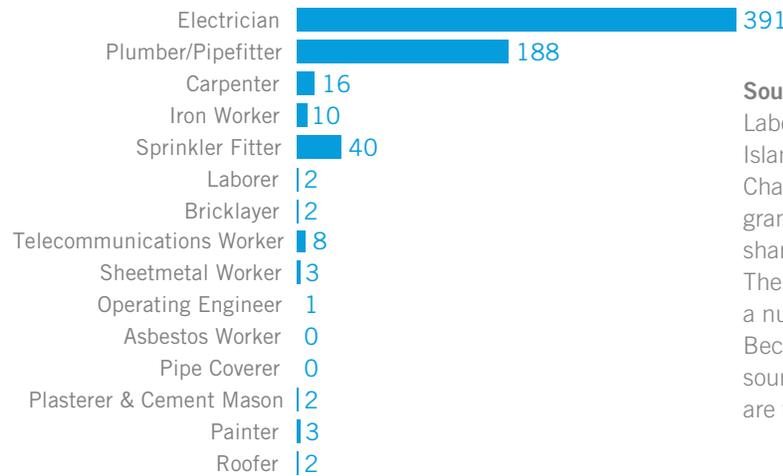
The skills required of manufacturing machine operators have the following similarities to construction:

- a) Stamina – On feet most of day, moderate to heavy lifting
- b) Operate high powered machines – strict safety rules and equipment required
- c) Solid math background (especially geometry and algebra) required
- d) Learning through on-the-job training
- e) Working with hands & analytical skills

CHALLENGE 5: Employer Participation in Training Future Workers

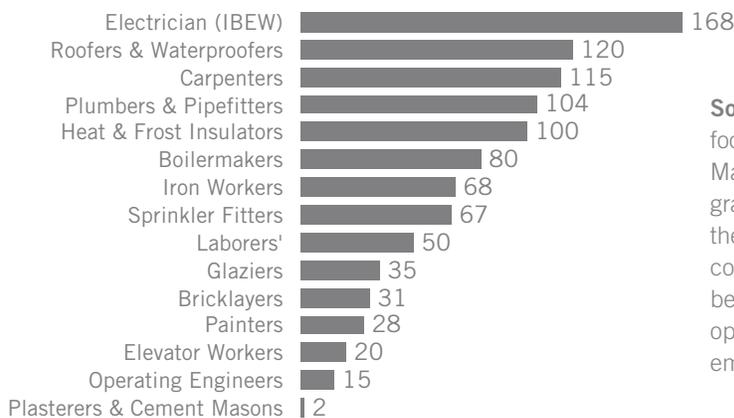
Industry must drive the demand for skilled journey-level workers that have been educated in quality apprenticeship programs and must be willing to employ the apprentices, providing the critical on-the-job training. Construction employers do not contribute equally towards developing the next generation of workers, as the total journey-level worker pool is often created by apprenticeship programs these employers do not participate or invest in. Many construction firms are far short of the allowable apprenticeships ratios. In his review of apprenticeship records, Bodah found that of the over 200 employer sponsors, only seven employ ten or more apprentices.

EMPLOYER SPONSORED APPRENTICESHIPS, Rhode Island, 2001



Source: Bodah, Matthew M. Ph.D., Schmidt Labor Research Center, University of Rhode Island. April 2, 2002. "Preliminary Report and Chart Book: Building Trades Apprenticeship Programs in Rhode Island." Unpublished research shared by email April 2008. Table 7. Note: These numbers were compiled from combining a number of sources of apprenticeship records. Because of the inconsistencies between data sources the author warns that these numbers are to be interpreted with caution.

JOINT LABOR MANAGEMENT SPONSORED APPRENTICESHIPS Rhode Island, 2006



Source: Build RI: Building Futures has primarily focused on placements in the Joint Labor Management Sponsored Apprenticeship Programs, because of the significant difference in the quality of training provided, retention and completion of apprentices and higher wage and benefit rates through these apprenticeship opportunities. These are also considered "multi-employer" apprenticeship programs.

Apprenticeship programs are sponsored either jointly by labor unions and signatory contractors, or unilaterally by non-union contractors. For joint (labor management) apprenticeship training programs, a training fund is established in the collective bargaining agreement with the employer and each contractor signatory to a local union pays into that fund. The fund dollars are managed through a joint trust fund with labor and management representatives. Employer-sponsored programs organized and managed by individual contractors in the non-union sector do not have any established funding mechanism. Because of dedicated resources, joint labor management apprenticeship programs have higher enrollment and higher completion rates. Studies from other states have documented that the growing share of non-signatory employers in construction combined with the under investment in skill training and apprenticeships by non-signatory employers has led to an overall decline in training investment.

The best recent analysis of the construction apprenticeships in Rhode Island was done in 2002 by Mathew M. Bodah, Ph.D. of the URI Schmidt Labor Research Center . While there were limitations imposed by the data, Bodah found that “joint apprenticeship programs: 1) train workers across a broader range of construction occupations, 2) enroll more female and minority apprentices, 3) have higher completion rates, and 4) lower cancellation rates than employer-sponsored programs. The findings also indicate, however, that employer-sponsored programs enroll more Latino apprentices than joint apprenticeship programs, and that recent journeyman’s test passers are more likely to have received training in employer-sponsored programs.” Notably Rhode Island’s population and participants in joint apprenticeship programs are 18% minority while employer sponsored programs are 11% minority.

Quality apprenticeship programs have to have supervision, safety, and continuity, in addition to high quality curricula and classroom instruction. Our key informants told us that all apprenticeship experiences are not created equal, “Some journey-workers clearly have superior skills in mentoring apprenticeships and keeping them working productively. Some contractors have a culture of supporting apprentices and a critical mass of supportive journey-worker mentors, while others do not. The majority of the apprentices are working for fewer than half of the contractors.” Apprentices in employer-sponsored programs have the most issues with continuity because there is no organization to give them another placement if they get laid off.

Conclusions

Through lessons learned in Building Futures first phase of a comprehensive Skill Gap Analysis, five key areas emerge as needing careful consideration, planning, and action if the workforce challenges identified by this analysis and our Industry Partnership are to be addressed effectively.

- 1. Recruitment.** As an Industry Partnership and workforce intermediary, Building Futures has a powerful role to play in coordinating effective recruitment efforts for the talent needed in the skilled building trades' workforce. For the construction sector to continue its economic growth and thrive, targeted joint recruitment efforts will have to be orchestrated well among a multitude of partners. Currently there is also a significant lack of recruitment materials to help reposition the image of construction trade careers and broaden their appeal. Through collaborations, a system to generate an expanded recruitment pool can be established by marketing apprenticeships as a path to higher education in its own right, not just an alternative to college.
- 2. Preparation.** Our pilot program results have uncovered the critical need for adequate preparation of registered apprenticeship candidates. This preparation is not around technical skills, but rather life skills and the mitigation of conditional barriers to successfully retain employment once placed as apprentices. Examples of such preparation include financial literacy training, especially money management in the context of the cyclical work in the building trades. Additionally, reliable transportation to the work site is critical, as the employment opportunities are regional and require travel. Implicit in this requisite are valid drivers' licenses, owning vehicles and obtaining insurance. Personal time management is also essential, such as scheduling needed appointments at appropriate times, and arranging for child care as not to interfere with working hours.
- 3. Training.** Pre-employment activities need to be expanded to include both hard and soft-skills training through vocational coursework where young adults can be exposed to, and trained for, the rigors and demands of employment within the building and construction trades. This strategy is particularly needed to address deficits in professional and personal skills, in addition to motivation. Today Building Futures operates on a "clearinghouse" model that includes evaluation, limited basic preparation, career exploration and support services, but many candidates require a deeper intervention to bridge the skill gap. The success of a well designed pre-apprenticeship training

program can be measured through increased retention and completion of registered apprenticeships, and verified through feedback and data provided by apprenticeship program sponsors.

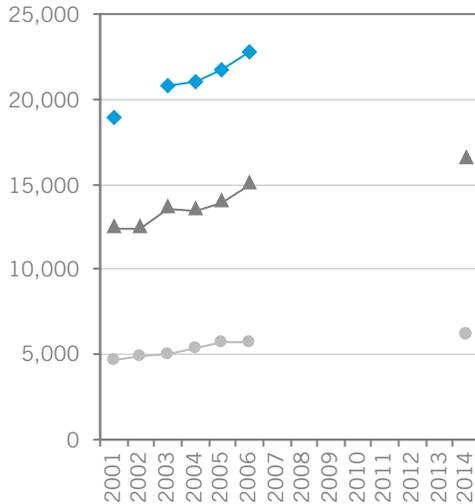
4. **Retention.** The RIDLT's efforts to create a reliable data system to track apprenticeship milestones will be critical to performance measurement in improved recruitment, retention and completion in apprenticeship programs. This first phase of our skills gap analysis could suggest a need for 6,250 completing apprentices over the next decade. A phased plan will be required to meet this goal, a goal more than three times the current system's output. To achieve this, it will be necessary to improve the completion rate of registered apprenticeships. Otherwise worksites will not be able to sustain journey-worker to apprentice ratios that are conducive to safe learning and quality work.

5. **Employer participation.** The number of employers contributing to training the future workforce can be widened through increased use of apprentices. The quality of apprenticeships must also be validated. Through promoting the use of registered apprentices among contractors by providing services and education, allowable ratios of apprentices can be maximized. Additionally, policies that address unequal market conditions also appear necessary. For example, participation in registered apprenticeship programs by contractors and the utilization of apprentices on construction projects can be made a condition for bidding on projects of a pre-determined scope.

APPENDICES

A. RHODE ISLAND CONSTRUCTION LABOR MARKET

CONSTRUCTION JOBS ARE GROWING FASTER THAN OTHER SECTORS



- ◆ NAICS 23 Construction
- NAICS 236 Construction of buildings
- ▲ NAICS 238 Specialty trade contractors

- Rhode Island construction companies added 3,900 people to their payrolls between 2001 and 2006, 1060 in building construction firms and 2,550 in specialty trade contractors
- Construction employment has increased 21% between 2001 and 2006, a period when Rhode Island private employment grew just 3%.
- Employment is projected to continue to grow. Construction of buildings and Specialty trade contractors are expanding industries in Rhode Island.

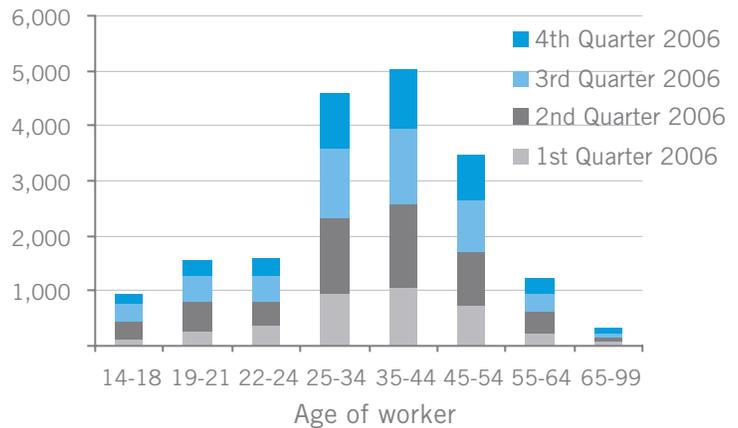
CONSTRUCTION IS A DYNAMIC INDUSTRY WITH A CONSTANT NEED TO HIRE

Q1-Q4 AVERAGE FOR 2006

Total Employment	22,536
Net Job Flows	431
Job Creation	2,615
New Hires	4,677
Separations	5,843
Turnover	13%
Avg. Monthly Earnings	\$3,855
Avg. New Hire Earnings	\$3,093

NEW HIRES BY AGE IN 2006

Rhode Island construction firms hired 4,677 people in 2006



Source: U.S. Census Bureau. Local Employment Dynamics. LEHD Rhode Island Industry Reports - Quarterly Workforce Indicators. <http://lehd.did.census.gov/led/datatools/qwiapp.html>

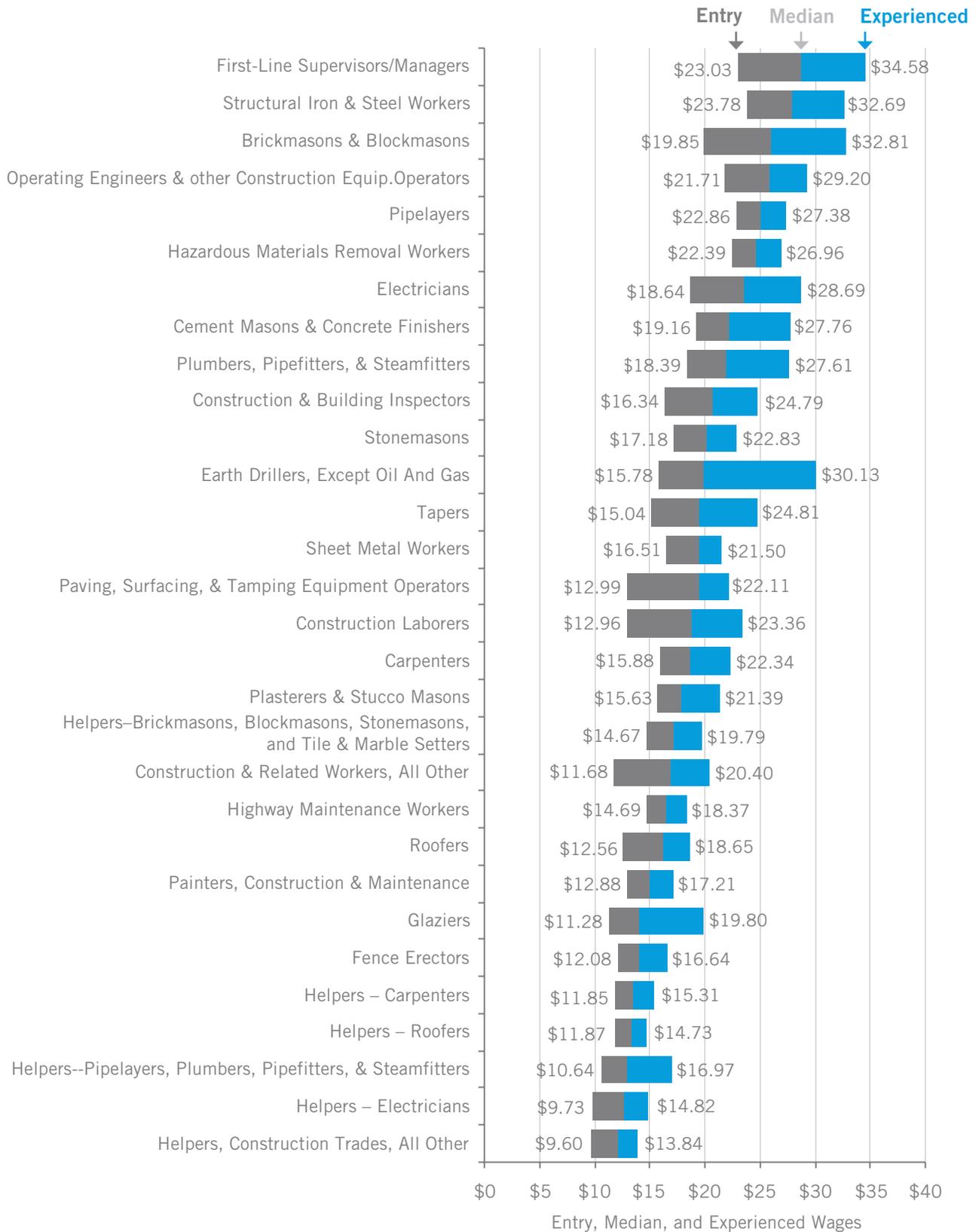
B. PROJECTED OCCUPATIONAL OPENINGS IN CONSTRUCTION – 2004-2014

Occupation	2004 Employment	2014 Projected Employment	Growth Openings	Replacement Openings	Total Projected Openings
Carpenters	5,982	7,084	1,102	974	2,076
Plumbers, Pipefitters, & Steamfitters	2,344	2,835	491	539	1,030
First-Line Supervisors/Managers of Construction Trades & Extraction Workers	2,804	3,295	491	477	968
Construction Laborers	3,901	4,332	431	519	950
Electricians	2,113	2,516	403	418	821
Painters, Construction & Maintenance	1,432	1,719	287	218	505
Operating Engineers & Other Construction Equip. Operators	939	1,124	185	241	426
Sheet Metal Workers	567	663	96	136	232
Roofers	395	511	116	92	208
Cement Masons & Concrete Finishers	432	527	95	87	182
Brickmasons & Blockmasons	447	550	103	66	169
Construction And Building Inspectors	266	305	39	60	99
Hazardous Materials Removal Workers	128	176	48	34	82
Helpers–Brickmasons, Blockmasons, Stonemasons, and Tile & Marble Setters	108	137	29	45	74
Highway Maintenance Workers	231	265	34	33	67
Stonemasons	193	231	38	29	67
Structural Iron & Steel Workers	236	247	11	46	57
Tapers	126	147	21	27	48
Helpers, Construction Trades, All Other	85	78	0	35	35
Pipelayers	101	109	8	23	31
Earth Drillers, Except Oil And Gas	79	93	14	17	31
Construction & Related Workers, All Other	125	135	10	20	30
Helpers–Roofers	24	31	7	10	17
All Construction & Extraction	26,404	31,057	4,653	4,753	9,406
All Industries Statewide	518,145	573,437	63,178	123,123	186,301

Source: Rhode Island Department of Labor and Training, Labor Market Information. Industry and Occupational Projections. www.dlt.ri.gov/lmi/proj.htm (accessed on the web April 2008). *estimated by author from other published LMI data

C. CONSTRUCTION WAGES BY OCCUPATION IN RHODE ISLAND, 2006

Construction occupations in descending order by median wage



Source: Rhode Island Department of Labor and Training, Labor Market Information, Occupational Employment Statistics – May 2006

D. RHODE ISLAND JOINT UNION-MANAGEMENT APPRENTICESHIP PROGRAMS

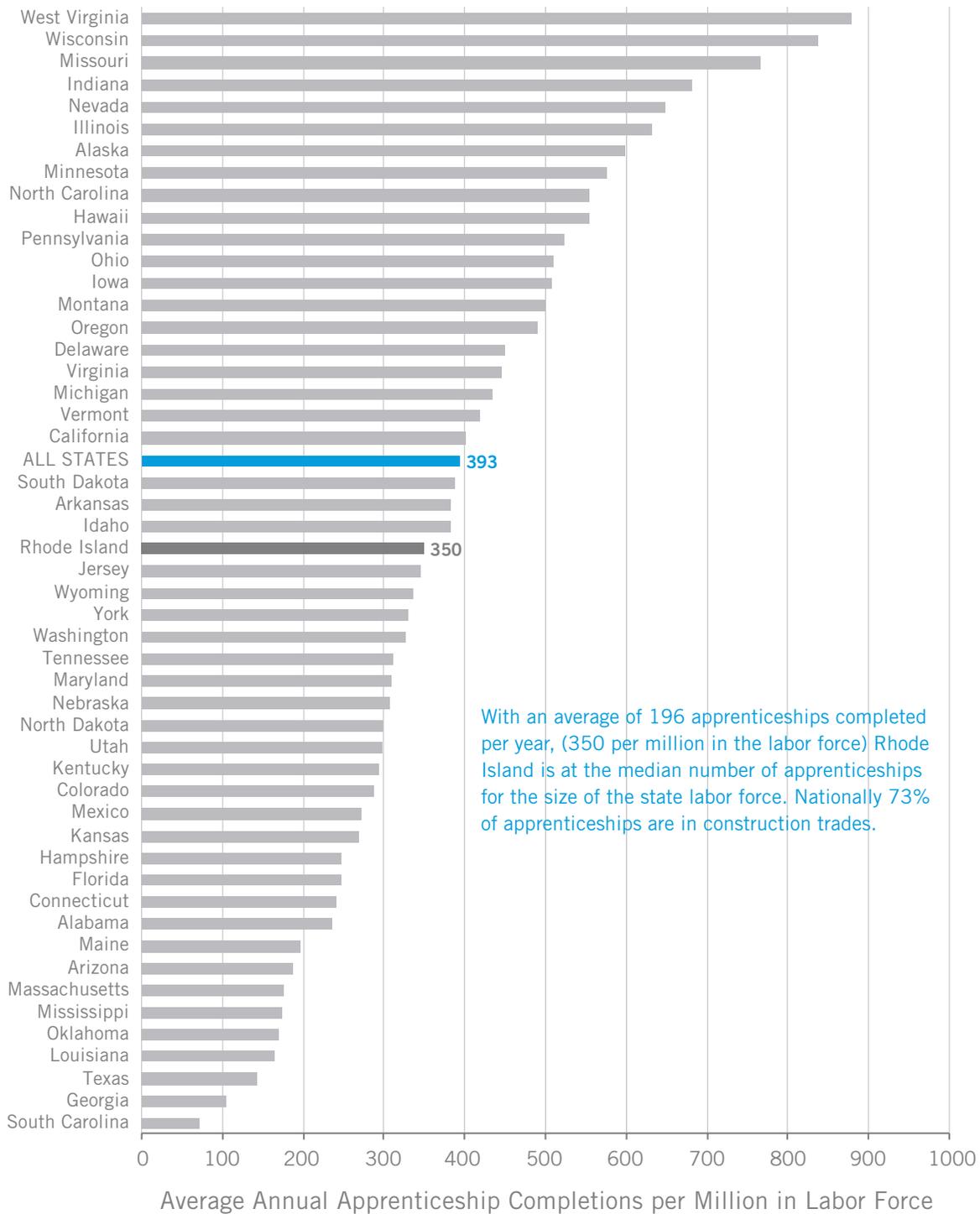
Program	Apprenticeship Specifics					Wages & Benefits						
	Term	Jurisdiction	Classroom Hours	On the Job Hours	Insertion Fee	Starting Wage	Wage Progression	Journeyman Wage	Starting Benefits	Benefit Progression	Journeyman Benefits	Monthly Dues
Boilermakers Local 29	4 Years	New England (except CT)	144 per year	2,000 per year	\$500 within 2000 hours \$500 when graduating	\$20.90 (65%)	5% Increase every 6 month	\$32.19 hr	350 hours for Health	% basis	Health, dental pension & annuity (\$19.11)	\$34.15
Bricklayers & Allied Craftsmen Local 1	3 Year	RI	144 per year	1,000 per year	\$120	\$15.50 hr (50%)	8.3 % Increase every 6 months	\$31.00 hr	Full	None needed	Health, dental, pension, & annuity	\$14 (Journey level)
Carpenters UBC Local 94	4 years	RI	160 per year	1400 per year	\$90 (includes 3 months dues)	\$14.38 hr (50%)	5% Increase every 6 mths. 10% last 2 years	\$28.75 Hr	Health, partial pension & annuity	% basis	Health, dental, pension, & annuity (\$15.70)	\$20
Elevator Workers No. 39	5 years		84 per year	6,000 total								
Electricians IBEW Local 99	5 years	RI, some Mass.	180 per year minimum (210 avg)	8,000 total	150 Text books cost \$450	\$13.43 hr (42%)	Increase every 6 months	\$31.97 hr	Health after 900 hours	Full Benefits after 2000 hours worked	Health, dental, 2 pensions, & annuity (\$13.44)	\$23.73
Glaziers Local 1333	4 years	RI, Conn. Some Mass.	144 per year	1,000 per year	\$181 (includes 3 months dues)	\$14.69 hr (50%)	6.25% increase every 1000 hours	\$29.38 hr	Health, partial pension & annuity	Full Benefits at 3rd year	Health, dental, pension, & annuity	\$26
Insulators Local 6	4 Years	New England (except CT)	150 per year	1,600 per year	\$500	\$15.51 (RI)	10% per year, 20 % last year	\$31.02 hr	350 to qualify for all benefits, then quarterly hours to maintain	Full Benefits Eligibility after 350 hours	\$15.79	App.=1.05 per hour worked, J. = 1.80
Ironworkers Local 37	3 years	RI, Conn. Some Mass.	200 per year	6,000 total	\$135 (includes 1 month dues)	\$20.05 hr (70%)	Every 6 months, 5% increase	\$28.65 hr	Full - (\$21.75 hr)	Full Benefits	Health, dental, pension, & annuity	\$35
Laborers Local 271	3 years	RI	144 per year	4,000 total	?	\$16.24 hr (60%)	1st Year: 60%/2nd: 70%/3rd: 80%/4th 90%	\$27.07 hr	Full Benefits	Full Benefits	Health, dental, pension & annuity	?
Operating Engineers Local 57	3 years	RI	144 per year + 240 hours on Saturdays	6000 total		?	?	\$28.07 hr	?	?	\$15.43	?
Painters & Allied Trades District Council 11	3 years	RI, Conn. Some Mass.	144 per year	2,000 per year	\$181 (includes 3 month dues)	\$12.50 hr (50%)	5% increase every 1000 hours	\$25.00 hr	Health, partial pension & annuity	Full Benefits at 3rd year	Health, dental, pension, & annuity	\$30
Plasterers & Cement Masons Local 40	PROGRAM UNDER REVIEW					PROGRAM UNDER REVIEW						
Plumbers/Pipefitters Local 51	5 years	RI, SE mass	262 per year	10,000 total	\$200 (includes 1 month dues) \$100 yr. for	\$12.96 hr (40%)	10% increase every 2000 hrs until 10000	\$32.40 hr	Health after 200 hours	Pension at year 3	Health, dental, pension & annuity (\$16.67)	\$30
Roofers & Waterproofers Local 33	3 years	New England (except CT)	150 per year	6,000 total	\$432 (over 3 years) \$12 a month payment	\$13.48 hr (50%)	% basis	\$26.96 hr	Health 50% pension	Full benefits after 1st year	?	\$20
Sprinklerfitters Local 676	5 years	RI, CT, & Western MA	144 per year	2,000 per year	\$200 after 3 Months, with \$300 more by	\$14.18 (40%)	6 month, 1000 hours and performance evaluation.	\$35.45 hr	600 Hours, then full benefits	% basis	Health, Dental, Pension & annuity (\$13.15)	\$115
Sheet Metal Workers Local 17	5 years	Boston, Eastern Mass	144 per year	8,000 total	?	?	?	\$29.93 hr	?	?	\$19.17	?

All the apprenticeships above require applicant to be eighteen years old, have a valid drivers license, have reliable transportation, and either a high school diploma or GED, except carpentry which accepts 17 year olds. Electricians specifically require algebra in addition to the high school credential. Some of the programs require written aptitude tests, physical exams, and/or interviews.

Source: Building Futures compilation of information gathered directly from individual programs. 2008.

E. COMPLETED APPRENTICESHIPS BY STATE, ANNUAL AVERAGE 2002–2006

Per million workers, all industries



Source: U.S. Department of Labor Employment and Training Administration. Apprenticeship Statistics. New and Completed Apprentices by State for FY 2002-2006. Accessed on the web on 4/17/08. <http://www.doleta.gov/OA/statistics.cfm>. Scaled by the size of the 2004 state civilian labor force.

F. NUMBER OF RI CONSTRUCTION APPRENTICESHIPS BY TRADE, 2006

Union	Journeyman	Apprentices	Out of work as of 12/7/06	Regional Personnel Capabilities
Boilermakers Local No.29	450	80	N/A	800
Bricklayers Local No. 1	475	31	10	7051
Carpenters Local No. 94	1500	115	80/4000 (regional)	Unlimited
Elevator Workers Local No. 39	67	20	0	Not Available
Glaziers Local No. 1333	175	35	21	Not Available
Heat & Frost Insulators Local No. 6	510	100	35	1000
IBEW Local No.99	680	168	85	6297
Iron Workers Local No. 37	332	68	10	6000
Laborers' District Council	2100	50	150	Not Available
Plasterers & Cement Masons No. 40	120	2	10	400+
Operating Engineers Local No.57	796	15	55	6912
Painters Local No. 195	266	28	30	Not Available
Plumbers & Pipefitters Local No. 51	1265	104	96	6000+
Roofers & Waterproofers Local No. 33	780	120	Unable to ascertain	670
Sheet metal Workers Local No. 17	240	Not Available	93 (regional)	2174
Sprinkler Fitters Local No. 676	222	67	5	Not Available
Teamsters Local No. 251	Unlimited	Not Available	N/A	Not Available
Total	9978	1003		37304+

Source: Build RI, December 7, 2006

G. METHOD NOTES FOR ESTIMATING NEED FOR APPRENTICES

The goal was to estimate the number of apprenticeships that need to be completed to replace the stock of journey-workers in union trades. Build RI provided counts of journey-workers by trade union. This report used the 2000 Rhode Island population by age data from the U.S. census and compared it to the BLS Local Employment Dynamics Q3 2006 construction employment by age date to determine the loss rate for workers as they aged from 45-54 into the 55-64 year old category. The number of 55-64 year old workers in construction would be twice as high if people were not leaving the profession due to age and retirement prior to age 65. The estimate for future retirements in this study assumes all the people passing age 65 will retire and half of the people turning 55 will not continue working. These aging statistics were then applied to the base of 10,000 journey-workers in the construction trades. However, an undetermined percentage of these 10,000 workers may not be Rhode Islanders, but traveling workers.

H. OTHER TRAINING PROGRAMS FOR THE CONSTRUCTION INDUSTRY

Post Secondary

MotoRing Technical Training Institute (MTTI), East Providence

New England Institute of Technology, Warwick

ABC School (residential sub-sector), East Providence

High School

Chariho Area Career & Technical Center, Wood Rvier Junction

Cranston Area Career & Technical Center, Cranston

East Providence Area Career & Technical Center, East Providence

Davies Career & Technical Center, Lincoln

Hanley Career & Technical Center, Providence

Newport Area Career & Technical Center, Newport

Warwick Area Career & Technical Center, Warwick

Woonsocket Area Career & Technical Center, Woonsocket

New England Laborers/Cranston Public Schools Construction & Career Academy

Exeter Job Corp Academy

The federal government recognizes Job Corp as qualifying for direct entry into apprenticeship programs, however, the RI experience is that the majority of Job Corp graduates require further training prior to being ready to succeed in a construction apprenticeship program.

Not for Profit

YouthBuild Providence (referenced in study)

SER Jobs for Progress

Amos House (10 week introductory program)

Urban League Youthbuild project

I. KEY INFORMANTS

Federal Apprenticeships Program, Howard Carney.

Carpenters, William (Bill) Holmes, Chair of RI State Apprenticeship Council.

Gilbane Building Company, William Bryan, Program Director

Maron Construction Co., Inc., David J. Maron, President of Associated General Contractors, Rhode Island Chapter.

RI Building & Construction Trades Council, Contact: Michael Sabitoni, President.

Painters, IUPAT District Council 11, Contact: Scott Duhamel, Business Manager.

Electricians, IBEW Local 99, Contact: James (Jim) Jackson Apprenticeship Coordinator.

Build RI, <http://www.buildri.org/r21/> Contact: Greg Mancini, Executive Director.

BuildRI is an equal labor-management partnership devoted to promoting the benefits of using union contractors and their highly skilled union workers in the Rhode Island area marketplace. The coalition, which is involved in constructing virtually every commercial or major residential construction project in the area, encompasses over 500 local area contractors and 17 local construction unions.

Associated General Contractors, Rhode Island Chapter, Contact: Eric Anderson

The Rhode Island Chapter of the Associated General Contractors of America, Inc. (RIAGC) is a construction industry trade association established in 1931. They promote the interests of our members by means of education and training, safety awareness programs, collective bargaining, legislative action and peer recognition. Their diverse Regular membership is composed of the principal industrial and commercial Construction Managers and General Contractors in Rhode Island. These firms are assisted by an Associate membership of Specialty contractors, material suppliers and professional service providers.

END NOTES

- ¹Rhode Island Economic Policy Council. 2008. *A Rhode Island Economic Strategy: Grow the Top, Build a New Middle and Move the Bottom Up*. www.ripolicy.org/strategy
- ²Sax, Leonard, M.D., Ph. D. 2007. *Boys Adrift. The Five Factors Driving the Growing Epidemic of Unmotivated Boys and Underachieving Young Men*. Basic Books. New York.
- ³Harrington, Paul. Northeastern University Center for Labor Market Research.
- ⁴BNA Construction Labor Reports, Vol. 46, no. 2296 (2000): 920: cited in: *Standing at a Crossroads: The Building Trades in the 21st Century*: Mark Erlich & Jeff Grabelsky, Labor History, Vol. 46, no. 4, 2005
- ⁵Center for Construction Research and Training. (CPWR) 2008. *The Construction Chart Book : The U.S. Construction Industry and its Workers*. 4th Edition, 2008. <http://www.cpwr.com/rp-chartbook.html>, Chapter 28, Education in Construction and Other Industries.
- ⁶Bradley, David H. Ph.D. and Stephen A. Herzenberg, Ph.D of the Keystone Research Center. 2002. "Construction Apprenticeship and Training In Pennsylvania." Prepared for the Capital Area Labor-Management Council, Inc. Construction partnership Coordination Project.
- ⁷U.S. Department of Labor Employment and Training Administration. Apprenticeship Statistics. Accessed on the web on 4/17/08.
- ⁸Rhode Island Department of Labor and Training. Labor Market Information. RI Declining Occupations at <http://www.dlt.ri.gov/lmi/proj/declineocc.htm>
- ⁹US DOL, Occupational Outlook Handbook.
- ¹⁰Center for Construction Research and Training. (CPWR) 2008. *The Construction Chart Book: The U.S. Construction Industry and its Workers*. 4th Edition, 2008. <http://www.cpwr.com/rp-chartbook.html>, Chapter 29, Apprenticeships in Construction.
- ¹¹Vincent, Jeff. 2004. "Analysis of Construction Industry Apprenticeship Programs in Indiana." Indiana University Institute for the Study of Labor and Society. (April) 2004 IU-ISLS.
- ¹²Bradley, David H. Ph.D. and Stephen A. Herzenberg, Ph.D of the Keystone Research Center. 2002. "Construction Apprenticeship and Training In Pennsylvania." Prepared for the Capital Area Labor-Management Council, Inc. Construction partnership Coordination Project.
- ¹³While Bodah's invested significant time in reviewing apprenticeship data, his unpublished work contains cautions about the use of his data which was pieced together from a number of different databases. The apprentices listed in each database did not entirely correspond with the other databases.

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