



**Training Proposal for:**

**Sheet Metal Workers' Local No. 104 and Bay Area Industry  
Apprentice and Journeyman Training Fund**

**Agreement Number: ET16-0921**

**Panel Meeting of:** January 22, 2016

**ETP Regional Office:** San Francisco Bay Area      **Analyst:** D. Woodside

**PROJECT PROFILE**

Contract Attributes:	Retrainee Apprenticeship Priority Rate Veterans	Industry Sector(s):	Construction  Priority Industry: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Counties Served:	Northern California	Repeat Contractor:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Union(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Sheet Metal Workers' Local Union No. 104		
Turnover Rate:	≤20%		
Managers/Supervisors: (% of total trainees)	N/A		

**FUNDING DETAIL**

<b>Program Costs</b>	+	<b>Support Costs</b>	=	<b>Total ETP Funding</b>
\$888,504		\$61,428 8%		\$949,932

In-Kind Contribution:	50% of Total ETP Funding Required	Inherent
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**TRAINING PLAN TABLE**

Job No.	Job Description	Type of Training	Estimated No. of Trainees	Range of Hours		Average Cost per Trainee	Post-Retention Wage
				Class / Lab	CBT		
1	Retrainee Priority Rate Journeymen	Commercial Skills, Computer Skills, Business Skills, OSHA 10/30	91	8-200	0	\$752	\$28.45
				Weighted Avg: 32			
2	Retrainee Apprentice	Commercial Skills Business Skills, OSHA 10	291	8-210	0	\$2,780	\$21.28
				Weighted Avg: 200			
3	Retrainee Priority Rate Pre-Apprentice	Commercial Skills Business Skills, OSHA 10 Literacy Skills	30	8-200	0	\$564	\$21.28
				Weighted Avg: 24			
4	Retrainee Apprentice Veterans	Commercial Skills Business Skills, OSHA 10	20	8-210	0	\$2,780	\$21.28
				Weighted Avg: 200			

**Minimum Wage by County:** SET Priority Industry: \$21.28 per hour.  
**Health Benefits:**  Yes  No This is employer share of cost for healthcare premiums – medical, dental, vision.  
**Used to meet the Post-Retention Wage?:**  Yes  No  Maybe  
 Up to \$2.45 per hour may be used to meet the Post-Retention Wage for Job Numbers 2 and 4.  
 Up to \$9.51 per hour may be used to meet the Post-Retention Wage for Job Number 3 for Pre-Apprentices.

Wage Range by Occupation		
Occupation Titles	Wage Range	Estimated # of Trainees
<b>Job Number 1</b>		
Journeyman Building Trades Sheet Metal Worker; Air Conditioning Mechanic; Test, Adjust & Balancing Technician		91
<b>Job Number 2</b>		
Apprentice Building Trades Sheet Metal Worker; Air Conditioning Mechanic; Test, Adjust & Balancing Technician		291
<b>Job Number 3</b>		
Pre-Apprentice Building Trades Sheet Metal Worker; Air Conditioning Mechanic; Test, Adjust & Balancing Technician		30
<b>Job Number 4</b>		
Veterans Apprentice Building Trades Sheet Metal Worker; Air Conditioning Mechanic; Test, Adjust & Balancing Technician		20

## **INTRODUCTION**

The Sheet Metal Workers' Local 104 and Bay Area Industry Apprentice and Journeyman Training Fund (Sheet Metal Trust) ([www.smw104training.org](http://www.smw104training.org)) is an "umbrella trust" fund created through collective bargaining between Local 104 and the Bay Area Association of Sheet Metal Contractors (Bay Area Contractors). The Trust is administered by 10 trustees designated equally by Local 104 and the signatory employers from Bay Area Contractors. These employers are primarily in the construction industry or transportation industries, both of which are Priority Industries for ETP.

Prior to 1992, the signatory employers were members of five different sheet-metal trade associations, each with a different trust fund. Following the creation of Bay Area Contractors, these five separate trust funds merged into one. Today, Sheet Metal Trust oversees four training centers in Northern California, serving some 6,500 union members and 260 signatory employers.

The Trust sponsors seven different apprenticeship programs for the sheet metal trades. Three of those programs will be funded under this proposal, for the trades shown in the Wage Range by Occupation table: Sheet Metal Worker; Air Conditioning Mechanic; Test, Adjust & Balancing Technician. Each program is for a length of five years.

This will be the fifth ETP Agreement with the Sheet Metal Trust (referred to previously as the Bay Area Sheet Metal JAC).

### **Funding Cap**

The Panel capped funding for Apprentice training at \$450,000 per program sponsor in FY 2015/16, with case-by-case flexibility. This cap does not apply to Pre-Apprentice and Journeyman training, although the overall MEC cap does apply at \$950,000.

As a result of the merger between five trade associations, as discussed earlier, Sheet Metal Trust funds training for a large number of Apprentices over a broad geographic region. The Trust administered training for a total of 753 registered apprentices located across 17 counties in CY 2015. Each region has its own training centers: East Bay located in San Leandro, North Bay located in Fairfield, and South Bay located in Santa Clara and Castroville. All of these apprenticeship programs have been consolidated under one Job Number.

Given the broad scope of this geographic region, and the large numbers of apprentices to be trained, a \$450,000 cap may be overly restrictive in this case. As such, staff recommends funding at a total of \$808,600 for Apprentices (Job Number 2) and Veteran Apprentices (Job Number 4).

Training is scheduled and delivered in each region by a local Training Coordinator, although trainees may attend classes in other regions from time-to-time. The three Training Coordinators meet at the headquarters facility in San Leandro on a regular basis to share curriculum, develop best practices, and plan new coursework as may be requested by the signatory employers.

### **Veterans**

The Panel has established a higher reimbursement rate and other incentives for training California veterans. Higher support costs are also available to reach participants for this program. In this proposal, Sheet Metal Trust has committed to training 20 Veterans in Job Number 4 at the regular apprenticeship rate and without additional support costs above the 8

percent. The Trust's training programs are registered with Helmets to Hardhats. They also work with other veteran groups as well.

## Employer Demand

Construction work for sheet metal workers is increasing in the Bay Area, especially on the San Francisco Peninsula and in the South Bay. Examples of larger projects running into 2016 and beyond are listed below. The Trust reports that these construction projects have led to the registration of over 125 new apprentices in 2015, and a similar expansion is expected in 2016.

- SF Transbay Terminal: Work continues with Phase 1 to complete in 2018. This is a \$1.6 billion project, including \$12 million for HVAC (Heating, Ventilation and Air Conditioning).
- 181 Fremont, San Francisco (SF): This is a mixed-use project of 411,000 square feet of office space and 68 residential units, with a \$500 million budget including \$20 million in HVAC, scheduled for completion in 2017.
- California Pacific Medical Center Van Ness Hospital project, SF: This hospital is scheduled to open in March of 2019 and includes \$200 million in HVAC. This will be a 13-story hospital with 274 patient beds.
- California Pacific Medical Center also has the St Luke's Hospital project underway, expected to open in 2018, as a 7-story 120 patient bed hospital. This includes \$60 million in HVAC.
- In the South Bay, the Apple Campus II project in Cupertino started in January 2015 and is expected to complete in July of 2017, including \$400 million in HVAC work. There are several other projects as part of the Apple Campus.
- In the City of Santa Clara, the Santa Clara Technology Square project will be under construction from February 2016 to November 2016 with \$30 million in HVAC work.
- Also in Santa Clara, the CoreSite data center project will occur from March 2016 to October 2016 with \$40 million in HVAC work.

Due to limited apprentice registration during the economic downturn, it has been almost two years since the Trust had a graduation ceremony, but that has now changed. There were 76 graduates in 2010 and the Trust expects 100 in 2016.

According to the Trust, an upswing in construction has generated the need for more apprentices to enter the sheet metal trade. In 2014 the number of 1st year apprentices accepted was 120, and for 2015 it was 157. Unfortunately, the JAC is having difficulty finding qualified apprentices. To build a larger and more qualified "pipeline," the Trust is requesting ETP funds to train Pre-Apprentices (Job Number 3). As journeymen retire and construction expands in the Bay Area, there is a gap of qualified sheet metal workers. As such, the Sheet Metal Trust also seeks funding for Journeymen (Job Number 1).

## Apprenticeship Program

The Panel is authorized to fund Apprentice training that does not displace any other source of government funds, or replace an existing apprenticeship program approved by the Division of Apprenticeship Standards (DAS). The Panel adopted the Apprenticeship Training Program as a pilot in March 2012. It is designed to supplement cost of delivery for the Related and Supplemental Instruction (RSI) portion of DAS-approved apprenticeship training.

RSI is delivered as class/lab at a trainer-to-trainee ratio of 1:25. (ETP does not reimburse CBT delivery for apprenticeship training.) The curriculum is developed with input from DAS and designated Local Educational Agencies (LEA). In this case, the LEA is Foothill College. The Apprenticeship Program allows reimbursement for up to 200 hours of RSI plus OSHA10.

For the building trades, it is not customary for workers to be employed for a standard retention period of 90 consecutive days with one employer. In that instance, the Panel may substitute non-consecutive hours worked for retention. This modified retention period must be no less than 500 hours within 272 days with more than one employer. Both the standard and modified retention periods will apply to this proposal.

To ensure ETP does not displace Montoya Funds, Apprenticeship reimbursement is reduced by \$5, reducing the priority industry rate from \$18 to \$13 per hour. The post-retention wage for Apprentices cannot be less than \$21.28 per hour. This is the Special Employment Training Statewide for 2016 as modified for priority industries, which is used for ease of administration.

In addition, the Panel adopted a “blended rate” for Journeymen reflecting the fact that these workers may be employed by a variety of contractors over the two-year term of contract ranging from large employers, to small ( $\leq 100$  employees). This is \$22 per hour, midway between the Priority Industry standard rate (\$18) and Small Business rate (\$26). [Note: This “blended rate” has been extended to Pre-Apprentices, for ease of administration.]

### ➤ **DAS Completion Rates**

The average completion rate for Apprentices in the sheet metal industry is 68.10% as measured by DAS over the most recent five-year reporting period (CY2009 through CY2013). The DAS completion rates for the regions covered under this proposal are as follows: 1) Bay Area Sheet Metal JAC at 74.81%; and 2) Monterey, Santa Cruz and San Benito Counties Sheet Metal and Air Conditioning Industry JATC at 74.19%. All regions meet ETP standards in this regard.

## **PROJECT DETAILS**

The Sheet Metal trade is unique because it is one of the few crafts where a worker starts with raw material, creates a component, and then installs and maintains the product. Workers constantly meet new challenges: using their hands, visualizing and analyzing how components can be made or installed, knowing how mechanical systems work, and practicing collaborative skills when working with customers and coordinating with other workers.

As stated earlier, the Trust sponsors seven apprenticeship programs for the sheet metal trade, three of which will be funded under this proposal. The three apprenticeship programs are shown below. As earlier, each is five years in duration. [Note: The Trust did not apply for funding on behalf of the four other based on lower enrollment and retention rates.]

Sheet Metal Worker: The type of work performed can range from detailing, layout, fabrication or installation of duct systems to architectural sheet metal, metal roofing and a variety of other shop or field sheet metal work, including job coordination and supervision. This trade is involved in the commercial construction industry and can be very demanding physically, including climbing, lifting, standing, and working around heights and hazards.

Test, Adjust, & Balancing Technician: The type of work performed can range from pressure testing, adjusting and balancing of duct systems for energy efficiency to commissioning and complete documentation of HVAC systems in commercial buildings. The work can vary from light physical activity to maneuvering into limited access areas with tools and equipment.

Sheet Metal Workers and Test, Adjust & Balancing Technicians determine the quantity and type of material they will need to correspond with blueprints and specifications. In a shop,

using a combination of mathematics, layout tools, hammers, drills, hacksaws, plasma and laser beam cutting systems, computers, cutting, forming, seaming or welding machines, workers manipulate the material into the product desired. Pre-fabricated parts are transported to construction job sites for installation according to blue prints and careful coordination on the jobsite.

Air Conditioning Mechanic: The type of work performed includes maintenance, repair, start-ups, controls, refrigeration, and installation on a wide range of HVAC equipment, mostly larger commercial systems. The work can vary from light physical activity to lifting heavy equipment parts.

The Air Conditioning Mechanic work includes start-up, preventive maintenance, repair, testing, balancing, and sometimes certification of the installed systems. Items commonly fabricated and installed include HVAC systems, metal roofs, kitchen hoods, various flashings, gutters, and decorative architectural features.

### **Pre-Apprentice**

Pre-Apprenticeship is an option for most of the programs sponsored by Sheet Metal Trust. Apprentice applicants may choose this path to establish their reputation as a worker, experience the trade enough to help with career decisions, gain additional work experience as needed for their apprenticeship application, and earn money pending acceptance into the full program.

Pre-Apprentice is an occupation with its own wage rates under each of the pertinent Collective Bargaining Agreements. These workers assist, and are supervised by the Journeymen. Employers are limited in the number of Pre-Apprentices they can hire (relative to the number of Journeymen and Apprentices) and the tasks that can be assigned.

The Trust anticipates delivering the majority of Pre-Apprentice training hours in Commercial Skills. A small percentage will be in Literacy Skills and OSHA 10. Literacy Skills will include math and vocational English customized for the sheet metal trade. OSHA 10 will also be made available to Pre-Apprentices.

Overall, the Pre-Apprentice program is about 24 hours in length, and none of the courses replicate the courses that are taught in the apprenticeship programs.

### **Journeymen**

For Journeymen, the Trust will offer specialty and upgrade Commercial, Business, and Computer Skills and OSHA 10/30. These skills will address new technologies and equipment currently in use by this trade. This proposal includes new training topics such as: Revit CAD Detailing Software, GTAW Welding, and a Sheet Metal to Testing Adjusting and Balancing Bureau (TABB) upgrade course. These classes were not offered in the previous ETP Agreement. This proposal will allow the Trust to expand the number of classes teaching more advanced skills.

### **Training Plan**

All of the training sites offer the most up-to-date facilities and equipment for learning for Apprentices, Pre-Apprentices and Journeymen. The Sheet Metal Trust is committed to using its trust fund for upgrading its facilities. For example:

(1) The Trust has invested over \$3 million at the Fairfield training facility to develop state-of-the-art welding and HVAC service labs estimated to be completed and hosting its first class near the end of 2016.

(2) The Trust will pursue additional welding and TABB labs accreditations in order to certify trainees in various industry needs, including recent Title 24 (energy-related) requirements.

(3) The Trust plans to continue implementing electronic technology at all of its facilities including the use of digital tablets instead of books in some courses.

The Trust has six full-time trainers and 31 part-time trainers providing instruction at its training centers. These trainers were (or currently are) working as Journeymen in the sheet metal trade and are experts in their subject matter.

Training will start immediately upon approval by the Panel. Each training center's scheduling varies, but the majority of the training will occur in the fall, winter and spring months with limited training happening during the summer. The types of training are outlined below:

**Commercial Skills** (80%) – Training will be provided to all sheet metal worker occupations including Journeymen, Apprentices and Pre-apprentices. Training may cover: (1) green construction practices and materials; (2) new equipment and updated building standards related to green business practices necessary to meet commercial requirements; (3) new skills to develop, retrofit and maintain greener buildings; and (4) more safety competency, as opposed to just safety awareness.

Included in this proposal are new courses not offered in the past. One new course is GTAW Welding (Gas/Tungsten/Arc Welding) which gives workers greater control over the weld than other welding processes and creates stronger, higher quality welds. However, GTAW is more complex and difficult to master. More employers are requesting this higher level of welding for its workers. There is also a new Disaster Training course to meet labor and management requests for increased safety training because of more stringent job requirements. This class is bundled into a 40-hour Safety Combination class with at least six hours dedicated to the Disaster Training. Finally, there is a course called "Survival Skills." This course is a trade refresher and technology update class for journeymen. The Trust is participating with the State of California Division of Apprenticeship Standards to develop specialized trade-related training for refinery workers, per new requirements. The Training Centers will provide this training to journeymen and apprentices once it is fully developed and approved by DAS.

**Computer Skills** (10%) - Training will be provided to all Journeymen across occupations. Training will include 3-Dimensional (3-D) virtual construction software. Currently, there are not enough journeymen who are able to use 3-D modeling. The Trust reports that if this training need is not met, the trend to send 3-D modeling offshore will continue. The curriculum will also include additional training in software applications for planning, scheduling, and tracking jobs; meeting "lean construction project" requirements; and installing/adjusting automated systems. Any occupation may receive this training.

Training also includes a new advanced CAD class called Revit CAD. Revit is a building modeling software that allows users to design a building and structure its components in 3-D, annotate the model with 2D drafting elements, and access building information from the building model's database. Revit has tools to plan and track various stages in the building's lifecycle from concept to construction and any later demolition.

**Business Skills:** (2%) – Training will be provided to all sheet metal worker occupations including Journeymen, Apprentices and Pre-apprentices. Trainees will develop skills to collaborate with construction workers from all of the various trades to coordinate the different parts of a building project. Trainees will need to learn team skills so that they can work well as part of a larger team and techniques to reduce waste and meet budgets. Training also includes leadership skills so that trainees can better manage projects.

**Literacy Skills** training (3%) – Training will cover Math for Sheet Metal and Vocational English related to sheet metal projects and documentation. Such training will be provided to Pre-Apprentice sheet metal workers from any occupation that need to improve these skills to understand and utilize new technologies and equipment.

### **Certified Safety Training**

**OSHA 10/30** (5%) This training is a series of courses “bundled” by industry sector and occupation. Completion of the training results in a certificate that expands employment opportunities. Training consists of OSHA 10 for Apprentices and Pre-Apprentices; and OSHA 10/30 for Journeymen. Note: To ensure that each trainee receives certification, ETP will only consider payment earned upon completion of the full 10-hour or 30-hour course. OSHA 10/30 is not included in the 10% limitation on safety training. The trainer-to-trainee ratio is 1:40 for OSHA10/30.

### **Curriculum Development**

Employers submit program needs to all the training centers, which receive additional union input at labor/management and industry meetings. Curriculum development is further customized for local area employers, and employer members are involved in journeyman, pre-apprentice, and apprenticeship training plan design. Training topics are customized to include new equipment and to meet new industry standards/materials.

### **Impact/Outcome**

Certifications that may be earned include: Title 24 and CA MATT (Mechanical Acceptance Testing Technician), TABB Technician and Supervisor Certifications, various American Welding Society Weld Certifications, Environmental Protection Agency Refrigerant Handling Certifications, North American Technicians Excellence, Inc. HVAC Service and Installation Certifications, OSHA 10, OSHA 30, Rigging and Signal Certifications as well as certifications to use a variety of material handling and lift equipment.

### **Commitment to Training**

Employers will continue to make contributions to the training trust for every hour worked by Apprentices, Pre-Apprentices, and Journeymen. Safety training is, and will continue to be, provided by the participating employers in accordance with all pertinent requirements under state and federal law.

### **Marketing and Support Costs**

The Sheet Metal Trust is requesting eight percent in support costs to promote training opportunities for Journeymen, Apprentices, and Pre-Apprentices. Outreach will be coordinated with the 260 signatory employers, many of which are small businesses. Support costs will also be used by the Trust in recruiting Pre-Apprentices and Apprentices from schools, employment centers and community organizations. The ETP-funded training will be discussed at all labor-

management meetings and pertinent trade, industry, and apprenticeship events. The Trust routinely meets with signatory employers and other stakeholders to assess training needs for each geographic region. This includes face-to-face meetings, emails, and phone contact with the various SMACNAs and Local 104. The Sheet Metal Trust anticipates personnel costs for recruitment and outreach in excess of the ETP support funds provided, and that nine Trust staff people will assist with ETP-related marketing, recruitment, needs assessments, and scheduling. The Trust will assume responsibility for any additional costs. Staff recommends the 8% support costs.

### **RECOMMENDATION**

Staff recommends approval of this proposal.

### **PRIOR PROJECTS**

The following table summarizes performance by the Sheet Metal Trust under ETP Agreements completed within the last five years:

Agreement No.	Location (City)	Term	Approved Amount	Payment Earned	
				\$	%
ET14-0904*	Multiple	11/25/13-11/24/15	\$1,177,197	\$1,177,197	(100%)
ET11-0331	Multiple	06/30/11-06/29/13	\$397,280	\$358,524	(90%)

\*ET14-0904: Reimbursable hours have been tracked for potential earnings of \$1,349,980 (which exceeds 100% of the approved amount). Thus far, a total of 109 trainees have completed retention and have been approved for earnings of \$527,090. Final reimbursement is scheduled at the end of January 2016.

### **DEVELOPMENT SERVICES**

California Labor Federation in Sacramento, in conjunction with Strategy Workplace Communications in Oakland, assisted with development of this proposal at no charge.

### **ADMINISTRATIVE SERVICES**

Strategy Workplace Communications will perform administrative services in connection with this proposal for a fee not to exceed 13% of payment earned.

### **TRAINING VENDORS**

N/A

**Exhibit B: Menu Curriculum****Class/Lab Hours**

8-200 (Job Number 1)

Trainees may receive any of the following:

**JOURNEYMAN****COMMERCIAL SKILLS**

- Advanced Welding Skills
- Architecture Designs
- California (CA) Green Building Code Training
- Disaster Training
- Ducts Maintenance
- Energy Auditing: Total Building (Green Training)
- Energy Auditing: Total Heating Ventilation and Air Conditioning (HVAC) Systems (Green Training)
- Fire/Life HVAC System Building Inspection Training
- HERS (California Home Energy Rating System Program)
- Job Coordination Training
- Lean Construction Training
- Management and Monitoring of Materials
- Materials and Equipment Testing for Industrial Use
- Proper Machine and Equipment Set-Up
- Rigging and Signal Training
- Safe Working Practices
- Testing Materials and Equipment –Proper Set-Up and Use
- Understanding Changes to Industry Standards
- Upgrading Lead Handling and Asbestos Removal Skills
- Working with Building Materials Training
- Control System Service
- Detailing
- Gas Tungsten Arc Welding (GTAW) Welding
- Testing Adjusting and Balancing Bureau Certification Training (TABB)
- Survival Skills
  - Technology Update
  - Trade Math
  - Layout Review
- Title 24 Certification
  - California Mechanical Acceptance Testing Technician Certification (MATT)
  - Energy Efficiency

**COMPUTER SKILLS**

- 3-D Modeling – Virtual Construction
- Automated Systems Applications
- Benchmark Software – Lean Construction
- Job Tracking System
- Scheduling & Planning Jobs
- Revit Computer-Aided Design (CAD) Detailing Software

**BUSINESS SKILLS**

- Conflict Resolution
- Customer Service Skills
- Decision Making Skills
- Inventory Checklist
- Leadership Skills
- Problem Solving
- Project Management
- Teambuilding Skills

**OSHA 10/30** (OSHA Certified Instructor)

- OSHA 10 (requires completion of 10-hour course)
- OSHA 30 (requires completion of 30-hour course)

**APPRENTICE****Class/Lab Hours**

8-210 (Job Numbers 2 and 4) Trainees may receive any of the following:

**COMMERCIAL SKILLS**

- Advanced Architectural
- Advanced Electricity for Sheet Metal Air Conditioning Service
- Advanced Layout and Fabrication
- Advanced Welding
- Air Balance Test Equipment Instruments
- Air Conditioning, Commercial Systems, Heating
- Air Distribution & Manufacturing Systems
- Architectural Sheet Metal
- Basic Electricity for Sheet Metal Air Conditioning Service
- Basics of Architectural Sheet Metal
- CAD Detailing
- Codes and Standards
- Commercial Systems, Heat Loads, Piping
- Common Furnace Features
- Control System Service
- Control Systems
- Detailing
- Electrical Systems Operation, Controls & Devices
- Fabrication and Shortcuts
- Field Installation
- Filters and Filter Housings
- Final Architectural/Industrial Project
- Final HVAC Project
- Forman Training
- Furnace Installation
- Gas Tungsten Arc Welding (GTAW)
- Hazardous Material Recognition for the Test & Air Balance Industry
- HVAC Air Systems and Duct Design
- HVAC Energy Conservation
- HVAC Testing & Balancing Procedures
- Industrial and Stainless Steel Introduction

- Installing Thermostats, Flues and Vents
- Intermediate CAD
- Measuring and Sketching
- Metal Roofing
- Parallel Line Fittings
- Piping
- Plans and Specifications
- Project Management, Takeoffs, Estimates
- Properties of Air Distribution for Sheet Metal Air Conditioning Service
- Radial Line Layout and Sheet Metal Offsets
- Refrigeration for Sheet Metal Air Conditioning Service
- Refrigeration Theory for Sheet Metal Air Conditioning Service
- Residential AC Units
- Residential Duct Systems
- Residential Structure and Sheet Metal Work
- Service Basics for Sheet Metal Workers
- Sheet Metal Control Systems
- Sheet Metal to TABB
- Submittals and Shop Drawings
- Survival Skills
- Systems Installation & Troubleshooting
- Temperature Measurement Instruments & Duct Systems
- Title 24 Certification
  - California Mechanical Acceptance Testing Technician (CA MATT)
  - Energy Efficiency
- Triangulation Fittings
- Welding I
  - Process and Safety Overview
  - Gas, Metal Arc Welding (GMAW)
- Welding II
  - Gas, Metal Arc Welding (GMAW)
  - Flux-Cored Arc Welding (FCAW)

### **BUSINESS SKILLS**

- Customer Service
- Project Management for the Test & Balance Industry

### **OSHA 10** (OSHA Certified Instructor)

- OSHA 10 (requires completion of 10-hour course)

### **Class/Lab Hours**

8-200 (Job Number 3)

Trainees may receive any of the following:

## **PRE-APPRENTICE**

### **COMMERCIAL SKILLS**

- Introduction to Architectural Designs
- Introduction to Green Building
- Orthographic and Pictorial Views and Sketching

- Sheet Metal Career Paths
- Sheet Metal Language
- Sheet Metal Math
- Sheet Metal Tools, Equipment and Their Usage
- Understanding Changes to Industry Standards
- Disaster Training

#### **LITERACY TRAINING**

- Math for Sheet Metal Workers
- Vocational English Skills for Sheet Metal Workers
  - Reading Work Documents Accurately
  - Writing Reports
  - Communicating with Customers and Co-workers

#### **OSHA 10** (OSHA Certified Instructor)

- OSHA 10 (requires completion of 10-hour course)

Note: Reimbursement for retraining is capped at 200 total training hours per trainee for Job Numbers 1 and 3 and 210 total hours per trainee (200 hours Commercial and Business Skills + 10 hours of OSHA 10) for Job Numbers 2 and 4, regardless of the method of delivery.