



**International Training Institute®**  
For the Sheet Metal and Air Conditioning Industry

**MEDIA KIT**

# ABOUT

## THE INTERNATIONAL TRAINING INSTITUTE (ITI)

The [International Training Institute \(ITI\)](#) provides curriculum and training to 148 training facilities in the United States and Canada for the unionized sheet metal, air conditioning and welding industry.

The training programs and materials offered by the ITI are the result of an employee welfare benefit plan established on May 12, 1971 to fund the training and development of apprentices and workers in the unionized sheet metal industry.

The ITI is jointly sponsored by SMART, the International Association of [Sheet Metal Air, Rail and Transportation Workers](#) (formerly the Sheet Metal Workers' International Association) and the [Sheet Metal and Air Conditioning Contractors' National Association \(SMACNA\)](#).

More than 14,000 apprentices are currently learning and working in four- and five-year programs, earning college credits for their work and graduating with a well-defined career path and zero college debt.

The ITI supports apprenticeship and advanced career training for male and female union workers in the sheet metal, heating, ventilation and air conditioning (HVAC), industrial/welding, architectural, and building service industry throughout the United States and Canada. Headquartered in Fairfax, Virginia, the ITI produces a standardized sheet metal curriculum supported by a wide variety of training materials free of charge to sheet metal apprentices and journeymen.

Sheet metal workers are a highly educated, skilled workforce of trade people who enjoy working with their hands and solving problems as well as utilizing spatial skills, work ethic and the ability to work as a team.

A sheet metal worker can range from the designer/detailer in the office who uses AutoCAD to create three-dimensional designs of HVAC systems to the skilled professional on the job site who makes sure the ductwork is installed correctly in order to meet customer needs and/or code compliance. And there are many more jobs in between.

Sheet metal apprentices are students committed to the challenges, rewards and continuing education required for a successful career as a journey person. Graduates have gone on to become foremen, general contractors, project managers, company owners, business managers and presidents of their local or the national union. Sheet metal workers take pride in their work and see the value in their accomplishments.

The ITI's staff is made up of regional representatives and trade-specific specialists who travel the country to provide individual schools, directors, instructors and staff with the training and support needed to keep the sheet metal industry moving forward.



## HIGHER EDUCATION/APPRENTICESHIPS

According to the [Bureau of Labor Statistics](#), the job outlook for sheet metal work from 2016-2026 is 9% growth from the 138,900 jobs in 2016. People who like working with their hands, solving problems and using math to create intricate systems need not be relegated to academia. The outlook states, "Employment growth reflects an expected increase in the number of industrial, commercial, and residential structures that will be built over the coming decade."

Sheet metal apprentices are college students. They attend four- and five-year programs consisting of core curriculum, classroom study and hands-on training, which are practiced in labs and fabrication shops in the schools as well as in real time on the job site.

Apprentices earn college credits, leaving only general education requirements necessary to earn an associate degree from partnerships with community colleges in their hometowns. Students in some programs assure students can earn their associate degree by the

time they graduate the apprenticeship. Instead of carrying just books, they carry tools, a living wage and, most importantly, zero college debt when they graduate.

A sheet metal apprentice can be anyone – from a single father who wants a career shift yet knows little about the trade to a fourth-generation legacy who has known about sheet metal work her entire life. Cable installers, graduate students, waiters and waitresses, single parents, security guards, high school graduates – they've all become sheet metal apprentices, and upon graduation, journey people.

Qualifications to enter an apprenticeship include good physical condition, above average mechanical and math skills, good hand-eye coordination, understanding of spatial relationships and how patterns are used to create metal forms, excellent work and study habits, team player, solid reasoning skills, problem solver, reliable, responsible and enjoy the work.

In addition to the core curriculum, apprentices study specialized areas including heating, ventilating and air conditioning (HVAC), architectural/ornamental sheet metal, detailing/AutoCAD drafting, service and refrigeration, testing, adjusting and balancing (TAB); residential HVAC, sign industry, industrial welding and roofing.

Upon graduation, the ITI also provides journeymen and women the chance to improve their skillset by offering new courses and certifications. Upgrade classes and certification tests are held at training centers across the country, making union sheet metal workers a valuable asset to their contractors.

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# DISCIPLINES



## ARCHITECTURAL/BUILDING ENCLOSURE

Architectural sheet metal is a combination of technical skills and artistry. The shaping of metal into useful and beautiful forms is a craft dating back centuries. Some famous examples include the Fordham Spire in Chicago, Experience Music in Seattle, the CN Tower in Toronto, Canada; the Empire State Building and Statue of Liberty in New York City.

Along with the basic principles of architecture, students will work with architects, engineers and other trade workers to create buildings, bridges, ornamental elements such as siding, spires and sculptures as well as other long-lasting designs for building decoration that are functional and beautiful.

## DETAILING/AUTOCAD

## THREE-DIMENSIONAL DRAFTING

Sheet metal detailers use computer-aided drafting software to produce detailed two- and three-dimensional drawings of the major systems that make buildings comfortable and safe. With the use of the most up-to-date technology, detailers' designs ensure workers can fabricate and install complex systems efficiently and on time.

Although jobsite work is required, most work is done inside an office at a computer, where detailers examine blueprints and communicate regularly with project managers, trade workers and others involved in the construction of buildings.

Apprentices and journeymen who choose a career in service and refrigeration are the first on site when buildings are either no longer comfortable or safe. Technicians not only keep occupants cool in the summer and warm in the winter, they keep industries that

demand on heating and cooling – such as the food service or medical industries – functioning at safe temperatures.

Workers in the service and refrigeration industry install and test systems on a variety of job sites as service technicians, fabricators, system evaluators, energy consumption managers and service managers

## **SERVICE AND REFRIGERATION**

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## **TESTING, ADJUSTING AND BALANCING (TAB)**

Testing, adjusting and balancing (TAB) is an important part of air and water delivery systems, but it goes virtually unnoticed until a building's occupants are too hot, too cold or bothered by their system's noise level or air quality. TAB technicians make sure air and water are delivered efficiently, quietly and safely throughout a building.

TAB technicians are responsible for working on air and water delivery systems to meet the specifications outlined by the design engineer. Technicians learn all parts of the HVAC and fluid flow systems, analysis and measurements to conduct appropriate tests and make correct adjustments. TAB technicians should enjoy math, the idea of working on complex

systems and solving problems on the fly. Opportunities in this field include energy management, indoor air quality, building systems commissioning, sound and vibration testing, fire life safety and smoke control systems, HVAC installation or system controls, system design, project or facility management, and clean room work or certification.



## **RESIDENTIAL HVAC**

Residential HVAC technicians work on installing and servicing complete residential systems either on new construction for a specialized homebuilder or for high-volume builders who develop large subdivisions containing many homes. Technicians work mostly in the field on duct systems for existing buildings to remodel, upgrade or troubleshoot systems in single-family homes, town homes and apartment buildings.

Opportunities in this field include new construction and residential finish installer, retrofit technician and residential services technician.

## **SIGN INDUSTRY**

Craft workers in the sheet metal industry make the majority of signs, even those made of plastics or neon tubing, including those seen on tops of buildings, storefronts or on the side of the highway. Craft workers design new signs, fabricate signs based on existing designs or mounted signs in a variety of locations. While some work in the field, others work in the office designing signs with the use of CAD software.

On the more creative side, the sign industry is the most visible of all the disciplines. Opportunities in this field include crane operator, project coordinator, sign designer and contractor.



## ROOFING

A roof is more than just the top of a finished building. It is a system designed to direct rainwater to gutters and down spouts, keep heated and cooled air inside structures, support rooftop machinery and withstand most weather conditions, including wind and hail. In this field, workers work outdoors on commercial roofing systems. During classroom and on-the-job training, apprentices learn about different types of low slope roofing systems including built-up roofs, Modified Bitumen Roof Membranes and single-ply membranes along with different types of roofing designs such as green roof systems.

Opportunities in this career field include job superintendent, foreman, estimator, installer and safety and risk manager.

## INDUSTRIAL/WELDING

Industrial sheet metal workers and welders work on large-scale projects, custom projects and large shop-built modules, using metals that are often up to 1 inch thick as well as large, heavy-gauge machinery to hoist projects into place. Machines and systems they help craft can be found in food processing plants, mills, nuclear power facilities, power or automobile assembly plants and can be located anywhere in the world.

Industrial projects typically last for years and enhance the quality of life for many people. Opportunities in this field include becoming a certified industrial welder by the American Welding Society, custom fabricator, grinder and finisher, plasma cutter operator, field installer or foreman, shop foreman, estimator, project manager and shop owner.

## HELMETS TO HARDHATS

Those who complete their careers in the military often need guidance to a fulfilling civilian career. Using services such as [Helmets to Hardhats](#), the ITI welcomes veterans as direct-entry applicants into schools and provides other benefits if they qualify for the program.

The program helps veterans, but it also helps training directors find quality applicants for the sheet metal apprenticeship. These directors receive hardworking students who are dedicated, motivated and disciplined.

Honorably discharged veterans can click on the [Helmets to Hardhats link](#) on the ITI's website, which will direct them to how to find a sheet metal apprenticeship in their area.



## SMART Heroes

Members of the military planning on transitioning to civilian life in the next year can participate in SMART Heroes, a seven-week course which allows them to earn the equivalent of their first-year sheet metal apprenticeship training (224 hours). Upon discharge from service, these graduates may choose to enter any of the 148 SMART apprenticeship programs in the United States and be provided direct entry and advanced placement as a second-year sheet metal apprentice, including a high probability of obtaining second-year apprentice wages and benefits.

Launched in August 2017, the SMART Heroes program was established to provide free sheet metal industry training to enlisted U.S. military men and women who plan to enter the civilian life within the year, thereby assisting in a successful transition into the civilian workforce.

The program was created by the ITI together with the International Association of Sheet Metal, Air, Rail and Transportation Workers (SMART) and Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) created the program in collaboration with [SMART Local 66](#), [SMACNA Western Washington](#), [Western Washington Sheet Metal training center](#) and Helmets to Hardhats.

In 2019, a second location was approved at the Colorado Sheet Metal training center in Colorado Springs, Colorado and the program launched on Aug. 19. This second location was made possible due to the cooperation between Fort Carson, SMART, SMACNA, and Helmets to Hardhats, and will follow the same guidelines as the inaugural program.



## WOMEN IN THE TRADE

The percentage of women in the sheet metal apprenticeship is 3.26% percent. National-ly, the construction industry in general is made up of 3% women, according to the U.S. Department of Labor. Percentages are higher in areas around the country such as Local 28 in New York with 12.6%; Western Washington Sheet Metal Local 66 with 10%; and Local 16 in Portland, Oregon with 7.2%.

Math, spacial relationships, problem solving and multi-tasking are all skills many women possess, and with the physicality of the job becoming more neutral due to safety regulations, women are finding it easier to assimilate on the job site as well as in the classroom. What apprenticeship training directors are finding is many women simply don't know a sheet metal apprenticeship is a career/education option for them.

Partnerships and affiliations with women's trade groups such as Oregon Tradeswomen Inc. in Portland; Chicago Women in Trades; Nontraditional Employment for Women in New York; and Building Pathways in Boston have helped training coordinators introduce women to a trade many love but fewer know much about. Through these programs, wom-

en are introduced not only to the skills of the trade, but the academic side as well as the physical stamina it takes to be an “industrial athlete.”

The gender pay gap in unionized sheet metal doesn't exist as all apprentices in the program are paid based on experience and completion of program benchmarks determined by each individual local. All apprentices are paid the same hourly rate at each level of experience – apprentice to journey level.

There are numerous benefits for women to work a union sheet metal trade as a career:

- higher wages than what has been considered traditional blue-collar employment for women;
- health benefits (typically for the entire family), paid for by the employers on the member's behalf;
- a pension benefit and often, also a 401(k) to provide into retirement, and the confidence, skills and knowledge to build things, work with your hands, and perform home repair or automotive repairs on your own;
- education is free and apprentices graduate with zero college debt, an associate degree and career.



## **WELDING**

In the last five years, sheet metal workers have been called upon to fill hundreds of skilled industrial nuclear welding positions in the Southeast thanks to the opening of three major projects – Savannah River Site, a nuclear reservation 25 miles east of Augusta, Georgia; Alvin W. Vogtle Electric Generating Plant (also known as Plant Vogtle) in Waynesboro, Georgia; and the Virgil C. Summer Nuclear Generating Station (VC Summer), located 20 miles northwest of Columbia, South Carolina.

For example, in 2017, contractors needed 150 to 200 skilled welders.

Because of these projects, as well as natural attrition through retirement, demand is high for welders, and for these sites, welders came as far as Tennessee to fulfill the need. The requirements: pass the skills exam, federal-level background check and on-the-job tests.

The strategy was to recruit welders they could train, not just seasoned welders, and keep the training constant, so welders can answer the call when contractors need them and be able to pass the necessary tests needed to perform the specific kind of work being requested.

Since its implementation, it's a strategy that has worked in other parts of the country as well. The ongoing recruitment for certified welders and certified welding instructors continues today as demand remains high for this skillset. The American Welding Society and the ITI host more than 90 official testing facilities across the United States to help fulfill the demand in addition to apprenticeship classes aimed at training the future of the industry.

## LEADERSHIP

### **JAMES PAGE, ADMINISTRATOR**



James Page was a member of the ITI field staff from 2007 until 2012, when he took over as administrator for the National Energy Management Institute Committee (NEMIC), a union sheet metal organization that works closely with the ITI. Page took the reins as ITI administrator in October 2014.

Page has more than 30 years of experience in the HVAC industry. He completed his apprenticeship training in 1984 with Sheet Metal Workers Local No. 108 in Los Angeles. He earned his associate degree in sheet metal apprenticeship technology from Ivy Tech College and his associate degree in liberal studies from Long Beach City College.

His professional career includes training and certification in basic and advanced testing, adjusting and

balancing for TAB certification; air conditioning and service levels I, II and III; indoor air quality, service and TAB instructors training; basics in advanced professional development; and advanced professional development in teaching. He also was a past trainer in OSHA 10 and 30 and holds numerous industry certifications.

Page's experience ranges from the installation of HVAC systems to life safety testing of environmental systems for the city of Los Angeles Fire Department.

For the first 10 years, he worked as an apprentice, advancing to journeyman and installation foreman before changing departments from sheet metal to service. He then became a certified test and balance technician for one of the largest HVAC contractors in Southern California. From there, for the next 17 years, he served as a certified TAB technician and supervisor, HVAC system consultant, estimator and field operations manager for a leading test and balance contractor out of Local 105.

While maintaining a successful career in the field, Page earned a credential in occupational teaching with the state of California and worked for more than 10 years locally and nationally to educate the sheet metal workers of tomorrow as an instructor for apprentice and journeymen courses.

### **MICHAEL HARRIS, PROGRAM DIRECTOR**



Michael Harris first started working in a sheet metal shop as a summer job at age 16, but it wasn't until he spent a year at college that he figured out it was the industry where he wanted to build his career. A second-generation sheet metal worker, he began working full time in 1987 at the custom fab shop where his father worked and entered Sheet Metal Workers Local No. 20's apprenticeship program in 1991.

With only a couple apprentice years under his belt, Harris began teaching part time at the training center and took on the role as full-time instructor in 1997; he took over as director of training in 2000.

With a welding background and leadership qualities, Harris began his career with the ITI as

a full-time welding assessor in 2005 and in 2009 took on his current role as program director, where he oversees programming and instructor training as well as directs the field staff.

Harris also serves as a member of several committees for the American Welding Society; as chairman of the Accredited Testing Facility and Certified Welder Committee; as a member of the main certification committee, the Certification of Welding Inspectors Committee; the Certification of Welding Educators Committee; and the Auditing of American Welding Society Accredited Testing Facility Certified Welding Fabricators Committee.

In addition to his father, he has three uncles who worked in the trade and currently has a brother and two nephews who work in the trade.

In his spare time, Harris enjoys the outdoors and spending time with his wife and three kids.

## FAQs

### Q: WHAT IS SHEET METAL?

**A:** The term “sheet metal” refers to any metal that can be formed into flat pieces of varying thicknesses. Thick metals are called plate. Metals used in the sheet metal industry include cold rolled steel, mild steel, stainless steel, tin, nickel, titanium, aluminum, brass and copper.

Using specialized tools, sheet metal workers cut, roll, bend, and shape these pieces to make a wide variety of objects. Examples of where sheet metal can be found or used include:

- Ductwork (HVAC)
- Refrigeration unit cabinets (Service)
- Medical tables and storage units (Kitchen and Stainless)
- Building facades (Architectural)
- Signs (Architectural)
- Exhaust hoods (HVAC Welding)
- Stacks (Industrial Welding)
- Decorative art (Ornamental)

Sheet metal plays a vital role in our daily life and is found in the areas one might expect, like heating and cooling systems, or in unexpected places, such as medical equipment.

## **Q: IS SHEET METAL WORK DANGEROUS?**

**A:** The danger varies, depending on which career path you decide to take. Some workers perform their tasks on ladders, roofs or bridges. Others work at a computer. Regardless, the emphasis is always on safety. Apprentices learn how to safely and responsibly handle tools, materials and themselves through both classroom instruction and on-the-job training. Workers are reminded to focus on safety every day.

## **Q: WHY DOESN'T THIS TRAINING AND EDUCATION COST THE STUDENT ANYTHING? THIS SEEMS TOO GOOD TO BE TRUE.**

**A:** Having a steady supply of well-trained, well-educated workers is extremely valuable to the sheet metal industry. Therefore, ITI's members fund the training and education to ensure that no one who wants to work in this industry is prevented because of finances.

## **Q: ARE THERE GOOD OPPORTUNITIES FOR WOMEN IN THIS FIELD?**

**A:** Absolutely. Women in the sheet metal trade receive the same education and opportunities as their male counterparts. As with most construction-related jobs, jobs in the sheet metal industry have traditionally been held by men, but that's changing as women move into this field in increasing numbers.

## **Q: ISN'T IT BETTER TO HAVE A COLLEGE DEGREE?**

**A:** A traditional four-year college isn't for everyone, but a completed apprenticeship can be the equivalent to a college degree. Many of the courses offered by the ITI are college-credited, and sheet metal apprentices can use those credits to pursue a college degree, in addition to receiving their journeyman's card upon completion of the program. ITI curriculum has been evaluated for college credit by the National College Credit Recommendation Services (NCCRS), and the recommended credits are issued through Excelsior College.

## **Q: HOW DOES THE UNION BENEFIT MEMBERS?**

**A:** The union negotiates funding for training and education in the sheet metal industry. Beyond that, being part of a union delivers a wealth of benefits to members. The union negotiates on behalf of its members for better pay, benefits, and working conditions. The union gives workers an important, and powerful, say in their workplace.

## **Q: WHAT CAN A CAREER IN SHEET METAL LEAD TO?**

**A:** Sheet metal workers can choose to work in general construction, become certified in a specialty area, work for a company or general contractor, or start their own business. In addition, sheet metal workers can hold union office, work for their trade association, teach classes or write the standards and manuals that guide the sheet metal industry. Opportunities in this field for personal growth and achievement truly are limitless.

## **Q: CAN PEOPLE VISIT THEIR LOCAL TRAINING CENTER?**

**A:** Certainly. Contact [your local training center](#) to arrange a visit.

## **Q: WHAT SKILLS IS THE SHEET METAL INDUSTRY LOOKING FOR?**

**A:** The sheet metal industry wants candidates who like to work with their hands, like to solve problems and be creative, take pride in their work, work well in a team-oriented environment, and enjoy taking on challenges. In addition, a solid understanding of math is important to many jobs in this industry.

# INTERVIEWS \* PHOTOS \* INFORMATION

There are more than 10,000 images in the sheet metal image library. Images are available in all formats (i.e. .jpg, .tiff & .eps) and can be e-mailed, sent virtually using FTP sites/Dropbox or provided as a custom art disk.

Interviews are available with James Page, Mike Harris or any of the ITI field staff, training directors, instructors or apprentices.

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