



Meeting the Workforce Needs of the Unionized Sheet Metal Industry

**Report submitted to the
National Labor-Management Cooperative Committee**

By

**William F. Maloney, Ph.D.
University of Kentucky**

January 16, 2007

Executive Summary

The labor pool from which the unionized sheet metal industry will draw its future workforce is very different from the historical pool. Because of the intense physical demands of the work, few workers work past the age of 60. The Baby Boomer generation, those individuals born between 1946 and 1964, has been the largest group in the workforce and its leading edge will reach 60 years of age in 2006 and begin to retire. Approximately 40% of the construction workforce and 42% of the sheet metal workforce will be eligible to retire during the next ten years. One industry observer estimates that the construction industry will need to add 185,000 new workers each of the next ten years to offset the wave of retirements. Another observer sets the figure at 250,000. Both of these figures were determined prior to the extensive damage wrought by hurricanes Katrina and Rita, which will increase these figures significantly. Thus, demand for skilled construction workers will be strong for the foreseeable future.

At the same time, the US labor force will undergo significant demographic change as a consequence of:

- a declining male labor force participation rate;
- an increasing female labor force participation rate;
- a declining male birth rate such that only 1.06 males are being born for each one female;
- a declining birth rate such that the current birth rate is the lowest in recorded history;
- high birth rates of immigrant populations, particularly Latino; and
- immigration.

The result will be a labor force that is more female, more Latino, and more Asian. The construction industry, with sheet metal as no exception, has been a bastion for white males. In 2002, the sheet metal industry was 3.6% female, 3.5% African-American, 2.4% Asian, and 17.2% Latino (includes persons formerly labeled as Hispanic). In other words, it was 73.8% white male. The Latino participation is concentrated in Florida and the Southwest.

Absent strong external pressure for change, the industry has historically focused its recruiting attention on what it knows best: young, white males. Recruiting consisted of participating in career fairs and running advertisements in local papers alerting the community that application for apprenticeship will be accepted within a specified time frame. Until recently, this was adequate to attract a sufficient number of applicants. However, the skill shortage has been growing due to a combination of factors: increasing college attendance, societal bias against blue collar jobs and in favor of college attendance and white collar jobs, a negative image of construction work, and a negative image of unions. In addition, other factors, such as the high incarceration rate of African American youths have contributed. Thus, the future of the unionized sheet metal industry depends upon its ability to recruit a workforce from population groups it has historically neglected: women and minorities.

To do so requires a radical change in the way in which workforce development is conducted. The workforce development process is identified as consisting of six related activities: awareness, familiarization, recruitment, selection, training, and retention. Seventy-one recommendations are presented to change the way workforce development is conducted in the unionized sheet metal industry. Some are basic and not likely to generate any concern or opposition. Others, however, will raise significant concerns among union members and contractors. Two of the recommendations are critical. First, management, i.e., the contractors, must become more actively involved in the workforce development process. Too often, this process is left to the union, which, for the contractors, is allowing someone else to pick their workforce. The apprenticeship programs in the unionized industry are legally jointly operated. It is time for the contractors to return the "joint" to the committee. Second, a fulltime director of outreach and recruitment position should be created within each JAC or JATC. This individual should be a human resources professional with appropriate training.

A series of appendices are presented that identify resources that may be used to increase the number of women and minorities in the sheet metal industry.

Meeting the Workforce Needs of the Unionized Sheet Metal Industry

Table of Contents

	Page
Executive Summary.....	ii
List of Tables.....	iv
List of Figures.....	iv
List of Appendices.....	v
Preface.....	vi
Acknowledgements.....	ix
Introduction.....	1
The Situation – Demographics.....	1
Summary.....	3
The Situation – Education.....	4
Perceptions of Construction Employment.....	7
The Situation – History.....	10
The Results.....	11
Model.....	15
Workforce Development Process.....	19
Outreach.....	23
A Cautionary Note.....	25
Recommendations.....	27
References.....	40
Appendices.....	43

List of Tables

	Page
Table 1 - Workforce Composition by Ethnic Group.....	2
Table 2 - Labor Force Participation Rate by Gender.....	2
Table 3 - U.S. Population - 2005 - Estimated.....	3
Table 4 - High School Graduation Rates – 2003.....	4
Table 5 - Percentage of High School Graduates Completing Subject.....	5
Table 6 - Four Year College Graduation Rates.....	5
Table 7 - Employed Persons by Selected Construction Occupation, Sex, and Race.....	12

List of Figures

Figure 1 - Postsecondary Participation Rates by Sex and Race.....	6
Figure 2 - U.S. Employment by Education and Training Required, 2000.....	7
Figure 3 - Albert Einstein.....	14
Figure 4 - Integrated Pathways Model.....	15
Figure 5 - Pathway #1.....	16
Figure 6 - Pathway #2.....	17
Figure 7 - Pathway #3.....	18
Figure 8 - Workforce Development Process.....	19
Figure 9 - JATC Outreach & Recruitment.....	23
Figure 10-Skills and Ability vs. Requirements.....	25

List of Appendices

Appendix Number	Title	Page
1.	Hispanics in the United States: An Insight into Group Characteristics.....	43
2.	Latinos in Construction: Breaking Barriers, Building Hope.....	54
3.	Boy Scouts of America Merit Badges Relevant to Construction.....	81
4.	The George Meany Award.....	96
5.	Girl Scout Merit Badges.....	98
6.	Exploring.....	99
7.	If I Had a Hammer.....	108
8.	From Crayons to CAD.....	115
9.	Build Up.....	134
10.	Delcastle High School Summer Camp.....	135
11.	California Charter High School for the Skilled Trades.....	137
12.	Sample Sexual Harassment Workshop Outline.....	158
13.	Sample Collective Bargaining Agreement Contract Language for Sexual Harassment, Gender Discrimination, and Equal Opportunity.....	165
14.	Committee on Women in the Trades.....	166
15.	IBEW Women's Conference.....	168
16.	Electrical Workers Minority Caucus.....	172
17.	Labor-Affiliated Female and Minority Organizations.....	176
18.	Female and Minority Organizations with Focus on Increasing Female and Minority Participation in the Construction Industry.....	181
19.	Pre-apprenticeship Program Guidelines	204
20.	Youth Organization and Activities	223
21.	Proposed Occupational Fitness Program for Women.....	255
22.	Manual for Survival.....	257
23.	Children's Awareness – Construction Figures.....	300
24.	Children's Awareness – Books.....	303
25.	Modern Day Icon.....	307
26.	Career Financial Analysis.....	308
27.	Transition to Trainer.....	309

Meeting the Workforce Needs of the Unionized Sheet Metal Industry

PREFACE

In conducting this project, the principal investigator talked with many sheet metal workers and contractors. In addition, he received notes, letters, and phone calls from others. There were three themes contained in these messages: depression, despair and pessimism about the future. It is important that these concerns be examined before addressing the recruitment and retention of women and minorities in the sheet metal industry.

Issues

- Time after time, when a group of sheet metal workers was questioned, less than 25% of the group indicated that they would like their children, either male or female, to follow them into the sheet metal trade. The percentages were even lower when the question was limited to daughters. There were numerous reasons cited for this reluctance: the work is too hard, employment is too unstable, and there is no future. One caller said "I don't want my daughter working with these guys; they're a bunch of animals!"

If the current members of the industry do not want their children coming into their trade, it will be extremely difficult to attract well-qualified individuals to the industry. How does one recruit with enthusiasm absent a belief in the future viability and attractiveness of the trade?

- The latest unemployment figures for the country (May, 2006) indicate that 4.6% of the civilian workforce is currently unemployed. On a historical basis, this figure is relatively low; the average unemployment rate for the civilian labor force for the period 1980-2005 was 6.2%. The economy has been growing at a healthy rate for several quarters and unemployment has been decreasing. However, it appears that the unionized sheet metal industry has not been experiencing this growth. Discussions with local union officials and members from around the country reveal that some locals have from 1/4 to 1/3 of their membership on the bench even though there has been a significant reduction in the number of members. A journey worker wrote that despite the fact that he had completed all of the upgrade courses available and had had a steady employment record, he has only been able to work 15 of the last 40 months and, as a result, lost his health benefits twice.
- There is a perception among the Union's membership that the markets for unionized sheet metal have been lost: (1) the off-shoring of American industry has removed a significant market from the union construction sector. The manufacturing industry that was once the pride of America is now located in Southeast Asia; (2) the gross mismanagement and refusal of its executives to look to the future has led the American auto industry, a major source of work for unionized sheet metal, to the brink of bankruptcy; (3) high rise buildings are now being built by non-signatory contractors and their unorganized employees in former bastions of union construction such as Manhattan; and (4) there is a rapidly decreasing percentage of decision makers in this growing industry choosing to use Union labor. Many Union members realize this and stated that they just want to hold on until they can retire.
- There is a general uneasiness about retirement because of concerns about the financial viability of Social Security and the SMWIA national pension plan. Both are significantly under-funded. Social Security's problems arise because of a significant reduction in the ratio of workers paying into the fund to the number of individuals receiving benefits and an expansion in benefits without corresponding increases in taxes. The problem is exacerbated by the demographics; the relative size of the Baby Boomer generation dwarfs that of Generation X and the Millennial generations

For the national pension fund, the problem is one of too few younger workers paying into the fund as a consequence of the loss of market share to the open shop. An industry that has gone from over 85% unionized to one that is less than 20% unionized, at best, has contracted by retirements, members resigning and seeking employment elsewhere, and not replacing retirees with younger

workers. As a consequence, the average age of the membership of the SMWIA is increasing. There is a plan in effect to restore the national pension plan to full funding, but there is not a lot of optimism among SMWIA members that it will be successful.

- Just like auto and other industries, the unionized sheet metal industry, 30 plus years ago, established the concept of early retirement using a defined benefit pension plan. As these industries shrunk due to market share losses to competitors, the number of workers paying into the fund was drastically reduced thereby creating the basis of the under-funding crisis. Plans such as the Rule of 85 that allow retirement when age and service equal 85 and plans in California that allow retirement at 50 or 52 have created a situation in which members can collect retirement benefits for 15 years before they can collect full Social Security benefits.

Early retirement created another problem, which was the need to provide medical benefits to retirees until they were eligible for Medicare at 65. The cost of providing retiree health coverage was covered by increased payments into the health and welfare fund by workers or by requiring retirees to pay all or a portion of the cost. These problems have been compounded by rapidly escalating health care costs and the reality that retirees are the single most expensive age group to insure.

As a consequence of these funding problems, greater proportions of negotiated increases are being used to cover the pension and health and welfare shortfalls. Because of general inflation and increased energy costs, the working members have less discretionary income. Benefit contributions are increasing to meet the increasing costs driven by the retirement of Baby Boomers with the consequence that sheet metal contractors employing younger workers are not competitive and cannot provide jobs to these workers.

- Rightly or wrongly, there is a perception among Union members that their union's leadership, at both the local and national levels, has few, if any, ideas and is content to hold on until retirement.
- When used, hiring hall procedures are causing productive and better workers to be blocked from jobs by lesser quality workers. Contractors have said that they will take on more work if they could be assured of the quality of the workers they would receive from the hall. Without the assurances of good quality workers, contractors do not believe it is worth the risk to undertake new work. Contractors have set their work levels such that they avoid additional risk and earn an acceptable profit.
- For years, union construction has tried to sell itself on the basis of having the best trained and most productive craftsmen in the industry. Clients are voting with their dollars and purchasing construction services from nonunion firms. This decision is attributed to three factors: (1) union firms are simply too costly and not competitive and the alleged better training does not result in sufficiently greater productivity; (2) worker and union inflexibility; and (3) little concern for the client. Clients today question the value of using a supplier who is not committed to the success of the client.

The future for the unionized sheet metal industry does not look bright. Unless the SMWIA and SMACNA begin a complete examination of how they do business, particularly in terms of the needs of their clients, and develop a radically new way of doing business, the question of recruitment of new workers will be moot. There will be no need for new workers because there will be no unionized sheet metal industry.

Meaning

It is important to understand these issues because of their impact on attracting new entrants to the unionized sheet metal industry.

An individual evaluating potential careers looks for the opportunity:

- to develop proficiency in a set of skills that will allow the individual to be marketable now and into the future. The SMWIA/SMACNA apprenticeship program together with journey worker upgrades is, without question, the best sheet metal training program in the country.
- to complete required training programs and move to higher pay levels as expeditiously as possible. This will require apprenticeship programs to be flexible in granting credit for work completed in other training programs. An apprentice related his experience in having to take a CAD class in the apprenticeship program after having completed a one semester CAD course at a community college.
- to earn an income that will allow the person to have an appropriate standard of living. The wages negotiated for sheet metal workers between the SMWIA locals and SMACNA chapters allows individuals to maintain a good standard of living. However, the average construction worker works approximately 1600 hours per year. Conditions that render union contractors uncompetitive reduce the hours available to workers and, thereby, their income.
 - workers need to work 2000 hours per year to earn an amount that will provide them and their families with the standard of living commensurate with the training completed.
- to earn benefits, e.g., health insurance, that provide for the security of the worker's family.
- to earn a comfortable retirement.
- to work in a professional work environment where they are treated with respect, not subjected to repeated hazing and harassment, and forced to work with uncommitted people.

Without the perception of these opportunities, an individual will not choose to join and remain in an occupation. The choice is simple – what job will provide you with more of what you want.

The report that follows examines the current workforce situation in the sheet metal industry in terms of demographics, education, and the history of efforts to integrate women and minorities into the industry. It then presents a model of recruitment and retention and examples of programs that may be used to form a comprehensive program to recruit and retain women and minorities in the sheet metal industry.

Acknowledgements

I want to acknowledge the following individuals for their assistance and inspiration in studying this subject:

Jerry Galarneau, Apprentice Coordinator, SMWIA Local 16, Portland, Oregon
Charlie McClure, Apprentice Coordinator, SMWIA Local 19, Philadelphia, Pennsylvania
Connie Ashbrook, Executive Director, Oregon Tradeswomen, Inc., Portland, Oregon
Susan Eisenberg, Professor, University of Massachusetts at Boston, Boston, Massachusetts
Francoise Jacobsohn, Project Director, Legal Momentum (formerly NOW Legal Defense and Education Fund), New York, New York
Joan Kuransky, Executive Director, Wider Opportunities for Women, Washington, D.C.
Anne Rascon, Executive Director, Nontraditional Employment for Women
Beth Youin, Executive Director, Tradeswomen, Inc., Oakland, California

Meeting the Workforce Needs of the Unionized Sheet Metal Industry

Introduction

As we move through the 21st century, it is becoming increasingly evident that the construction industry in the United States is experiencing a shortage of skilled workers that will only get worse. The US workforce is changing at a rapid rate as a result of several factors: demographic, educational, and sociological. The industry that built the United States using the backs of immigrants will continue to do so, with several significant changes.

The Situation - Demographics

The labor force in the United States is undergoing significant demographic changes that have the potential to create serious short-term imbalances in the supply and demand for workers. These imbalances may limit economic growth if not addressed. The construction industry is especially vulnerable to the effects of the imbalances.

High birth rates after World War II resulted in what has been termed the Baby Boomer Generation (individuals born between 1946 and 1964). The leading edge of this group will turn 60 in 2006 and is beginning to retire.

Robert M. Gasperow, director of the Construction Labor Research Council, published an analysis of U.S. Bureau of Labor Statistics and U.S. Bureau of the Census data and the implications for the construction labor market in a paper titled "Craft Labor Supply Outlook 2005 - 2015" (Gasperow, 2005). His analyses of Bureau of Labor Statistics data and conclusions have significant implications for the construction industry: Gasperow's conclusions and other BLS data add insight to the issue.

- Recent labor shortages in the construction industry have increased the awareness of the need for recruiting, training, and retaining new entrants to the industry
- Because of the time required for training, there is a lag between recruiting new entrants and the availability of trained craft workers. Craft-based apprenticeship programs range from three to five years in length. Skill-based programs that do not provide the breadth of skills of craft training are shorter in duration.
- Gasperow concludes that the construction industry will need to add 185,000 workers annually over the next ten years to replace workers retiring or otherwise leaving the industry and to allow for growth. Of this number, the sheet metal industry will need 6200 new entrants per year. The Construction Users Roundtable estimates that this need is be closer to 200,000 to 250,000 new entrants per year (CURT 2004). It is important to note that these estimates were prepared prior to the devastating impact of hurricanes Katrina and Rita on the Gulf Coast. At the same time, the petrochemical industry in Alberta, Canada is experiencing a construction boom.
- Because of the physical demands of construction work, the working life of construction workers is shorter than that of workers in other industries. Consequently, construction workers retire earlier or move to less physically demanding occupations in other industries. Either way, the worker is lost to the construction industry.
- A large influx of Latino workers allowed the industry to meet increasing demand in recent years.
- The number of Baby Boomers leaving the industry will increase faster than the number of Millennial Generation members (individuals born between 1980 and 2000) and entering the industry, thus creating significant competition for the new labor force entrants.
- Approximately 40% of the current construction workforce is eligible to retire in the next ten years. For the membership of the Sheet Metal Workers International Association, this figure is 42%.
- The composition of the new entrants will change because of differences in population growth rates: Whites, 6%; Blacks, 21%, and Latinos, 23%.
- There will be increasing competition between construction and all other industries for new entrants. For example, one estimate reveals that the US is currently short 110,000 over the road truckers.
- The median age of all construction craft workers was 33 years of age in 1988 and 37 in 1997. By 2003, it had increased to 38 and for union members it was 39.
- The growth rate in the number of males in the labor force is expected to be 1.0% and for women 1.3%. The projected labor force growth rate for Latinos is 2.9%.

- While women are participating in greater numbers in the work force in general, they are not doing so in construction. The increasing entry of Latinos represents the biggest change in construction.
- “An actual shortage of bodies is highly unlikely. A shortage of labor in construction means a shortage of adequately trained, skilled, productive persons. In addition, shortages can occur when there are an adequate number of persons, but there is a mismatch between skills available and skills required. There is also the possibility that there is a geographic imbalance in available craft workers” (CURT 2004).
- The availability of retirement and health care benefits influences the retirement decision. Workers with those benefits will be more likely to retire than workers without the same benefits. Historically, these benefits have been more prevalent in the union sector suggesting high retirement rates in the union sector.
- There are more two wage earner families today, which makes early retirement easier.

Other statistics that bear on the situation:

- The US birth rate at 13.9/1000 people is the lowest since records have been kept.
- The ratio of males to females – 1.06/1 is dropping as fewer males are being born.

The Hudson Institute's book *Workforce 2020*, a sequel to its thought provoking *Workforce 2000*, estimates that the ethnic composition of the US workforce will continue diversifying and in 2020 will be as shown in Table 1 (Hudson Institute, 1998).

Ethnic Group	2000	2020
Caucasian	72%	69%
Latino	11%	14%
African American	12%	11%
Asian	5%	6%

2000 – BLS estimates; 2020 – Workforce 2020 estimates

Table 1 - Workforce Composition by Ethnic Group

The figure for Latino workers significantly understates the Latino share of the construction workforce. BLS data reported by the Center to Protect Workers Rights indicate that Latinos represented 17% of the construction labor force in 2000 and that the number of Latino construction workers in the United States had quadrupled between 1980 and 2000 (CPWR, 2003).

In addition, at the same time that the participation rate of women is increasing (See Table 2), several of the traditionally female occupations (office and administrative support occupations) will suffer some of the largest predicted job losses (Heckler, 2001). Consequently, many women will be searching for nontraditional jobs that pay good wages and provide good benefits. The increasing numbers of single mothers, whether it is by choice or not, is increasing the need to find “good” jobs (A good job is one that provides the jobholder with good earnings and benefits). The declining participation rate for males may be attributed, at least in part, to the impact of 30 year and out retirement programs and significant buyout programs as many industries restructure to increase profitability.

Gender	1975	2005
Male	77.9%	73.3%
Female	46.3%	59.3%

BLS statistics

Table 2 - Labor Force Participation Rate by Gender

Gender or Race	Percentage of Population
Male	49.3%
Female	50.7%
White	67.1%
Black	13.0%
Latino	14.4%
Asian	4.3%

U.S. Bureau of the Census
Table 3 - U.S. Population - 2005 - Estimated

Summary

The demographic changes discussed above have the following ramifications for the construction and sheet metal industries:

- The pool of workers seeking employment, i.e., the pool from which industry hires its employees, will be
 - More female as a result of fewer males in the population, higher participation rates for females, and lower participation rates for males.
 - More Latino as a function of higher birth rates and immigration.
 - Older as a consequence of job loss resulting from the restructuring going on in many industries
- Historically, the industry has traditionally focused its recruiting efforts on young, white males most of whom were related to persons already in the industry or acquainted with someone in the industry.
- To meet the demand for labor in the future, the industry must turn its attention to neglected groups:
 - Women
 - African Americans
 - Latinos
 - Asians
 - Older workers
 - Other immigrant groups
- Most sheet metal locals have little experience recruiting from these groups.
- A common mistake is treating Latinos as a monolithic group. This could not be more wrong. Cubans are very different from Mexicans; Puerto Ricans are very different from Guatemalans. A paper titled "Hispanics in the United States: An Insight into Group Characteristics" that was prepared by the Office of Minority Health Resource Center within the Department of Health and Human Services is presented in Appendix 1. It examines differences between Latino groups that may be relevant in recruiting.

Appendix 2 contains a report prepared for the National Council of La Raza by Lourdes Tinajero of the Cuban-American National Council that is an excellent look at Latino construction workers.

The construction industry will continue to be an industry of immigrants, but instead of being one of Irish, Italians, and Poles it will be one of Cubans, Mexicans, and Vietnamese. It will also be more female.

The Situation - Education

Construction work has long had a public image of being done by workers with a strong back and weak mind. This may be true for a few construction activities, but is certainly not true for the sheet metal craft. Sheet metal workers must have knowledge of mathematics and science if they are to meet the needs of 21st century. Many high school students are not completing courses in these areas, which is unfortunate in an increasingly technology-driven society. In many states, it is possible to earn a high school diploma while completing only one year of math and one year of science.

The basic qualifications for admission to a SMWIA/SMACNA apprenticeship program are:

- Be a high school graduate or have earned a GED
- Be at least 18 years of age
- Possess a valid driver's license
- Pass an appropriate aptitude test (typically the Differential Aptitude Test)
- Successfully complete an interview with members of the Joint Apprenticeship and Training Committee.

In spite of the fact that a high school diploma is necessary for almost any type of job in today's economy, a significant number of students fail to graduate from high school. Table 4 presents high school graduation rates by race and gender for 2003. For all races, females have a higher graduation rate than males. Caucasians and Asians have significantly higher graduation rates than do Hispanics and African Americans.

Race	Graduation Rate (%)		
	Total	Gender	
		Female	Male
Caucasian	78	79	74
Hispanic	53	58	49
African American	55	59	48
Asian	72	73	70
Total	70	72	65

Source: Leaving Boys Behind: Public High School Graduation Rates by Jay P. Greene and Marcus A. Winters. Manhattan Institute for Policy Research. Civic Report, No. 48, April, 2006

Table 4 - High School Graduation Rates – 2003

There are no specific requirements in terms of math and science proficiency for admission to an apprenticeship program. Most aptitude tests address basic mathematical concepts, numerical aptitude, and visual and spatial reasoning. However, basic mathematical competency may not be sufficient for tomorrow's sheet metal worker. For some, it may be necessary to have algebra, geometry, and trigonometry skills as well as knowledge in chemistry and physics. It is highly likely that not all sheet metal workers will need skills in these areas. The mathematics and science work completed by high school students varies considerably. Table 5 presents the percentages of graduates who complete specific math and science courses during their high school.

It is imperative that the mathematical and science proficiencies required in the sheet metal trade be identified and translated into high school course requirements. In turn, the requirements and their importance must be communicated to students and teachers.

The pool of workers from which to recruit construction apprentices has been declining since the 1950s as the percentage of high school graduates going on to postsecondary education has steadily increased. Figures 1(a) & 1(b) below present postsecondary participation rates by race and sex for 1974-2003. Postsecondary participation is increasing as a result of several factors:

Subject	Percentage of High School Graduates Completing Subject						
	Total	Gender		Race			
		Male	Female	Caucasian	African American	Hispanic	Asian
Algebra I	62.8	62.0	63.8	63.5	62.3	61.4	56.8
Geometry	75.1	73.7	77.3	77.7	72.6	62.3	79.9
Algebra II	61.7	59.8	63.7	64.6	55.6	48.3	70.1
Trigonometry	8.9	8.2	9.7	10.0	4.8	6.6	11.7
Biology	92.7	91.4	94.1	93.7	92.8	86.5	92.9
Chemistry	60.4	60.4	63.5	63.2	54.6	46.1	72.4
Physics	28.5	31.7	26.2	30.7	21.4	18.9	46.4

Source: National Center for Education Statistics, *Digest of Education Statistics 2000*, table 140, NCES 2001-034, Washington, D.C. Department of Education, Office of Educational Research and Improvement, 2001.

Table 5 - Percentage of High School Graduates Completing Subject

- Parents always want their children to have a better quality of life and be better off financially than they were. The way to do this is to go to college.
- President Bill Clinton is alleged to have said that “What you earn is the result of what you learn” in his effort to convince the public of the necessity of attending college.
- The second industrial revolution, i.e., the shift from manufacturing to services, along with productivity improvements and automation dramatically changed the jobs and skill mix in the economy. More and more workers are becoming knowledge workers rather than producing tangible objects. A college degree is normally a prerequisite for knowledge work. These workers provide services to clients on a face to face basis.

It is not enough to consider college attendance rate. Graduation rates are also important. Table 6 – presents four year graduation rates by race and sex for two recent cohorts at public universities. For all races, women have a higher graduation rate. Many students are working part-time today to help defray the cost of college. These students are taking longer, many require six years to graduate. Less than a third of students attending a public two-year college graduate in two years.

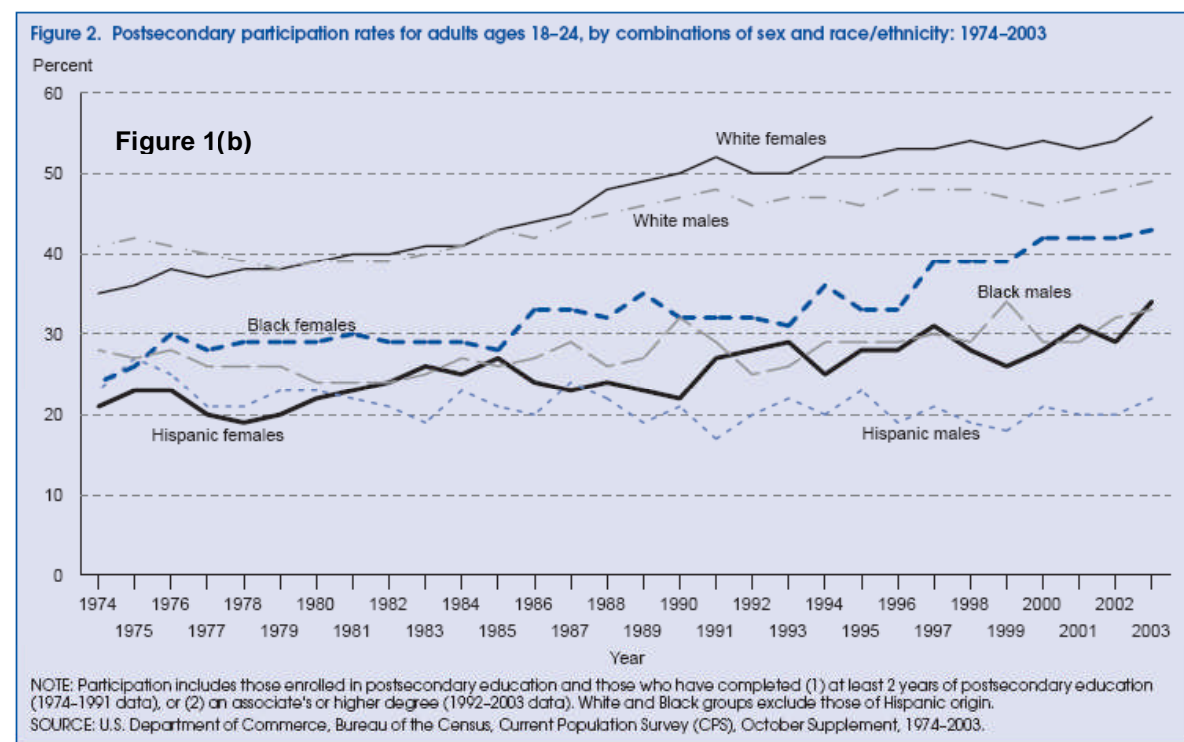
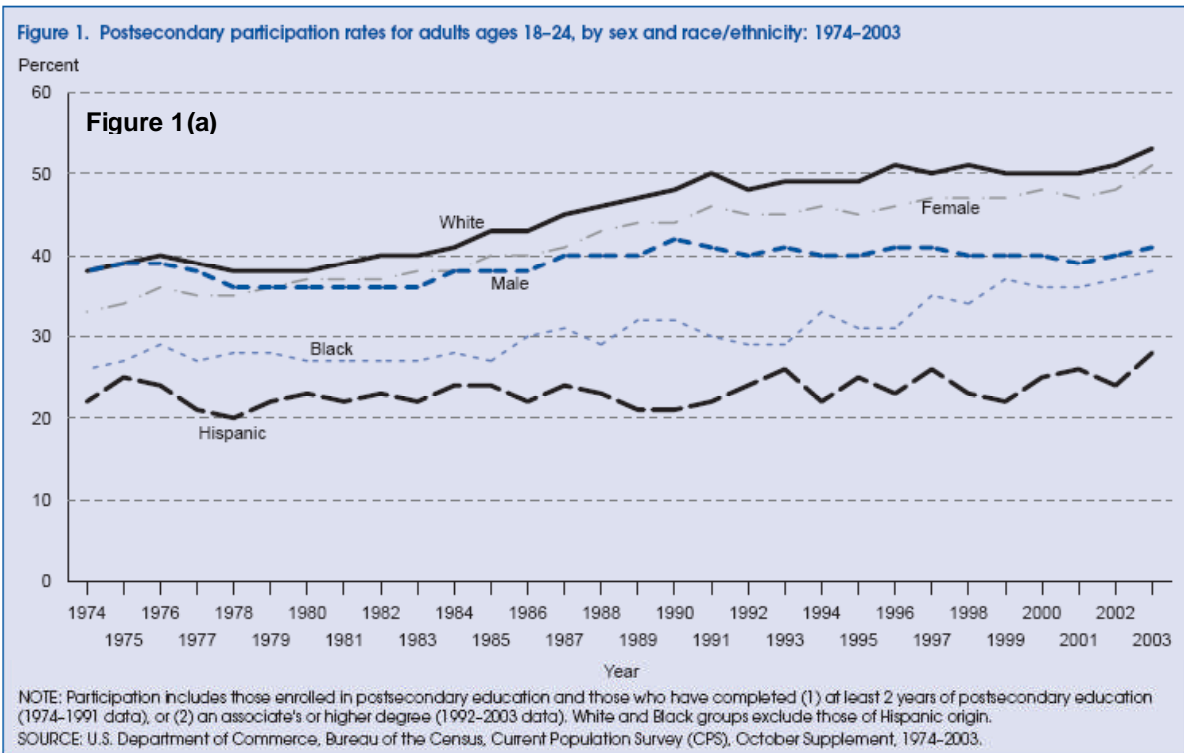
Race	College Graduation Rates – 4 Year (%)	
	Gender	
	Female	Male
Caucasian	57.5	51.3
African American	41.6	37.3
Hispanic	44.8	35.7
Asian	65.3	56.9

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Spring, 2005.

Table 6 - Four Year College Graduation Rates

Possession of a college degree does not guarantee stable employment or employment that makes use of the subject matter studied in college. The world is in the midst of the third industrial revolution as it moves forward in the digital age. With increasing rapidity, information technology is eliminating the need for services to be provided face to face. Satellite technology now allows:

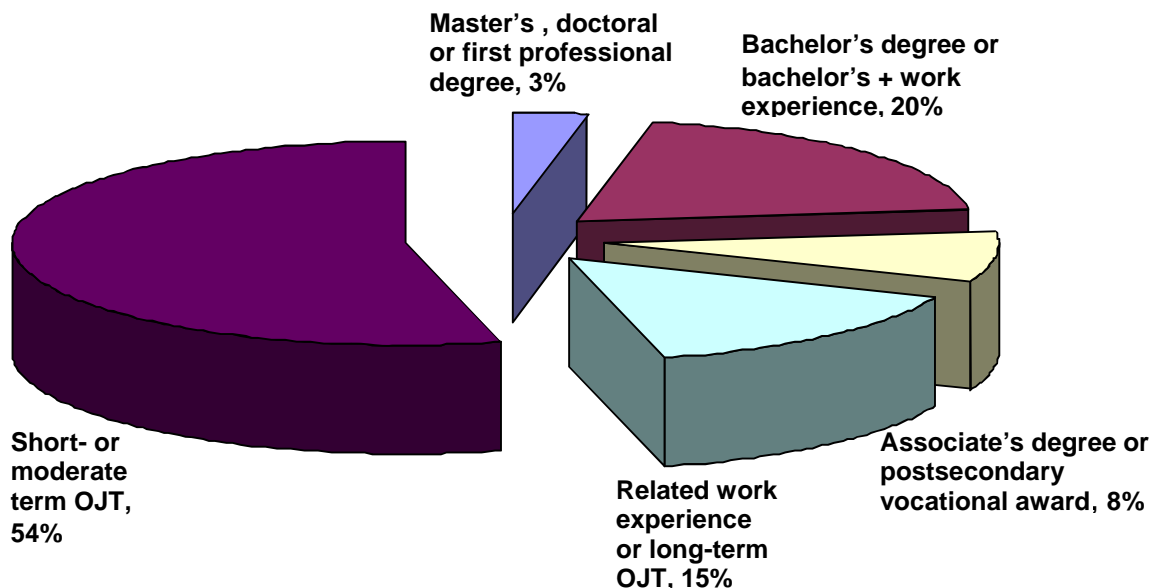
- X-rays to be read thousands of miles from the site of the x-ray.
- General Electric to design appliances in India using teams of Americans and Indians.
- The Internal Revenue Service to process tax returns in India.



Source of both charts: Institute of Education Sciences, National Center for Education Statistics, U.S. Dept. of Education. Postsecondary Participation Rates by Sex and Race/Ethnicity: 1974–2003.

Figure 1 - Postsecondary Participation Rates by Sex and Race

Consequently, the jobs of college educated workers are being outsourced to countries with lower labor costs. For example, Microsoft has established operations in India where it can pay computer programmers, which typically requires a college degree, \$6,000 per year rather than the \$60,000 the jobs pay in the United States. Dell Computer has established call centers in India rather than the United States. The result is that a college degree is no longer the guarantee of the good life.



Source: Occupational Outlook Quarterly, Winter 2001-02, p. 12

Figure 2 – U.S. Employment by Education and Training Required, 2000

As seen in Figure 2, only 23% of the jobs in the U.S. economy require a four year college degree. At the same time, college attendance rates have been increasing for the last 50 years. Approximately 50% of Caucasians, 40% of African Americans, and 30% of Hispanic high school graduates are enrolled in postsecondary education.

Perceptions of Construction Employment

At the same time as the American public has an overwhelming belief that college attendance is mandatory if a person is to secure a solid middle class life, the perception of construction craft work is extremely negative. The *Jobs Rated Almanac, Sixth Edition*, rated 250 jobs on the basis of the following criteria:

- Environment
 - Income
 - Outlook
 - Physical demands
 - Security
 - Stress
 - Travel opportunities
 - Extras, perks, and amenities
- } Core dimensions

The Top 3 and Bottom 3 rated jobs were:

<u>Top 3</u>	<u>Bottom 3</u>
1. Biologist	248. Cowboy
2. Actuary	249. Fisherman
3. Financial Planner	250. Lumberjack

Others of interest: 51 – Attorney; 70 – Mechanical Engineer; 175 – President of the United States

Construction jobs were rated as follows:

- Surveyor – 173
- Construction Foreman – 182
- Carpet Installer – 205
- Painter – 215
- Glazier – 216
- Drywall Finisher – 220
- Plasterer – 222
- Equipment Operator – 224
- Bricklayer – 225
- **Sheet Metal Worker – 227**
- Carpenter – 228
- Roofer – 242
- Laborer – 244
- Ironworker - 247

On the eight dimensions used for rating jobs, sheet metal work is described and evaluated in the *Jobs Rated Almanac* as below. Some of the statements are of questionable accuracy, e.g., “Most sheet metal workers are union members.”

- Environment – rank 210
 - Duties – Constructs, installs, and maintains sheet metal products for home, commercial, and industrial use.
 - Sheet metal workers are employed by construction contractors primarily those specializing in roofing, heating and air-conditioning, and by general contractors engaged in residential, commercial, and industrial construction. These workers follow blueprints or other instructions and cut, bend, and fasten pieces of sheet metal to construct ducts, roofs, gutters, kitchen counters, and other common products, which are then installed at construction sites. Often, sheet metal workers operate computerized metal working equipment, in addition to using saws, shears, presses, hammers, drills, and measures. This work entails a good deal of bending, lifting, and standing, often in awkward positions or at great heights. Workers may suffer injury from falls, or cuts from tools, machinery, and sharp metal edges. Sheet metal workers normally wear gloves and eye protection. Members of this profession work closely with other construction trade workers.
 - The following categories were used for the physical work environment:
 - The “necessary energy” component
 - Physical demands (crawling, stooping, bending, etc.)
 - Work conditions (toxic fumes, noise, etc.)
 - Physical environment extremes (treated as negative scores)
 - Stamina required
 - Degree of confinement
 - The following categories were used to assess the emotional environment:
 - Degree of competitiveness
 - Degree of hazards personally faced
 - Degree of peril faced by others
 - Degree of public contact
- Income – rank 152
 - Starting: \$29,000; Mid-level: \$37,000; Top: \$60,000. Growth potential – 200%
 - Most sheet metal workers are union members. Since the availability of jobs in this occupation is tied to the volume of new construction, union assistance to sheet metal workers is helpful under certain economic conditions. When construction slows, and unemployment rises accordingly, sheet metal workers can draw a stipend from the union. Apprentice sheet metal workers start at about 40 percent of the wages paid to experienced workers. Wages in this occupation increase regularly with seniority.

- Outlook – rank 143;
 - Job growth 23%
 - Promotion Opportunities: Seasoned sheet metal workers often assume supervisory positions or establish their own contracting business.
 - Opportunities in this field will increase steadily through the next decade, with most openings arising from the departure of current workers. Although overall employment will rise, sheet metal workers may be subject to long layoffs during periods of economic sluggishness. Seasonal unemployment of sheet metal fabricators and installers, however, will be substantially less severe than in other construction trades.
- Physical demands – rank 233
 - Basic day – 8.5 hours
 - Sheet metal workers normally work indoors, but spend some time outdoors at construction sites. These workers are required to lift, carry, bend, stoop, reach, and climb. Members of this trade often have to work in uncomfortable positions for extended periods. The safe operation of tools and equipment in this line of work calls for good vision and manual dexterity. The construction site is a noisy work environment. Sheet metal workers face the risk of injuries, including burns and cuts, while on the job. Stamina and strength are required in this occupation.
- Security – rank 224
 - Job Growth 23%
 - Unemployment: Very High

Sheet metal work offers good geographic flexibility. The number of job opportunities in this trade is expected to rise steadily through the next decade, though unforeseen downswings in the construction industry could alter the employment for workers in this occupation. Sheet metal workers face potential injury from the dangerous power tools they must use. The construction site is a hazardous work environment.

- Stress – rank 160
 - Hours per Day: 8.5
 - Average work week: 43.66
 - Time pressure: Low/Moderate
 - Competition: Low
 - Sheet metal workers use a variety of potentially hazardous equipment, such as chain saws, presses, and power tools. They sometimes work high above the ground on ladders and scaffold and must remain alert to avoid injury. Precision is required for building and installing sheet metal. Completing projects on time can also cause stress for sheet metal workers.

Sheet metal worker was not rated for travel opportunities and extras, perks, and amenities.

The perceptions of these raters are that sheet metal work is not a relatively attractive or desirable job given opportunities in the economy today.

The Situation - History

Historically, the construction industry in the United States has been a bastion of white males organized into building and construction trades unions that operated with extremely exclusionary membership practices. Membership was restricted to relatives and friends, who, in many instances, were members of the same ethnic group. As a consequence, trades in many areas became associated with particular ethnic groups, e.g., bricklayers in Philadelphia were Irish. The unions controlled the industry's training and labor supply and, until the 1950s, there was no alternative to the unions. Because there was no legal prohibition against it, the unions practiced racial and sexual discrimination [The racial group impacted the most was African American because it was, by far, the largest non-white group in the country until the latter part of the 1900s].

The legal environment began to change in the 1960s as the civil rights movement gained momentum. President John Kennedy, in March, 1961, issued Executive Order 10925, which prohibited federal contractors from discriminating on the basis of race. The order required not only that federal contractors pledge nondiscrimination, but that they also "take affirmative action to ensure" equal opportunity. Violators were subject to sanctions including suspension of contracts.

On July 2, 1964, Congress passed, and President Johnson signed, the 1964 Civil Rights Act, the most far-reaching civil rights legislation in the country's history. Title VII, prohibits employment discrimination based on race, sex, color, religion and national origin. It applies to private employers and labor unions and prohibits discrimination in recruitment, hiring, wages, assignment, promotions, benefits, discipline, discharge, layoffs and almost every aspect of employment. Sex was not initially included in the legislation, but was added by southern senators in an effort to derail the passage of the legislation in a belief that the Senate would never agree to prohibit discrimination based on sex.

President Lyndon Johnson, in September, 1965, issued Executive Order 11246. The order required federal contractors not to discriminate and to "take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, creed, color, or national origin." A prohibition against sexual discrimination was added in 1967. The order did not specify what would constitute affirmative action and did not apply to private sector firms not doing business with the federal government. The Office of Federal Contract Compliance was created to enforce the order.

In a speech on civil rights, President Kennedy first used the term "affirmative action" in the context of doing something positive to end racial discrimination. Thus, it is not sufficient to eliminate policies that foster racial discrimination; it is necessary to publicize the new policies and recruit applicants negatively affected by the old policies. This was a view shared with many who believed that employment policies should be color-blind. By removing the barriers, racial minorities could compete on the same basis as other groups. This would be true in an ideal world. However, years of discrimination in housing, education, and employment created inequalities that put minorities at a significant disadvantage.

After a series of civil rights protests in major cities over racism in construction and the urban riots of the mid-1960s, President Johnson concluded that color-blind policies were not sufficient to bring about the integration of the building trades unions in an expeditious manner. He believed that affirmative action should be a process of using race- (or gender-) conscious actions on behalf of a group to reverse race- or gender-conscious actions that had been taken against members of the group. Thus, the impacts of negative actions in the past can only be neutralized by positive actions in the present in order to provide a color-blind society utilizing neutral actions in the future.

Johnson tried to use the Housing and Urban Development Department's Model Cities program as a vehicle to increase black employment in construction. The Department of Labor developed a paradigm best known as the Philadelphia Plan that required construction unions in that city to hire a specified minimum number of African American employees or, in other words, a quota. In November, 1968, the General Accounting Office declared the Philadelphia Plan illegal and the Johnson administration dropped it without implementing it.

Upon taking office in 1969, President Nixon resurrected the Philadelphia Plan and pushed it through to approval. This led to the development and administration of local plans based on the idea of goals and timetables that reflected the demographics of the local area. The New Philadelphia Plan set percentages for minority hiring with which contractors would be required to make a "good faith" effort to comply. The plan was highly controversial. The Office of Federal Contract Compliance Programs (OFCCP) coordinated these equal opportunity efforts and helped to improve their management.

Because of the skilled nature of the trades and the poor educational background of most of the minority applicants, federal funds were provided to establish Labor Education Advancement Programs (LEAP) that provided remedial education, training in life skills, and a pre-apprenticeship program to give applicants knowledge of construction and work processes and fundamentals of tool usage. These programs were successful in opening the doors of the trades to minorities. However, because of the societal belief that construction was men's work, women were not included.

In 1978, President Jimmy Carter amended Executive Order 11246, which requires affirmative action in federal procurement, to include specific goals and timetables for the inclusion of women and minorities in the construction of federally funded facilities. Goals for minorities were to be determined using the percentages of the local workforce represented by minorities. Because of the extremely low numbers of women in the trades, a national goal of 3.1% rising to 6.9% was established. The actual rate at the time was 2%. Progress and compliance were to be assessed by the Office of Federal Contract Compliance Programs (OFCCP).

The Department of Labor's Bureau of Apprenticeship and Training (BAT) established affirmative action requirements for the apprenticeship programs that it certifies as well as for those certified by state apprenticeship councils. For women, the goal was set as 50% of the female labor force participation rate within a local area. Thus, the goal ranged from 20% to 25% depending upon the area.

The Comprehensive Training and Employment Act enacted in 1973, together with the growth of tradeswomen advocacy organizations, established female pre-apprenticeship programs patterned after the LEAP programs of the early 1970s.

The goals and timetables of affirmative action began to be seen as reverse discrimination and quotas because they were perceived as favoring minorities over Caucasians. A series of lawsuits resulted in judges significantly constraining the use of affirmative action programs. In the past twenty-five years, the use of affirmative action has been greatly reduced.

The Results

The 2002 gender and racial composition of selected construction occupations is shown in Table 7. Women, African Americans and Asians are significantly underrepresented while Hispanics or Latinos are overrepresented. Minority men have entered the construction trades with much less difficulty than white and minority females because of a long-held societal belief that construction is men's work. Minority females have experienced the greatest difficulty in breaking into the trades because the need to overcome both gender- and racial- based discrimination.

By 2003, women represented only 2.5% of the construction skilled workforce (Eisenberg and Mastracci, 2003). Given the federal actions identified above, what explains this almost complete lack of progress? To understand the reasons causing the lack of progress, it is necessary to examine the legal environment within which the industry functions as well as the industry itself.

Construction Occupations	Percent of Total			
	Women	Black or African American	Asian	Hispanic or Latino
First line supervision/manager	2.9	5.2	0.7	12.6
Brick masons, block masons, stonemasons	0.9	8.7	0.6	33.7
Carpenters	1.9	4.8	1.1	24.4
Carpet, floor, tile installers and finishers	2.3	4.5	1.4	40.0
Cement masons, concrete finishers, terrazzo workers	1.7	7.5	0.4	54.4
Construction laborers	3.5	10.5	1.2	40.5
Operating engineers and other construction equipment operators	2.7	6.2	1.1	10.1
Drywall installers, ceiling installers, and tapers	0.8	3.2	1.1	46.8
Electricians	2.6	8.1	1.7	15.1
Painters, construction and maintenance	7.5	7.4	1.8	35.0
Pipelayers, plumbers, pipefitters, and steamfitters	1.2	8.9	0.4	18.1
Roofers	2.4	7.2	0.7	42.0
Sheet metal workers	3.6	3.5	2.4	17.2
Structural iron and steel workers	1.6	2.2	5.7	7.9
Helpers, construction trades	3.2	8.9	0.9	38.6
U.S. Population	50.9	12.0	4.0	13.5

2005 Current Population Survey, U.S. Department of Labor, Bureau of Labor Statistics – Year 2002

Table 7 - Employed Persons by Selected Construction Occupation, Sex, and Race

The primary reason is the lack of institutional will on the part of government and the industry itself. With the election of Ronald Reagan, the philosophy of government changed to one of distrust of government, believing it to be too large and intrusive. The administration's approach was not to repeal legislation, but to slash the budget to prevent agencies from pursuing their missions. Discussions with former government officials indicated that succeeding administrations have followed this approach with the result that the EEOC, OFCCP, and the Department of Justice's Civil Rights Division are unable to aggressively pursue the integration of women into the construction industry. At the same time, thinking in the country has shifted from pro affirmative action to government remaining neutral. A series of reverse discrimination lawsuits has led the Federal courts to exercise strict scrutiny to ensure that any affirmative action requirement is tailored narrowly to benefit only the individuals harmed by discrimination. States such as California have utilized ballot initiatives to greatly restrict the use of affirmative action.

Historically, the construction industry has been predominantly male. Construction jobs were considered male jobs. Even when women have demonstrated an interest and capability in performing construction jobs such as during wartime, they were forced to give up the jobs to the men returning from war. As said earlier, construction is an industry of men, by men and for men. There is a belief that to be a construction worker, you must be a macho man to be able to do the outside, heavy, and dangerous work that requires great skill with tools. Any intrusion by women is a threat to that image and, consequently the ego of construction workers. The industry has fought any effort to integrate women.

For a truly enlightening look at the life of women attempting to integrate the trades, the reader is directed to three works in which women presented their own stories in all the vivid and graphic detail that would be lost in surveys: *We'll Call You If We Need You* by Susan Eisenberg, *Hard-Hatted Women – Life on the Job*, by Molly Martin, and *Alone in a Crowd – Women in the Trades Tell Their Stories* by Jean Ruth Schroedel. A summary of the reasons advanced in these books for the lack of women in the construction trades today include:

- Discrimination in hiring – Many women assert that contractors simply will not hire them either because of a belief that women are unable to do the work or because of a fear of negative reactions from the contractors' male employees resulting in turmoil on the site.
- Hiring women only in response to outside requirements, e.g., government affirmative action requirements. Women are hired and placed on government jobs and laid off when no longer needed to meet government requirements.
- Discrimination in training – For women, apprenticeship is the primary pathway into the trades. These programs typically require 160 hours of classroom instruction and 2000 hours of on-the-job (OJT) training each year of the program. The OJT is divided into hours by subject area to allow the development of skills taught in the classroom. Many women allege that they are not provided with the full spectrum of training in the apprenticeship program. Instead, they are assigned to work that is menial, boring, and having little potential for skill development. This results in a potential mismatch between the skills required to perform the available work and the skills possessed by the available women.
- Lack of a job – The lack of a job, whether it be a result of a business downturn or discrimination in hiring and/or training is a serious matter for any worker. Many of the women who have tried to enter the trades are single mothers, with serious financial obligations. They typically lack the financial cushion to ride out an extended period of unemployment. They may be forced to leave the industry to support their family.
- Although there are exceptions, many apprenticeship programs have adopted a passive approach to recruit women and have exhibited little commitment to it. Why go after females when you can get enough males to fill the available slots? A lot of people want jobs; we'll wait for them to knock on the door.
- Sexual harassment - Sexual harassment violates laws prohibiting sex discrimination in employment. As amended, Title VII of the 1964 Civil Rights Act established that unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitutes sexual harassment when:
 1. submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment;
 2. submission to, or rejection of, such conduct by an individual is used as the basis for employment decisions affecting such individual; or
 3. such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile, or offensive work environment.

Construction workers, in general, are perceived to be sexist and racist. There is a great deal of history to support this perception. The sexual harassment of female workers is a major impediment to attracting and retaining highly qualified women as craft workers. Some women have survived by putting up with the harassment until they qualify as journey workers and then moving on to jobs such as electrical inspectors that do not require them to work with male construction workers. These are government jobs that have better protection against sexual harassment.

Many construction sites satisfy criterion 3 above as an intimidating, hostile, or offensive work environment. Upon entering a site, women may be subjected to taunts and requests for sexual favors, find crude sexual objects left in their tools, pornographic pictures posted around the job site, and physical assault including groping, unwanted touching, and assault. Harassment appears to be perceived as a means of driving women off the sites. A recent survey of female journey workers and apprentices in California determined that 57% of the women had been sexually harassed during the past year (California Apprentice Council, 2004). Is it any wonder why many women do not want to subject themselves to life on a construction site? Many female apprentices see leaving the industry as their only option if they are to retain their dignity.

In 2005, the skilled trades are only 2.5% female, essentially unchanged in twenty-seven years.

In the 1980s, recessionary economic conditions combined with the Business Roundtable companies' shifting their procurement to open shop firms resulted in significant downward pressure on wages and

benefits in the industry. Consequently, construction industry wages stagnated while those in other industries did not. Construction craft work became less attractive economically and when coupled with the employment practices and working conditions made construction work less desirable. The shift from union to open shop dominance also resulted in a dramatic decrease in the training being performed in the industry, which seriously negatively impacted the movement of women into the industry.

Where does the construction industry stand in early 2006?

- There is a shortage of skilled workers in all categories within the industry.
- There is a significant need over the next 10-15 years for new entrants into the construction labor force.
- The supply of traditional entrants, white males, is declining.
- The supply of African Americans is expected to remain stable while that of Asians and Latinos will increase, particularly for Latinos.
- The ratio of males to females in the workforce is approaching parity.
- The industry is perceived to be less attractive than its alternatives.

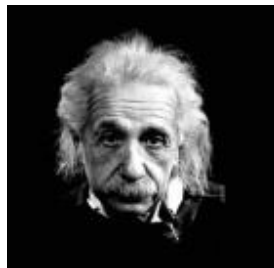
There has been speculation about the existence and extent of a craft shortage for several years. The issue of a skilled craft shortage is at the critical stage for the country. The destruction caused by Hurricanes Katrina and Rita created a major demand for infrastructure construction. The increase in energy prices has generated a need for new oil refineries and power generation facilities. This will include nuclear power as the country finally begins to respond to the global warming crisis and a desire to reduce its dependence on oil.

In summary, the situation is as follows:

- There is likely a strong increase in the demand for skilled construction workers.
- There is a declining supply of people interested in employment in construction.
- The workforce is going to become younger, more female, and more diverse.

CONCLUSION: We cannot continue to do business as usual!

As old Albert said -



*Insanity is doing the same
thing over and over again and
expecting different results!*

Figure 3 - Albert Einstein

Model

The pathways to journeylevel status are presented in Figures 4 to 7. The ultimate objective of this model is to provide a skilled, productive journey worker. As seen in the figure, there are several pathways to reach journey worker status.

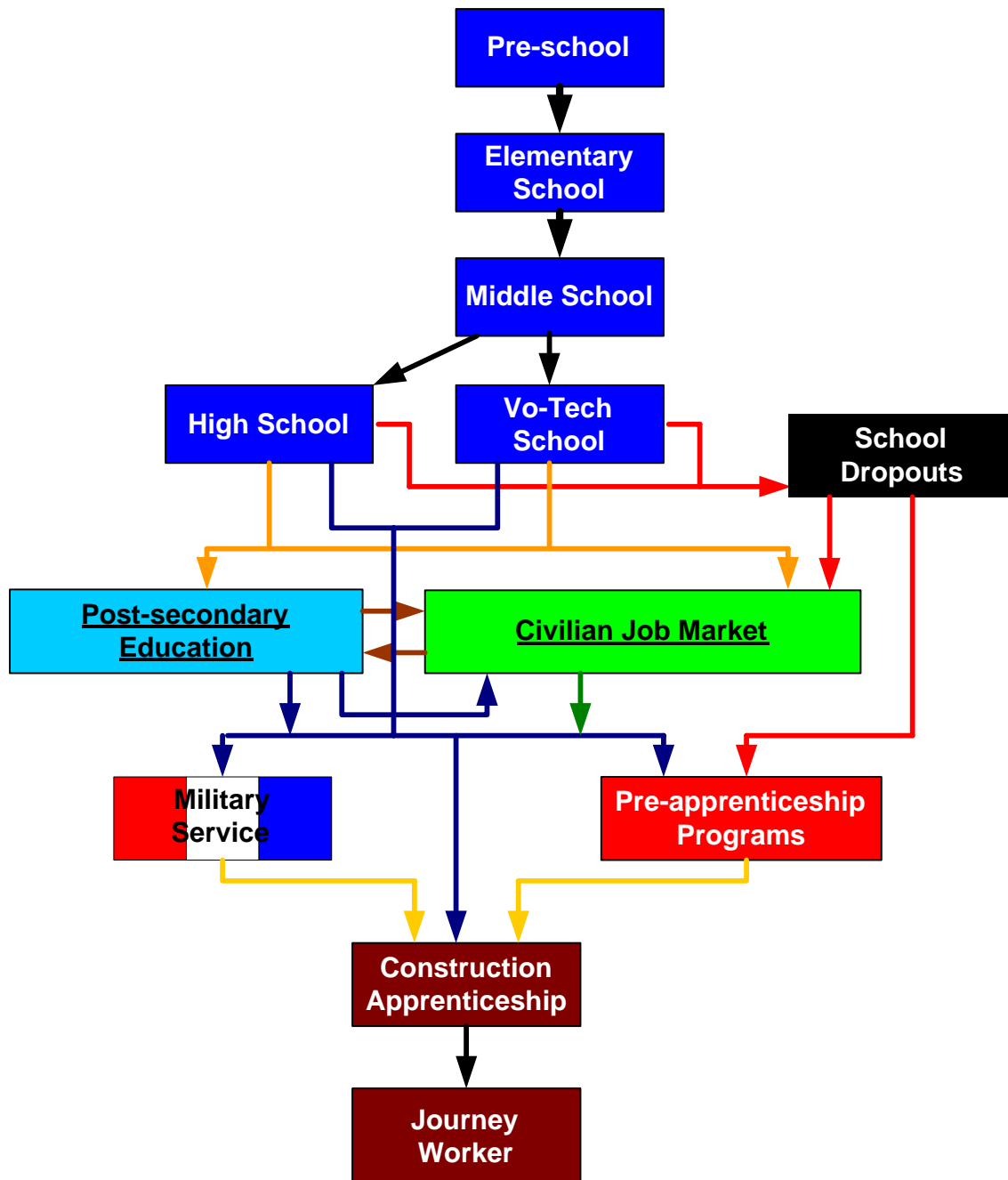


Figure 4 - Integrated Pathways Model

Figure 4 illustrates the various pathways by which an individual can progress through the education system, enter the workforce, and progress to journey worker status. It tends to hide the three distinct pathways that are used.

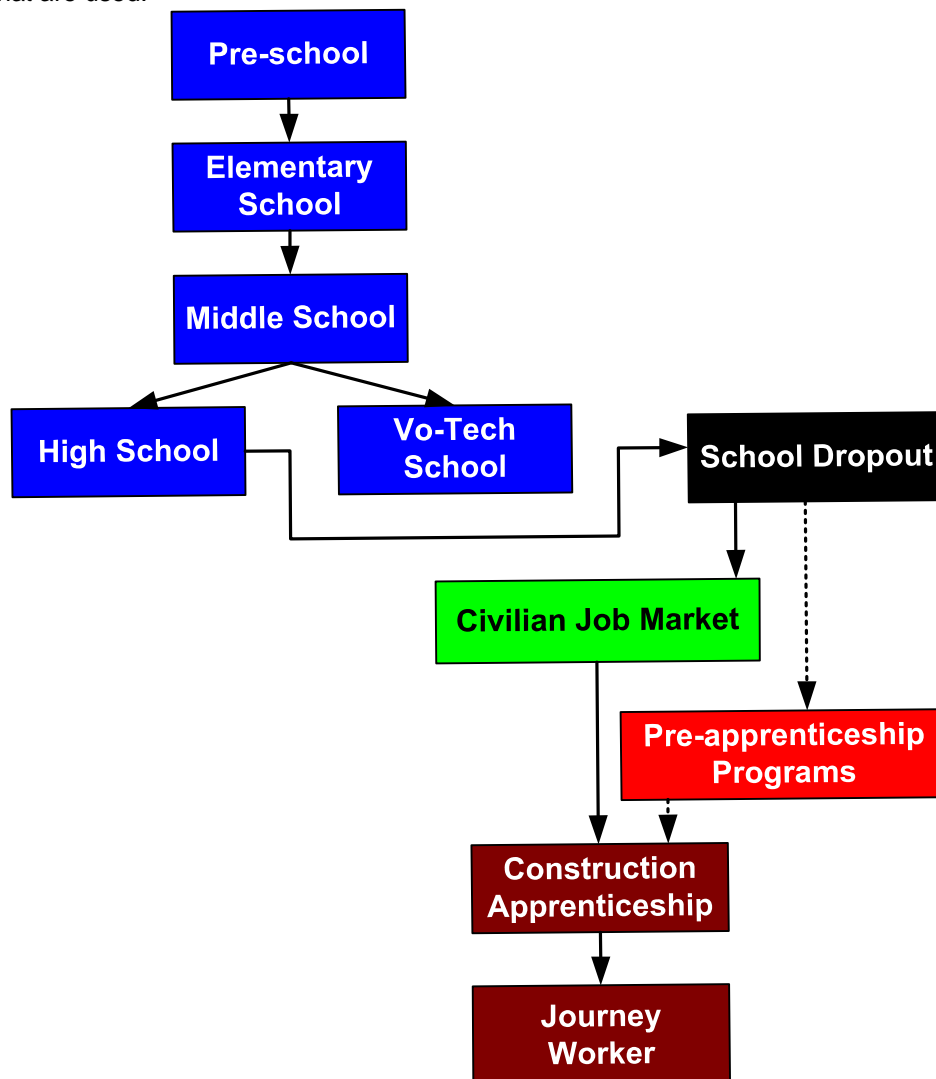


Figure 5 - Pathway #1

Figure 5 illustrates the pathway that has been followed by individuals who drop out of school. Access to apprenticeship is normally only an option once an individual completes a pre-apprenticeship program that requires work on school skills such as math, on work skills such as interviewing, and on life skills such as financial management. These pre-apprenticeship programs are typically run by community organizations that will be discussed later. The jobs that dropouts obtain are often in the secondary labor market, which consists of high-turnover, low pay, and usually part-time and/or temporary jobs. Most of these jobs are filled by ethnic minorities, women, and older laid-off workers. Because many of these jobs are in the fast food industry, the jobs have been termed “McJobs.” The major question about people from this background is whether they possess the work skills and, even more importantly, the appropriate work attitudes and discipline necessary to be successful in the cost-driven construction world. An unknown portion of these workers have had experience with the judicial system that may raise concerns, particularly if felony offenses were involved. Having said that, it is also important to recognize all it takes

for many people is a second chance. A felony conviction may prevent someone from being employed on a particular site, but that person may be a highly productive worker in the shop or on other sites.

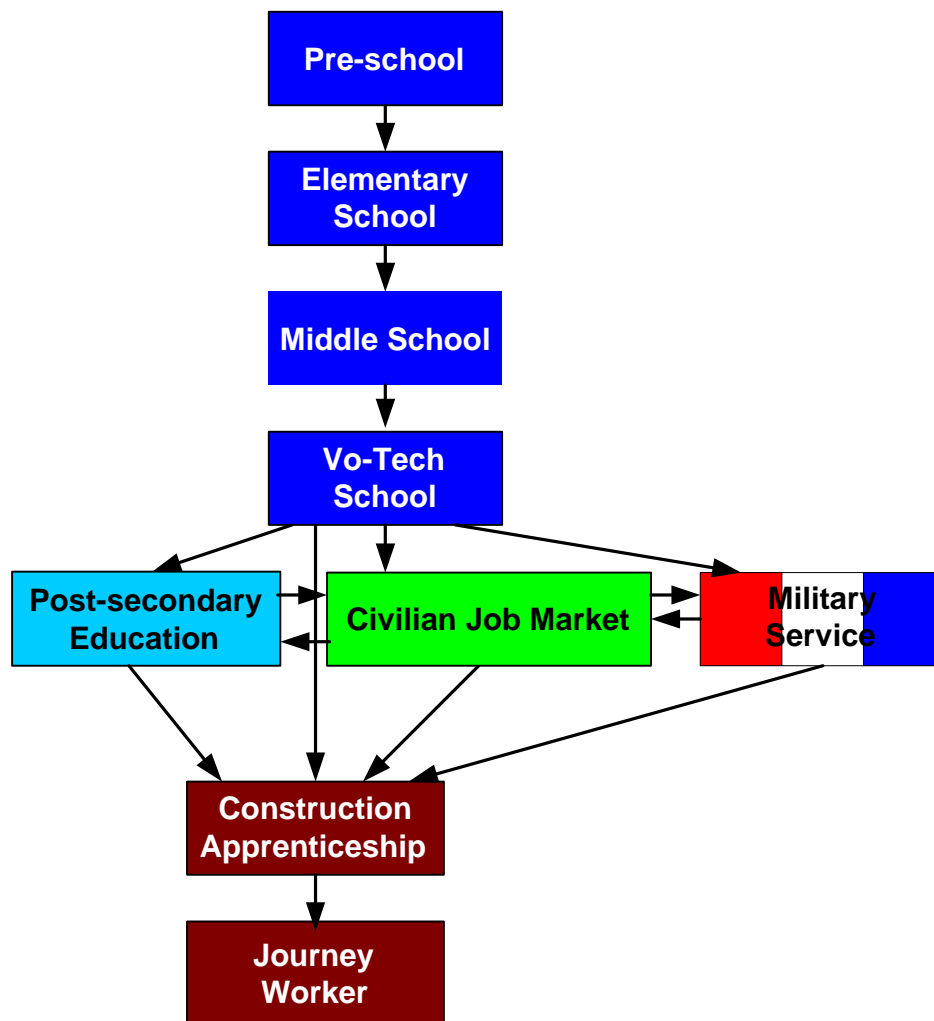


Figure 6 - Pathway #2

Figure 6 illustrates a path into the industry by a graduate of a vocational-technical school whereby the graduate enters the apprenticeship program directly or enters after a period of time pursuing further education, working at a job not related to the craft of the apprenticeship, or serving in the military. SMWIA and SMACNA have made a commitment to working with the Helmets to Hardhats program to provide military veterans with the opportunity to enter an apprenticeship program upon completion of their military service. The program had its successes, but it has also experienced problems: lack of openings in the trades of interest; lack of openings in the geographic areas of interest; and lack of flexibility on the part of the unions in granting credit for prior training and education.

Finally, Figure 7 indicates the paths that may be followed by individuals completing high school within a traditional timeline. The pathways are similar to those for graduates of vocational-technical schools. Pre-apprenticeship programs are included here to reflect the fact that some individuals, including some women, know little about the trades and need a program that will provide them with the basic knowledge and skills necessary to be successful in an apprenticeship program. Successful completion of the pre-apprenticeship program then becomes a prerequisite for admission to the apprenticeship program.

Given the potential pathways to apprenticeship, how should SMWIA and SMACNA use them to develop the workforce the industry needs in the 21st century.

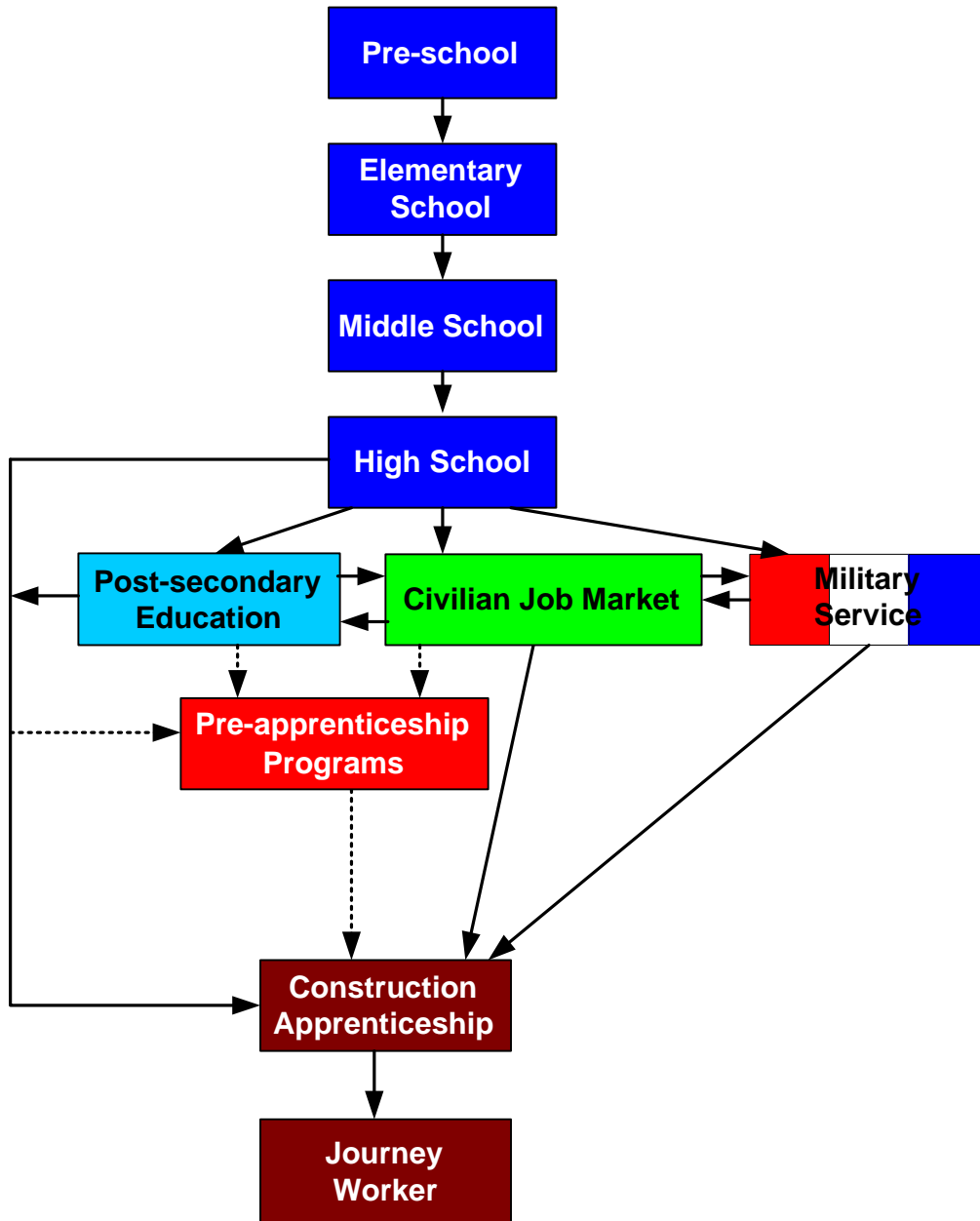


Figure 7 - Pathway #3

Workforce Development Process

The process of developing a workforce to meet both the short-term and long-term needs of the sheet metal industry consists of the six phases identified below and must be continuous. Because of the current lead time necessary to educate and train a journey worker, it is necessary to be looking into the future and begin preparing workers early.

Workforce Development Phase	Stage of Life					
	Preschool	Elementary School	Middle School	High School	Postsecondary School	Adulthood
Awareness						
Familiarization						
Recruitment						
Selection						
Training						
Retention						

Figure 8 - Workforce Development Process

The six phases of the workforce development process are sequential and are applicable to different people at different stages of their lives.

Awareness

The United States in particular and the world in general, have become captives of mass media and its ability to influence public perception. For years, the video media has glorified lawyers, doctors, fire fighters, and police. Today, attention has been focused on security forces in the United States, i.e., the FBI and CIA. These occupations are seen as exciting and sexy. In most TV shows, it appears that no one over the age of 30 is employed. In a recent survey, the top five organizations in terms of employment desirability were Disney, Google, the FBI, the CIA, and the NSA.

Construction and construction workers are rarely portrayed in the media and, if they are, it is not likely in a positive light. How many jokes have been made about bent over plumbers? It is such a widely accepted image that one company (Duluth Trading Company) is marketing a plumber's T-shirt that has an extra long tail.

The general population knows very little about construction and the occupations within it. They may see workers on jobsites, but still know little about what they do. Some occupations are more well-known than others. Ask most of the general public about what a carpenter or an electrician does and they will be able to tell you. On the other hand, ask them what a sheet metal worker or a millwright does and they will have little idea. The lack of industry and occupational knowledge is fostered by the failure of school guidance and career counselors to provide information to students on careers that do not require a college education. One reason for this is that counselors and teachers themselves have very little knowledge of the construction industry. The result is that students and their parents have very little information with which to make decisions for career preparation.

As seen in Figure 4, individuals make career decisions at various points in their lives. The ideal point is during middle school, which allows students to make decisions regarding necessary school coursework that will prepare them for the selected occupation. Individuals waiting until adulthood may be required to undergo significant remedial schooling, the cost of which in terms of both money and time may be prohibitive and, in most cases, born by the individual. Because construction work is physically demanding, it is desirable to have construction workers begin their career as soon as possible after completing high school. Construction is not a career one begins after retiring or having one's job outsourced in midlife. Therefore, it is crucial to begin to make children aware of the industry and its opportunities, whether they desire to be in the trades or in management.

Awareness is the process of creating knowledge of the construction industry, the various crafts within it, and the opportunities presented by it to individuals. It is possible to begin this process with preschoolers and continue through adulthood. Different types of awareness activities are presented later in this report.

The six phases of this process are not necessarily mutually independent. A sheet metal worker participating in an outreach program with high school students may simultaneously be making students aware of the occupation and industry; familiarizing the students with terminology, tools, and processes used in the industry; and conducting early recruiting for the apprenticeship program.

Familiarization

Familiarization is the process of learning about specific occupations, what they do, what they use to do it, how they do it, etc. It involves individuals acquiring a basic knowledge and limited skills about an occupation and career. For example, a person may know that a sheet metal worker bends metal in the process of fabricating a piece of duct, but know nothing about layout, plasma jet cutting machines, and breaks. Familiarization may begin for a boy or girl in Scouts with a project such as the Metalworking merit badge or Project Dollhouse, a joint project of Girls, Inc. and the Home Depot.

Recruitment

Recruitment is the process of identifying individuals with an interest in an occupation and employment context and influencing their decision-making process with regard to occupational choice. Most people are familiar with recruiting as applied to college athletics in which assistant and head colleges spend sometimes years trying to influence a boy to come play basketball for their school rather than some other school. These coaches use techniques ranging from phone calls, emails, letters, and in-home visits to communicate to the boy why their school and football program would be a better choice for the boy than any other program.

Recruitment for careers in sheet metal can begin with students in middle school. Students, in whatever venue, who demonstrate an interest in sheet metal work, can be identified. Information can be gathered from the individuals such as name, address, phone, email address, cell phone number, school, etc. Periodically, the recruiter can contact the student to see how they are doing, to determine if the student has an interest in participating in particular events. Recruitment opportunities also allow the recruiter to inform the student of events, discuss educational choices, and possibly discuss summer job opportunities. A steady recruitment effort over a period of years is preferred over a recruiting blitz toward the end of high school. Any opportunity for a recruiter to meet with a potential sheet metal apprentice is a great opportunity to discuss school and careers. Talking with a ninth grade student about the importance of mathematics and science and how it is used in the craft may encourage the student to take the math and science courses. Face to face communication is critical to establishing a relationship between prospective sheet metal apprentices and the sheet metal recruiter.

Recruitment does not have to be conducted in person, by email, or snail mail. The Millennial Generation, individuals born between 1980 and 2000 is the most technological sophisticated generation in history. Recruitment must involve the Internet and not just sites as Monster.com. Sites that cater more to the Millennial Generation such as SnagAJob.com must be used as well as those that target minority youths and women.

Advertising and recruitment must be undertaken in nontraditional places if the objective is to reach the greatest number of potential applicants from a particular group:

- Ethnic and minority media that are targeted to readers and listeners with particular demographics: newspapers, magazines, radio
- Churches: particularly in the African American and Latino communities
- Cable TV networks that cater to younger and minority viewers.

Selection

Selection is the process of developing criteria that will likely predict success in the occupation and utilizing those criteria to distinguish those who will be likely to succeed. The criteria that are broadly used are:

- High School diploma or GED
- Possess a valid driver's license
- 18 years of age or older
- Pass an aptitude test – typically the Differential Aptitude Test.
- Successful completion of an interview with the local training director, representatives from the union, and representatives from the local contractors' association.

The United States Equal Employment Opportunity Commission requires that all criteria used for the purposes of selection be validated, i.e., that they be shown to predict job performance. There is no universal set of criteria for the trade and there should be. Does a worker need to be able to lift a certain amount of weight from the floor over his/her head? If so, how much? 50 pounds? 75 pounds? 100 pounds? The lack of specific, validated physical criteria has been used in the past to discriminate against certain classes of workers, particularly women. The failure to develop validated criteria for school subjects such as math and science has allowed discrimination against minorities.

All women, just as all men, do not want to become sheet metal workers. Those that do want a fair opportunity to do so. They do not want to be rejected on the basis of an arbitrarily set criterion.

Training

Training is the process of developing the knowledge and skills necessary be considered skilled and is done through a combination of classroom instruction and on-the-job training under the direction of journey workers. Today, training for sheet metal workers is conducted through an apprenticeship program approved by the Office of Assessment and Training (OAT), a unit of the U.S. Department of Labor. The OAT may delegate this certification process to state apprenticeship councils.

Apprenticeship is a 4 to 5 year program consisting of 168 hours of classroom instruction and 2000 hours of on-the-job training per year under the guidance of journey workers. Pay begins at approximately 40% of the journey worker's rate and is increased at six month increments.

There is a considerable amount of discussion about the need for an apprenticeship to require the time it currently takes. There is also discussion about whether the program should be craft or skill based or skill versus time based.

International Training Institute

The International Training Institute is in the process of revising the sheet metal apprenticeship program. The program is designed with a core and elective modules. A CORE curriculum consisting of Math, Drafting (including CAD), Fabrication Skills, Installation Skills, Reading Blueprints, Knowledge of Materials and Tools, and Safety Resources and Procedures is required of all students in the program. The CORE provides the foundation and the basic knowledge and skills of every professional in the sheet metal industry. The programs are taught at state-of-the-art training centers throughout the country.

After completing the CORE, students will be asked to select from one or more specialty areas:

- HVAC Commercial
- HVAC Residential
- HVAC Service Work
- Architectural Sheet Metal
- Welding/Industrial Sheet Metal
- Detailing and Drafting
- Testing and Balancing

The CORE curriculum is designed to be completed in two years. One elective area will be selected and will constitute the remainder of the apprenticeship. Upon completing the apprenticeship, a journeylevel worker may undertake one or more of the elective areas under a journeylevel upgrade program.

There has been discussion about incorporating self-paced elements into the apprenticeship, but as of yet, nothing has been resolved.

Retention

Retention is the process of influencing an individual's perceptions of the work, work environment, and employment opportunities so that he/she remains with the organization. People leave an occupation for a variety of reasons. Among these are:

- Lack of employment opportunities
- Being forced to work under unsafe conditions
- Unfair treatment
- Sexual harassment
- Physical condition
- Childcare difficulty

It does an industry little good to attract bright, qualified individuals into its training program and then lose them shortly after completion of the training. There will always be voluntary attrition such as relocation to take advantage of better opportunities, retirement, and starting one's own business. It is those losses that occur because of discrimination in referrals, training, and other aspects of employment that are unacceptable.

Outreach

For years, all a local union had to do to obtain a sufficient number of qualified applicants was to place a notice in the local newspaper that applications were to be accepted until a specified date along with the details of how to submit the application. For the most part, that is no longer the case because, among other things:

- There are many more occupations from which to choose
- There is a lack of awareness and knowledge of the sheet metal trade
- There is a societal bias against blue collar work and in favor of college attendance
- Newspaper readership, especially among younger individuals is down dramatically

The sentiment expressed in the movie Field of Dreams of “Build it and they will come” is no longer viable, if indeed it ever was. Today, the identification of sufficient numbers of qualified individuals requires unions and contractors to get out of their offices into the community.



Figure 9 - JATC Outreach & Recruitment

Although there are significant differences between joint labor-management apprenticeship training programs as a result of size, resources, and demand, it is reasonable to say that the job of training director or apprentice coordinator is a fulltime job, if it is to be done well. Therefore, it is necessary to have a person responsible for outreach or, as shown in Figure 9 above, the interaction with educational, community, and other organizations through which awareness, familiarization, and recruitment can take place. While performing these functions, the Director of Outreach and Recruitment can identify

individuals with an interest in sheet metal work and other construction trades. The objectives of the outreach program must be to:

- Spread awareness of the sheet metal industry, occupations, and careers
- Identify boys, girls, young men, and young women who have the interest and motivation to become sheet metal workers
- Impress upon kids the importance of math and science in school
- *Track these people!*
- *Get them into the trade*

The remainder of the report consists of two parts: (1) a set of recommendations that will facilitate the workforce development process in the sheet metal industry and (2) a series of appendices that identify resources that may be used. The appendices are to be considered illustrative and not inclusive. They are to be examples for labor and management to use in the development of their own program.

A Cautionary Note –

Before proceeding to our recommendations, the following are some basic issues that must be examined:

- The education community is engaged in a great deal of discussion today about the validity of educational assessment. The volume of this discussion has been increased by the No Child Left Behind Act or, as many teachers derisively call it, the No Teacher Left Standing Act. A major point in the discussion is whether students actually learn material that can be used in their real life jobs or whether they simply learn material that will be on the standardized test. Another issue in the discussion is that of long-term skill retention. The question becomes “What is the actual level of skill possessed by a person with a high school diploma that is based upon successful completion of a series of standardized tests?”
- A GED in lieu of a high school diploma is acceptable to many JATCs. Several years ago, the U.S. Department of Defense implemented a policy that a GED would not serve as an equivalent for a high school diploma. An inability to recruit sufficient numbers of troops resulted in a reversal of the policy. The initial concern is still valid. What is the actual level of skills possessed by an individual completing a GED? A particular concern is with math skills.
- There is sufficient doubt associated with the high school diploma and the GED to question their usefulness in determining the level of skills possessed by an individual. In a recent survey of training needs in an area, basic math, including fractions, was identified as a significant need by contractors and craft workers. The participants in the survey were already working in the industry and expressed a need for math training.

A discussion of the skills possessed by an individual is not complete without a consideration of the skills required by the task to be performed by that individual. In any job situation, the individual brings certain skills and abilities with him/her to the work. Similarly, the work requires certain skills and abilities that tend to be expressed in terms of job requirements. There are three potential outcomes for this situation:

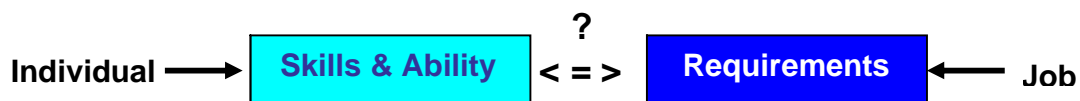


Figure 10 – Skills and Ability vs. Requirements

1. If the job's requirements are equal to the worker's capabilities, there is a good match with the result that the worker is productive, comes to work, and is satisfied with the work.
2. If the job's requirements are less than the skills of the worker, the individual will end up overmatched with the likely result that after a period of absenteeism, tardiness, and declining productivity, the worker will leave to search for a job more compatible with his skills and abilities.
3. If the job's requirements are greater than the skills of the worker, the same situation will prevail and the worker will eventually leave.

Thus, the goal must be to assign people to jobs in a way that provides the best match between the skills and abilities of the worker and the requirements of the job.

Implication

Interview after interview with contractors and supervisors in all parts of the construction industry reveal that the most difficult characteristic to find in an applicant today is that of a work ethic. There is a common belief that the Millennial Generation is characterized by a low work ethic. Many contractors have expressed the belief that the best approach to developing new workers is to identify people with strong work ethics and, if necessary, train them in any missing skills. This would be achieved by having all apprentice applicants take a placement test, which would be used to determine competency and additional training required, if any. To do this requires an accurate understanding of the skills required by a job as it is performed today with today's technology. Computerized layout and cutting machines have

changed the way sheet metal work is done. In doing so, it has reduced or eliminated the need for some skills while creating or increasing the need for others. In addition, the worker must be trainable.

Workforce Development Process Recommendations

General

- 1. Contractors must stop abdicating their responsibilities in the workforce development process to the local union.** The quality of a firm's workforce is a key to its success. Contractors must take an active role in all phases of the workforce development process. The employers know the characteristics of the people they want working for them and, as such, should be involved in the process of obtaining and developing them. After all, it is a **Joint** Apprenticeship and Training Committee.
- 2. Establish a mechanism for removing unprofessional and unproductive workers from the membership rolls to free up available hours for the hardworking professionals in the union and create opportunities for new members.** In the video "Live Up to the Promise," Michael J. Sullivan, general president of the SMWIA, recognized that 90% of the membership produces a fair day's work for a fair day's pay, but that is not good enough. If a customer sees 1 or 2 workers not carrying their share of the load, that is who will be remembered. The customer's perception is the union's reality. One or two workers slacking off means all of the workers are slacking off. Coworkers can no longer standby and let customer perceptions be determined by the slackers. The slackers are costing SMACNA contractors and SMWIA members work. Their attitudes are highly corrosive and have a negative impact on other members. If this group of members cannot change their attitudes and behavior, a mechanism must be developed to remove them from the rolls. The members of the SMWIA are in this together. President Sullivan said "If we let a small number of fellow workers bring us all down, then shame on us." This could be a procedure such that a member rejected by three contractors in a specified period of time be brought up on charges of conduct detrimental to the union and voted out of the union. For this to work, contractors must be honest and spell out the reasons for termination. The small minority cannot be allowed to destroy employment opportunities for the productive majority. Local union officials must likewise refrain from the temptation to simply re-shuffle unprofessional or unproductive workers from employer to employer.
- 3. Establish a formal five (5) year apprenticeship with the first year designated as a probationary period.** Admission to an apprentice program is typically based on paper applications, test scores, and interviews. There is little in the way of an applicant's work performance taken into account in making the decision to accept an applicant into an apprenticeship program because most applicants lack relevant work experience. A one year probationary period will allow an in-depth assessment to be made of the first year apprentice in terms of work ethic, integrity, character, and potential to become an excellent sheet metal worker, all of which would be consistent with the goal of SMWIA/SMACNA craftsmen as top-quality craftsmen. During the first-year probationary period, the apprentice would be subject to employment at will, i.e., a contractor would not need reasons to let the apprentice go. In addition, the apprentice could be dropped from the program at will.
- 4. Redesign the apprenticeship program to reflect time served and proficiency.** There is a significant difference in the time in which people acquire proficiency in a set of tasks and in the actual proficiency attained. A minimum proficiency level should be established for a specified set of skills. A minimum number of classroom and on-the-job hours should be established for the acquisition of that set of skills. Once the classroom training and the minimum number of on-the-job hours has been completed, the apprentice can undergo a proficiency test. If the hours served meets the minimum and the test is completed successfully, the apprentice is promoted to the next level. If the apprentice reaches the maximum number of hours allowed without passing the proficiency test, the apprentice will be required to undergo a period of remedial classroom instruction and work. Upon completion of the remedial work, a second proficiency test will be administered. Failure of the second proficiency test will result in the worker being dropped from the union. If, after a period of time, the worker desires a third attempt at the exam, the worker must document that he/she has undergone additional training at their own expense before being allowed to retake the exam. Failure of the third attempt is final; the worker will not be given another chance.

Apprentices typically work approximately 650-750 hours in each six month period. Strict adherence to the 1,000 hours per six months of the apprenticeship program will require an additional 2-3 months of on the job performance to complete the requirement.

5. **Create the position of Director of Outreach and Recruitment.** This should be a fulltime position held by a professional with training and experience in human resource management and workforce development. It is important that the individual be available most times, but especially during school hours. The Director should be employed directly by the JATC rather than by the union or contractors' association. The need for this position is a function of the size of the local union and the number of apprentices it wishes to train. In any decent size local union, the Training Director or Apprentice Coordinator has a fulltime position and cannot devote the time necessary to cultivate prospective apprentices.
6. **Establish an annual Workforce Development Workshop for JATCs, including the Training Director and the Director of Outreach and Recruiting.** The purpose of the workshop would be to develop an understanding of common concerns, share best practice and success stories, and, in general, promote a sharing of ideas and concerns to improve the overall effectiveness of the workforce development process. Prior to the workshop and to serve as a discussion tool, a directory of information on each JATC should be prepared containing the basis information on each program. This would include the web URL if the program utilizes a web home page. There are numerous excellent examples provided of local union web pages.
7. **Establish an on-line list serve for JATCs, including the Training Director and the Director of Outreach and Recruiting, to serve as a forum for discussion and sharing of ideas between annual workshops.** All construction local unions should be included. The list serve should be established and maintained by the International Training Institute.
8. **Create a social network map of the members of the local union and the local SMACNA chapter.** The network will identify school, church, and community based organizations in which the members of the union and contractor's staff participate. In turn, this will facilitate the identification of organizations in which workforce development efforts can be initiated. Once the social network has been determined, programs in which the union members and contractor representatives do not participate should be overlaid to identify potential opportunities for involvement. Some of the organizations in which there is no participation may hold greater promise for recruitment than the ones with current participation.
9. **Where it is in use, create a role in the outreach programs for apprentices participating in the Youth to Youth Program.** In many cases, these apprentices may be considered peers by the potential applicants and will be much more effective in communicating with younger individuals than will white-haired, middle-aged workers. General President Michael J. Sullivan's paper "Youth to Youth: One Trade Unionist's Dream That Became a Reality," written for the National Labor College, identifies outreach and recruitment as prime activities for apprentices participating in the Youth to Youth program.
10. **Create a national effort to develop a uniform body of literature about the industry, occupations, and opportunities.** With 150+ local unions, each working on its own, the industry's message is fragmented, much like the industry itself. The message is inconsistent and its development a waste of precious resources. There is a large variation in quality. A centralized effort will be more focused, professional, and cost effective. It will also allow the development of different themes and messages that will be targeted to different populations such as women, African Americans, Latinos, etc.
11. **Develop a professionally conducted job analysis and description.** There is a great need for a job analysis and job description that accurately identifies the requirements of the job and the qualifications necessary to meet those requirements. This will allow for more professional selection. The minimal requirement for admission to the apprenticeship program in most areas is a high school

diploma or a GED. What are the math competencies necessary for someone to be a first class sheet metal mechanic? In many localities, a person may earn a high school diploma with as little as one year of general math. Is this sufficient? Does the possession of a GED indicate that a person has those competencies?

The development of the job analysis requires the parties to make several critical decisions. First, there are two levels of quality that must be understood. The absolute best can be considered the potential quality. This is workmanship with no deviation from the design, no imperfections, and is essentially designed to last forever. The second is the level of quality for which the customer is willing to pay. This level is always equal to or less than the potential quality. In today's extremely competitive marketplace, few customers are willing to pay for the absolute best quality. Those that are, make no tradeoffs because cost is of no concern. However, most construction clients have a responsibility to shareholders or partners to seek the best return for their investment. Thus, it is necessary to talk about an appropriate level of quality, which is the level of quality for which the customer is willing to pay.

Given that there is an appropriate level of quality for each customer, the question that must be addressed is to what level of capability workers should be trained. Should they be trained to produce the best level of quality or the appropriate level? Do we train workers to produce a Cadillac when the customer wants a Chevrolet? Should we train all workers to produce the Chevrolet and then use the journey worker upgrade training process to bring some workers up to Cadillac capability? This would call for the creation of a mechanic/master mechanic distinction.

The issue that must be addressed here by the parties is that of the level of performance demanded by the customers and the level of capability developed within the workforce through the workforce development process. In many respects what has happened is that the market has reduced its demands while the unionized industry has continued to produce mechanics capable of producing better quality than the market is willing to buy.

12. SMACNA and the SMWIA must push for the establishment and maintenance of a professional work environment on all sites. James R. Ball, writer on professionalism has written in his \$10 book "Professionalism is for Everyone – 5 Keys to Being a True Professional" that professionalism involves five issues:

- Character
- Attitude
- Excellence
- Competency
- Conduct

Professionalism will make the worksite a more enjoyable and productive place and should lead to more work. Construction workers are results oriented and respond favorably to a work environment that is professional. If you want to be the best, you must act like the best. There was a cliché circulated several years saying that if you want to soar with eagles, you can't associate with turkeys. What should be included in a professionalism program will vary from setting to setting. Some examples of possible inclusions are:

- Code of professional conduct
- Dress code
- Customer bill of rights – Central Pennsylvania has a multi-trade example.

These should be in the collective bargaining agreement to ensure enforceability.

13. Establish a partnership with the Boy Scouts of America. The Scouts are focused on boys 11-14 years old and have 15 merit badges that are directly related to construction and one, metal working that has direct applicability to sheet metal work. Working with boys 11-14 years of age provides an outstanding opportunity to identify, influence, and cultivate boys who have the abilities and interest

in becoming a sheet metal worker. See Appendix 3 for a list and description of the merit badges. If the Boy Scouts are to become a source of sheet metalworkers, it is crucial that SMWIA members and SMACNA contractor representatives become active in the Scouts as troop leaders and merit badge counselors. A positive experience while earning the metalworking merit badge or any of the other construction merit badges may convince a boy to want to become a sheet metal worker. Boys at this age need a strong, positive, male role model. Scouting provides an excellent opportunity to do this.

George Meany, a plumber before becoming AFL-CIO president, was honored by the creation of the George Meany Award to recognize union members for their contribution to the Boy Scouts. It has been estimated that one out of four scout leaders are union members. A description of the award is presented in Appendix 4.

14. Establish a partnership with the Girl Scouts of America and provide scout leaders and merit badge counselors. The Girl Scouts have several merit badges that are related to construction. Despite changes in the job market for women, many of the Girl Scout merit badges are still oriented to traditional female jobs and stereotypical female activities such as homemaking. It is important to work with the Girl Scouts to introduce the issue of nontraditional jobs and begin to acquaint younger girls with opportunities in the skilled trades. This would be best done at the national level using a coordinated approach by the building trades. See Appendix 5 for a list of potentially applicable Girl Scout merit badges.

15. Establish high school age skilled trades Exploring posts. This is a program developed by the Boy Scouts that is targeted to high school age boys and girls. It involves the establishment of a formal organization called a post that focuses on specific occupations or industries. There are some established for police work, firefighting, as well as the skilled trades. See Appendix 6 for information on Learning for Life, Exploring, and skilled trades. Exploring would appear to be a great opportunity for the Youth to Youth participants. See <http://www.learning-for-life.org/exploring/index.html> for further information.

16. Work with local school systems to create opportunities for students to learn about construction and the occupations that are available within it. There is a great opportunity to influence school kids with a variety of programs that can begin in the 5th grade:

- If I Had a Hammer – 5th grade – designed to acquaint students with the basics of building a house and to provide assistance in helping students in mathematics. Can be expanded to include science issues and serve as an introduction to building. See Appendix 7.
- From Crayons to CAD – 6th to 9th grade – Created as a design-build program to acquaint students with the process of design and construction as well as other issues. The program has been formally endorsed by the Building and Construction Trades Department, which is working with the program's developer, the National Institute for Construction Excellence, to promote and assist in its further development. See Appendix 8.
- Buildup – a program developed by the AGC for use in elementary schools to acquaint students with construction. See Appendix 9.
- Career Summer Camp – a program designed for 6th and 7th graders at Delcastle High School in Newport, Delaware to expose them to construction and some of the trades. The goal is to expose them to the trades early enough that they can make decisions about attending vocational school. See Appendix 10.
- Vocational High Schools – Delcastle High School, Newport, Delaware offers a three-year program in sheet metal and HVAC. Partnerships should be developed with these programs to capture the best students into the SMWIA. For a detailed description of the Delcastle Sheet Metal Fabrication program go to <http://nccvotech.com/smf.asp>. There are many other vocational high schools that offer similar programs.
- Charter schools for the building trades – See Appendix 11 for an example of a new charter high school program in California. There are similar schools in other cities such as St. Louis and Philadelphia.

- 17. Develop a program in sexual discrimination and harassment and their prevention. Require all members of the SMWIA and contractor officials to complete it.** The program must examine what constitutes sexual discrimination and harassment, what is a hostile work environment, and the role of craft workers, forepersons, and contractor officials in preventing it. See Appendix 12 for a sample outline. Depending upon the local situation, it may be advisable to conduct the program annually. A majority of female craft workers have reported sexual harassment; experienced unwanted sexually suggestive looks, comments, joking, or gestures from their supervisors; and many have reported being touched or asked for sex. Conduct such as this is intolerable and must be stopped and prevented from reoccurring. Being forced to work in a hostile workplace can be considered a safety hazard because of the possibility of distractions caused by the hostility in the workplace. The distractions can lead to overlooking proper safety precautions and to on-the-job accidents and injuries.

The policy should prohibit all types of discrimination and harassment. The public focus has been on sexual harassment, but other activities are more insidious. For example, gender harassment involves the harassment of women, but has no sexual overtones. Its goal is to simply drive women off the jobsite. Defecating in a woman's boots or urinating in a portable toilet while a woman is using it have nothing to do with sex, but everything to do with the use of power to drive women away. The concern in today's school about the use of bullying should be extended to the construction jobsite. The physical mismatch between most male construction workers and most female workers is great. This may create a basis for bullying.

- 18. Where at all possible, a woman should not be assigned as the only woman on a jobsite to minimize the feeling of isolation.** Isolation leads to fear of harassment and assault because of the feeling of one woman against a group of men.

- 19. Develop a program in cultural awareness and sensitivity. Require all members of the SMWIA and contractor officials to complete it.** As presented in the examination of the demographic situation in the beginning of this report, the demographic makeup of the workforce is changing rapidly. A foreperson made the comment "We are moving from the Old World to the Third World." That is a fact that today's workers need to understand. The United States is a country of immigrants. The only thing that changes from time to time is the country of origin. The construction industry has always been and will continue to be made up of the immigrants and the sons of immigrants and now today with the daughters of immigrants.

- 20. Draft a policy and develop a program on sexual harassment and gender discrimination that would be included in local collective bargaining agreements.** Sample language can be found in Appendix 13.

- 21. The SMWIA must include a section in its Constitution on sexual, gender, and racial harassment including mechanisms for enforcement.** In construction, sexual harassment and the maintenance of a hostile work environment typically involve coworkers or fellow union members. The union has detailed procedures for dealing with members who do not honor their financial obligations. Prevention of the harassment of fellow members should be at least as important. If the union's assertions of brotherhood, equality, and mutual respect are valid, steps must be taken within the union to educate members in order to change their behavior or, if that does not work, to discipline the offending members.

The only applicable reference with the Constitution is Article Seventeen (17) - Misconduct and Penalties, Section 1(a) - "...any...member of this Association may be disciplined by imposition of one or more of the following penalties: reprimand, fine, removal from office, suspension or expulsion from membership [for] (Section 1(m) "Engaging in any conduct which is detrimental to the best interests of this Association or any subordinate unit hereof which will bring said unions into disrepute."

NOTE: At the SMWIA 2004 convention, the Constitution was amended to include both male and female pronouns wherever possible. Although there is not a specific constitutional section on sexual, gender, and racial harassment, members have been disciplined for sexual and racial harassment under the above mentioned Article Seventeen (17) – Misconduct and Penalties, and the penalties have been upheld on appeal.

22. Professionally design and develop a highly interactive demonstration of sheet metal work. It must demonstrate state of the art sheet metal technology and employ state of the art presentation technology. There must be hands-on interaction. The Millennial Generation is the most technologically advanced generation ever. The materials developed must be targeted to and tested by the Millennial generation because this group is the future of unionized sheet metal. Unless the demonstration grabs them, you will lose them.

There will be great differences in locales in terms of potential uses of this demonstration, some of which will include: career fairs, pre-apprenticeship programs, trades shows, county fairs, shopping mall exhibitions, etc. The goal is to have a demonstration that can readily be used at a location where potential apprentices may gather. **It is also important to reach the parents of potential apprentices.** The author attended a charity concert in Baltimore headlined by Lee Greenwood and was able to sample dishes cooked by members of the Baltimore-Washington Chefs Association. He was also able to obtain information on the apprentice program run by Association. His son completed the apprentice program and became a journeyman chef, an occupation he practiced until he quit after 10 years to become a plumber's apprentice.

23. Provide a mechanism whereby apprentices can obtain financial assistance in paying for tools, clothes, boots, initiation fees, school costs, etc. Many young people do not have the financial resources to acquire the necessary items at the beginning of the apprenticeship.

24. Develop and implement a program in which teachers and guidance counselors are brought to training centers and job sites to develop a better understanding of sheet metal work. One chapter invites middle and high school math teachers to visit the training center where they are shown the nature of the mathematics involved in the trade and the types of applications in which it is used. The teachers have returned to their schools and incorporated this information into their classes.

25. Develop a web-based application process that facilitates the timely and effective processing of applicants. The program should be web-based because of the computer proficiency of the Millennial generation and should consist of the following:

1. Application forms should be available on line and be able to be completed and submitted on line at any time. The Millennial Generation operates 24/7. The application process should reflect this.
2. Testing and scoring should be done on line so that the potential applicant's score is available to the test taker and the union without delay. The ACT and SAT tests are currently done this way.
3. Official high school and other transcripts should be required and submitted such as two forms of identification one of which must have a photograph, a valid driver's license, and an application fee.
4. Interviews should be conducted once a month to prevent the loss of good applicants.
5. The goal must be to get good applicants working.

26. Develop a mechanism whereby an applicant approved for admission to the apprenticeship program is hired immediately. Stories were shared with the author in which applicants got the final approval from the JATC and had to wait from 1 to 18 months to begin work and the apprenticeship. Younger applicants are seeking a job that provides them with an immediate income rather than a career. Many women encountered this problem in the 1980s and even into the 1990s.

A significant number of people in this situation gave up waiting for the sheet metal job to open up and took other employment. Many locals already do this.

- 27. *The primary focal point for recruitment should be high schools and vocational-technical schools at the secondary level and community college and technical colleges at the post-secondary college level.*** The quality of potential applicants is indicated by their accomplishments. Dropping out of high school is not a good predictor of workforce success. You are recruiting students to be successful in a 4-5 year training program. Academic achievement is a good predictor of success in training as well as in future work. The days of finding potentially good workers standing on the street corner are gone. Students dropping out of community college should be good applicants.
- 28. *Negotiate arrangements with local community/technical colleges that create a link so that apprenticeship courses may be accepted for credit toward an Associate's Degree.*** Many young people and their parents as well as guidance counselors believe that everyone has to attend college. Linking apprenticeship to community and technical colleges' degree programs creates the opportunity for craft workers to earn college credit while serving the apprenticeship, thereby creating the opportunity for further college study.
- 29. *Focus on identifying persons with strong work ethic.*** The most critical characteristic necessary for success is that of a strong, positive work ethic. The desire to come to work everyday on-time, take only allowed breaks, put the needs of the employer and client ahead of one's own needs, and let the employer know if an unforeseeable reason arises to prevent coming to work makes a significant difference in the efficiency and effectiveness of the work process. Identifying people with this characteristic and recruiting them to come to work for your business is critical. Workers with this characteristic and who are trainable will be the ideal candidates. Math skills can be obtained through training; work ethic cannot.

Women and Minorities

1. **Create a position that reports directly to the General President to provide advice on women's issues. Such a position should also be created within each local union.** All of the Executive Board positions of the SMWIA are filled by males. The union lacks the mechanism for generating input from female members; input that it vitally needs to increase the number of women in the trade.
2. **The local union and contractors group must undergo an in-depth analysis of their membership to identify the gender and racial composition of the industry.** This is necessary to establish a baseline.
3. **Appoint a female representative to the Building and Construction Trades Department's Committee on Women in the Trades.** When meeting with the co-chair of this committee to discuss actions that could be taken to improve the sheet metal industry's ability to attract and retain women, the author was met with chuckling and the comment "If they are so concerned, why don't they have a representative on this committee?" See Committee on Women in the Trades, BCTD, Co-chair Shannon Brett, Boilermakers at 703-560-1493 or sbrett@boilermakers.org. Brochure is presented in Appendix 14.
4. **Create a program within the SMWIA, similar to the IBEW's Women's Conference.** The last conference was held in September, 2004 and was designed to "bring together IBEW members interested in building and strengthening the IBEW and the communities in which they live. Delegates participated in plenary sessions, branch caucuses, round table discussions, and worker-friendly workshops to help equip them to take on the challenges facing working families in a proactive, strategic and practical manner. "This would provide a mechanism for women to discuss relevant issues. For information on the IBEW's Women's Conference program contact Carolyn Williams at the IBEW . In addition, see Appendix 15.
5. **Create a program similar to the Electrical Workers' Minority Caucus (Appendix 16) that would be independent of the SMWIA, but would be dedicated:**
 - To promote equal opportunity and employment for minorities at all levels of the SMWIA structure; to foster leadership development and empower minorities to become active participants and leaders in the SMWIA;
 - To assist SMWIA minority members who have discrimination complaints;
 - To promote, support and assist the organizing of minority workers in the SMWIA; to encourage minority workers to be greater activists in community and political affairs; and
 - To be actively involved in AFL-CIO Constituency Groups, human, civil, and women's rights organizations to advance the cause of minority workers.See <http://www.ibew-ewmc.com/> for further information.
6. **Establish a national point of contact to serve as the liaison between SMWIA/SMACNA and national organizations dealing with minority and female workforce issues.** Examples of such organizations are listed in recommendations below.
7. **Work with the General Contractor or Construction Manager to create site welfare conditions that reflect the needs of women.** This must include clean and sanitary permanent or portable toilets with running water and that are maintained in such a fashion. The facility doors should be lockable from both sides of the door and keys provided only to female workers. This would also apply if change rooms were provided.
8. **Establish relations with minority and female labor-affiliated organizations to provide the opportunity and basis for a dialogue on minority and female issues.** These would include
 - Asian Pacific American Labor Alliance - <http://www.apalanet.org/>
 - Coalition of Black Trade Unionists- <http://www.cbtu.org/>
 - Coalition of Labor Union Women - <http://www.cluw.org/>

- Labor Council for Latin American Advancement - <http://www.lclaa.org/>
See Appendix 17 for further information.

9. Establish partnerships with minority and female neighborhood or community based organizations committed to workforce development and the access of minority and female workers to good paying jobs. This should include national organizations such as these listed below. See Appendix 18 for information on these organizations.

- The Urban League – <http://www.nul.org>
- The National Council of La Raza - <http://www.nclr.org/>
- Wider Opportunities for Women - <http://www.wowonline.org/>
- Legal Momentum – formerly the NOW Legal Defense Fund <http://www.legalmomentum.org/>
- Women Build - <http://aawomenbuild.org/>
- List of local tradeswomen and related organizations.
- Depending upon the locality, there may be Native American groups.

The local union must work with community organizations such as these to organize and conduct career fairs. There are numerous examples of how to conduct these efficiently and effectively. Local 16 in Portland, Oregon has worked closely with Oregon Tradeswomen, Inc. to increase the number of female apprentices.

See Appendix 19 for guidelines on establishing a preapprentice program. The pre-apprenticeship program must be seen as much more than an educational vehicle to convey knowledge and skills to the participants. The program should be used as an assessment tool whereby the instructors are able to assess the pre-apprentice's attitudes, work ethic, ability to work with a team, etc.

10. Establish partnerships and/or sponsor programs focused on young people that are not connected with schools. These would be programs that meet outside of school or during the summer. See Appendix 20 for the following examples.

- Youth Build - <http://www.youthbuild.org/site/c.htmlR13PIKoG/b.1223921/k.BD3C/Home.htm>
- Rosie's Girls - http://www.nnetw.org/pgm_for_girls/rosies_girls/intro/rosies_intro.htm
- BEK Girlpower – <http://www.bekgirlpower.com/home.htm>
- Girls Inc. - <http://www.girlsinc.org>
- Craftsman's Kid's Club - <http://66.84.26.222/>

11. Identify female and minority sheet metal workers who have the experience and credibility to serve as role models.

12. Develop an occupational fitness program for all women. Most women (and some men) are not in the physical condition to perform sheet metal work eight hours a day, five days a week. See Appendix 21 for a proposed program. This program could be run in conjunction with a preapprenticeship program.

13. Meet with the makers of sheet metal hand tools to discuss the problems that females with smaller hands have with using the hand tools. Using tools that are too large creates a safety hazard that must be eliminated.

14. Together with the other construction unions meet with manufacturers of work clothes and work boots to discuss the problems that females have with finding appropriately sized clothes and boots. Clothes and boots that do not fit create potential safety hazards.

15. Together with the other construction unions, meet with manufacturers of Personal Protective Equipment to discuss the problems that women have in obtaining PPE that fits properly. Ill-fitting PPE (harnesses, respirators, and gloves) creates potential safety hazards in addition to the hazards created by the work itself.

16. **Together with the other construction unions, pressure the Bureau of Labor Statistics to conduct in-depth analyses and reporting of non-fatal occupational injuries and illnesses to women in the construction industry that result in days away from work.** Gender-based safety and health data are collected by the Bureau of Labor Statistics but are typically not analyzed or reported.
17. **Together with the other construction unions and construction safety experts, develop an ergonomically based training program for women for material handling.** Typically, women have less upper body strength than men and, consequently, loads should be handled differently to minimize ergonomic problems. All women should be required to complete the training program.
18. **Develop information for women on being a sheet metal worker that presents information on surviving and being successful within a historically male trade.** Examples are available from a variety of women's organizations. Appendix 22 contains the Manual for Survival for women workers prepared by Legal Momentum and the Association for Union Democracy.
19. **Establish a program to be conducted by the local union or in conjunction with other local unions of the construction unions that will assist workers in obtaining citizenship.** This is currently done by universities and organizations seeking high tech personnel. There is no reason why it cannot be done by unions seeking to fill the demand for skilled workers.
20. **For areas with a significant Latino/Latina population, develop a training program to educate the union membership and contractor representatives about the Latino/Latina population.** Appendices 1 and 2 provide an excellent introduction to the topic. Some of the factors that must be examined are:
 - Cultural differences between minority groups and the trade as well as the union training center
 - Importance of social networks for Latinos/Latinas
 - The American culture is high individualistic while the Latino/Latina culture is focused more on community.
 - The successful minority mechanics and contractor representatives are seen as role models that form a bridge between the Latino/Latina community and the perceived white business community. Word of mouth advertising by these role models is very effective in that they are able to tell stories about their experiences in the trade and to develop trust with their listeners.
 - There are significant differences between Latino/Latina groups, e.g., the Cuban culture is very different from that of a Mexican culture.
 - The Latino community has the highest overall dropout rate of any minority group although Mexican Americans have high aspirations and attain higher education leadership positions in community colleges. Social promotions create a wall that is difficult to overcome.
21. **Together with the General or Prime Contractor and other trade contractors on the site, post Material Safety Data Sheets for each chemical present on the worksite.** Women who may become pregnant must pay special attention to reproductive hazards present on site and protect themselves from the hazards. When possible, employers should make reasonable accommodations for workers in late stages of pregnancy rather than forcing them out of the workplace.
22. **SMACNA contractors, JATCs, and SMWIA local unions must review all communication materials to ensure that they are gender and racially neutral and include positive images of the different faces of workers in all visual materials (visuals, posters, pictures, etc.)** Picture after picture of middle-aged white men does not present an image of an organization welcoming women and minority applicants.

Awareness

1. **Together with the other construction unions, approach the makers of kids' toys and shows, such as Bob the Builder and Construction Jack, and discuss with them the creation of a line of construction figures that are ethnically and gender diverse and that represent the various trades in the industry.** Women must be portrayed as equals, i.e., Wendy must be shown doing the same types of tasks as Bob. It is important to begin to create awareness when children are young. See Appendix 23 for examples.
2. **Together with the other construction unions approach the publishers of children's books and arrange for the publication of construction coloring books that present a diverse workforce and books that provide information about the construction process that are targeted at late elementary school students.** See Appendix 24 for examples.
3. **Develop a modern day icon similar to Rosie the Riveter that can be used as the brand for female union construction workers.** Rosie was a very popular icon during World War II, one in which women took great pride. See Appendix 25.

Recruitment

1. **Develop a comparative study of the financial returns to a sheet metal apprenticeship and career with a set of other occupations and pathways to those occupations.** The occupations chosen for comparison should be diverse and include some that require a college education such as mechanical engineer. This needs to be a fairly sophisticated analysis and examine factors that influence the number of hours worked per week and per year, and average hours worked by different crafts.

Young adults have limited understanding of fringe benefits and the role that they can play in improving working life. This needs to be explained and used as a recruiting advantage. See Appendix 26.
2. **Prepare a detailed case study of a young person who has had a career whereby he/she moved from apprentice to journey worker and then on to becoming a contractor.** Self-employment is an issue of interest to the Millennial Generation. Sheet metal provides such an opportunity
3. **Develop a recruitment incentive program that will provide a reward (monetary or otherwise) to a SMWIA member who recruits an apprenticeship applicant who successfully completes the apprenticeship program.** Every member is in the position of marketing a career as a sheet metal worker. They must take advantage of these opportunities to sell the career.
4. **A training program for recruitment for all union members and contractor representatives should be developed and required of these parties to ensure that a professional, consistent message be developed and delivered.** It is crucial that every member of the union and representative of the contractor understand that the best recruitment is done face to face. Every one of these people must recognize that they have recruitment responsibilities and that they must be able to respond in an appropriate manner.
5. **JATCs must engage everyone in the union and contractor organizations to participate in the workforce development process.** It is crucial that women and minorities be involved because they can refute misperceptions of the trade and the treatment of women and minorities. More than forty years after the passage of Title VII of the 1964 Civil Rights Act, there is a fear of discrimination. Success stories can reinforce the beliefs that hard work does pay off.
6. **Develop a contact tracking system to maintain contact with individuals of interest.** This would allow the JATC to maintain contact via email and invite the contact to specific events, make them aware of events, or simply to say hello. Identifying people with interest in a potential sheet metal

career and that have the capabilities allows the JATC to cultivate that person and increase the likelihood of the person seriously considering a career in sheet metal.

Selection

1. **Develop a real or simulated work situation within which to evaluate applicants.** It is important to go beyond paper documents and oral interviews to evaluate an applicant's behavior, particularly factors such as motivation, discipline and willingness to learn.

Training

1. **Improve on the job apprentice training by adopting the Transition to Trainer program developed in Wisconsin.** On the job training of apprentices is haphazard. Many times apprentices are taught how to do things the correct way in class and then are told by journey workers in the field that that is wrong. This is particularly a problem of attitudes. Bad attitudes of journey workers contaminate the good attitudes developed by apprentices in their classes. The Transition to Trainer program trains apprentices in their last period to become effective trainers as journey workers. See Appendix 27.
2. **Develop a more structured and controlled on the job training program with appropriate documentation of the hours spent in the various activities.** It is critical that an apprentice receive on the job training in all aspects of the trade. An apprentice trained in one area, e.g., architectural, will not have the flexibility to work at duct fabrication in the event demand for architectural work declines.
3. **Develop and implement an extensive and effective safety training program.** Women are more concerned about safety than their male counterparts. It is extremely important that women feel safe on the job. The relatively smaller physical stature of women together with their psychological concerns about well-being and nurturing make them more aware of and concerned with safety. For their peace of mind, it is crucial that women feel well-prepared through extensive and effective safety training and practice.
4. **Develop and implement a hazard reporting system in which the person reporting the hazard is free from retaliation.** Women are more safety conscious than men and are more afraid of losing their jobs for creating problems for management such as reporting hazards. Fear of retaliation may inhibit their reporting of hazards. They may remain silent or attempt to move to a job perceived as safer.

Retention

1. **Contractors must establish a training program for forepersons and require its completion as a prerequisite to being a foreperson.** The foreperson is the critical individual on a site because that person establishes the culture and climate and the types of behavior that are allowable. The program and required completion should be repeated on an annual basis. The foreperson is an agent of management and an agent for change.
2. **Develop and implement a mandatory mentoring program for all female and minority apprentices. A similar program for female and minority journey persons should be available on a request basis.** The mentor should be someone who has gone through an apprenticeship that an apprentice can talk with. The mentor does not have to be a women or minority, but simply must be someone who understands the pressures experienced by apprentices and how to deal with them. It is important that apprentices, particularly women, be taught the tricks of the trade that allow work to be performed more easily and safely.

Mentors are especially needed for women because of the special problems they encounter in fitting in or becoming acculturated into the workforce. Men are used to sitting around talking with other men such as during lunch or in a bar after work. Women are not accustomed to doing this. Women are also accustomed to subordinate roles such as an apprentice. This is difficult to change when

becoming a journeyman. As a result, one must constantly prove oneself. The challenge is how to do your job and not lose your integrity. Women and minorities entering a relatively all white male domain need support emotionally and psychologically to ease their way into the trade.

3. ***Each local union should create a position of ombuds, i.e., one that investigates reported complaints, reports findings, and helps to achieve equitable settlements.*** The ombuds system provides an informal method of resolving disputes without resorting to formal mechanisms that tend to harden positions and create animosity.
4. ***Each local union should establish an Office of Member Assistance.*** This office would serve as a clearinghouse for information on childcare [construction work presents a set of circumstances that makes obtaining childcare difficult] and information on where members are working to facilitate the matching of members with temporary transportation needs with those who might be willing to offer a ride. Childcare and transportation are not solely female concerns. This office also could help members deal with these issues during training sessions for apprentices.
5. ***Establish a workshop on life skills and financial management.*** Younger workers today have few, if any, financial management skills. To help prevent apprentices and younger journeymen from getting into financial trouble, a life skills and financial management workshop should be developed and offered as part of the apprenticeship program and on demand to journeymen. Good financial management may prevent some apprentices from dropping out of the program as well as helping to eliminate financial problems experienced by journeymen.
6. ***Create teambuilding opportunities to strengthen the sense of community within the unionized sheet metal industry.*** It is critical that labor and management get to know one another and one way to do this is through activities outside of work. For example, participation in a challenge or ropes course program has been shown to have benefits as has outward bound types of programs. Activities such as union-contractor association trips to a baseball game with recognition by the baseball team during the game also create opportunities for community building.