



Training Proposal for:
Sheet Metal & Air Conditioning Apprenticeship & Journeymen Joint Training Fund of San Diego
Agreement Number: ET15-0906

Panel Meeting of: July 25, 2014

ETP Regional Office: San Diego

Analyst: S. Godin

PROJECT PROFILE

Contract Attributes:	Priority Rate Retrainee SB <100 Apprentice	Industry Sector(s):	Construction Green Technology Priority Industry: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Counties Served:	San Diego, Imperial	Repeat Contractor:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Union(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Sheet Metal & Air Conditioning Apprenticeship & Journeymen Joint Training Fund of San Diego		
Turnover Rate:	≤20%		
Managers/Supervisors: (% of total trainees)	N/A		

FUNDING DETAIL

Program Costs	+	Support Costs	=	Total ETP Funding
\$232,647		\$16,074 8%		\$248,721

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 Journeyman	Commercial Skills Computer Skills	35	8-200	0	\$705	\$35.03
				Weighted Avg: 30			
2	Retrainee Apprentice	Commercial Skills OSHA 10	81	8-210	0	\$2,776	\$20.32
				Weighted Avg: 199			

Minimum Wage by County: Job Number 1: \$15.98 per hour in San Diego County; \$14.90 per hour in Imperial County
 Job Number 2 (SET Priority Industry): \$20.32 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 \$0.70 per hour may be used to meet the Post-Retention Wage in Job Number 2 only.

Wage Range by Occupation & Job Number		
Occupation Titles	Wage Range	Estimated # of Trainees
Journeymen Sheet Metal (Job Number 1)		35
Apprentice Sheet Metal (Job Number 2)		81

INTRODUCTION

This project is brought to the Panel by the marketing efforts of the California Labor Federation Workforce and Economic Development Program.

Established in 1941, the Sheet Metal & Air Conditioning Apprenticeship & Journeymen Joint Training Fund of San Diego (SMJTF) (www.smjatc.org) is a joint effort by the Sheet Metal Workers' International Local 206 and the Sheet Metal and Air Conditioning Contractors National Association whose mission is to provide up-to-date industry skills training and secure high-quality job opportunities for its members.

Located in San Diego, the SMJTF training center has a total of seven classrooms and labs; a computer center with 20 stations; and a welding shop with 16 welding booths. The SMJTF serves 105 Apprentices and 425 Journeymen within San Diego and Imperial Counties. There are 34 signatory employers who contribute to the Sheet Metal Trust fund. These employers perform specialized construction work ranging from the design, layout, fabrication and installation of duct systems to architectural sheet metal fabrication, metal roofing construction, and a variety of other shop or sheet metal work.

PROJECT DETAILS

The SMJTF recruits and trains Apprentices to meet the needs of San Diego and Imperial Counties' sheet metal fabrication and heating, ventilation and air conditioning (HVAC) industry. The SMJTF also provides skills upgrade training to Journeymen in the latest sheet metal technologies.

SMJTF seeks ETP funding for Apprentices and Journeymen workers who perform specialized work related to architectural sheet metal fabrication; commercial refrigeration; and HVAC systems.

Energy efficiency demands continue to have a significant impact on the air conditioning and refrigeration industry. The California Building Energy Efficiency Standards require higher levels of efficiency from HVAC systems such as new types of equipment and controls, and the systematic cooling zones within commercial buildings. Workers must be able to calculate energy usage, energy loss, and the overall efficiency of installed systems. The proposed training will provide the skill sets needed for participating employers and its workers to adapt to the growing demand for energy efficiency, environmentally friendly technology, and reduction of waste in the way systems are constructed and operated.

Employer Demand for Training

The local hiring demands in San Diego and Imperial counties were considered for this funding request. Sheet metal employers must improve the workers skills to perform new techniques, including green/clean energy practices; learn new technologies, equipment, and materials affecting the industry; and have workers perform more efficiently.

There has also been an increase in demand for Sheet Metal workers with Business Skills such as project management, and Computer Skills such as 3-D virtual building modeling. All of the proposed training will help to reduce waste in expensive materials, re-work, and job delays; and assist employers meet the evolving needs of the highly competitive construction industry. The program will train to the needs of the employers, thus improving job security for sheet metal workers in San Diego and Imperial counties.

Upcoming projects during the term of the proposed Agreement include: BrightSource Energy's Ivanpah Solar Electricity Generating System; San Ysidro Border Crossing Station; Carlsbad Desalinization Plant; San Diego Courthouse; Kaiser Hospital; Thornton Hospital; Shore Shire Biotech Lab; and renovations and improvements to 70 schools within the San Diego Unified District. Each Project will employ around 20-50 of the SMJTF's sheet metal workers.

Apprenticeship Pilot

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 Apprenticeship Training Pilot Program allows funding for training programs sponsored by a Training Trust Fund.

The Panel provides reimbursement for the Related and Supplemental Instruction (RSI) portion of an apprenticeship training program. RSI is delivered as class/lab training that is developed with a Local Educational Agency (Palomar College) and approved by DAS. The program provides reimbursement for 200 hours of RSI plus OSHA 10.

For the building trades, where it is not customary for workers to be employed for 90 consecutive days with one employer, the Panel may substitute hours worked for retention. The modified retention period must be no less than 500 hours within 272 days with more than one employer. The SMJTF is requesting this modified retention period as an option along with the 90 calendar days.

To ensure ETP does not displace Montoya Funds, the Apprenticeship Pilot rate is reduced by \$5.00, reducing the priority industry rate from \$18.00 to \$13.00 per hour. The ETP minimum wage for Apprentices is the SET Priority statewide wage of \$20.32 per hour, which will be met by all Apprentices in the proposed training plan.

DAS Completion Rates

The DAS completion rate for the SMJTF for the years 2005 - 2009 was 68%. This is slightly lower than apprenticeship retention for the industry sector as a whole, which has an aggregated average of 69%. SMJTF attributes the lower retention rate to the recovering economy in the San Diego area. As such, according to DAS records, there are no other outstanding issues regarding retention.

There are 34 signatory employers contributing to the apprentice program. In 2013, the JATC graduated 26 Apprentices, who have now gone to work for these employers. The counties served are San Diego and Imperial with Palomar Community College as the LEA. All training outlined in this proposal will be center-based, classroom/laboratory training delivered at the JATC's training facility in San Diego.

Curriculum Development

Employers submit program training needs to the training center, which also receives additional union input at labor/management and industry meetings. Curriculum development is further customized for local area employers. Employer members of the JATC are also involved in journeyman and apprenticeship training plan design. Apprentice training will include RSI under the curriculum approved by DAS, along with ancillary training in demand by signatory employers.

The SMJTF has two full-time and four part-time trainers who will assist with the training. The trainers are former or current members of the trade and experts in the subject matter.

TRAINING PLAN

Journeyman

For Journeymen, the Trust will offer specialty and upgrade Commercial and Computer Skills. These skills will address new technologies and equipment currently in use by this trade. For example, Journeyman upgrade training will address green topics, and employer-driven certification classes in Service, Welding, 3-D Modeling and HVAC.

Apprentices

The Sheet Metal Apprenticeship training program is five years. Two semesters of instruction are delivered each year for 192 RSI hours. ETP will reimburse for training provided after completion of the first year of probationary period. These trainees will receive a mix of OSHA 10, and Commercial skills.

Commercial Skills (95%) - This training will include (1) general sheet metal construction practices and materials; (2) new equipment and updated building standards; (3) new skills to develop, retrofit and maintain buildings; and (4) safety competency (as compared to safety awareness). It will also include training in HVAC systems, including new specifications designed to meet energy goals. Apprentices will also receive First Aid/CPR training.

Computer Skills (10%) – Journeyman training will include 3-Dimensional (3-D) virtual construction software. Currently, there are not enough sheet metal workers 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. It will also include additional training in software applications for planning, scheduling and tracking jobs; meeting “lean construction project” requirements; and installing/adjusting automated systems.

OSHA 10 (5%) – Training is a series of courses “bundled” by industry sector and occupation. Completion of the training results in a certificate that expands employment opportunities. Typically, it is delivered to workers in the building trades. Training consists of OSHA 10 for Apprentices.

Note: To ensure that each trainee receives certification, ETP will only consider payment earned upon completion of the full 10-hour course. OSHA 10 is not included in the 10% limitation on safety training. The trainer-to-trainee ratio can be up to 1:40 for OSHA 10.

Commitment to Training

Employers will continue to make contributions to the training trust for every hour worked by 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.

Support Costs

Employers participate as members of the SMJTF Board of Trustees Training which is designed around their needs as well as general needs of the industry. Employers are notified of training through association websites, mailings, and presentations.

The Sheet Metal Trust is requesting 8% in support costs to promote training opportunities at labor-management meetings; visits to local schools, employment centers and community organizations; and trade shows and industry meetings such as SMACNA. Participating employers include both small and large sheet metal and air conditioning general contractors within San Diego and Imperial Counties.

Outreach for journeymen upgrade training will be coordinated with the signatory employers.

There are two staff people in the SMJTF office who will assist with marketing, recruitment, needs assessments and scheduling of classes.

PRIOR PROJECTS

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

Agreement No.	Location (City)	Term	Approved Amount	Payment Earned \$ %
ET11-0262	Multiple	6/06/11- 6/05/13	\$65,864	\$62,144 (94%)*
ET09-0359	Multiple	5/01/09- 4/30/11	\$285,240	\$53,860 (19%)**

*ET11-0262- This Agreement included a small job number to (\$28,028) to train 14 Apprentices. The JATC trained 15 Apprentices and earned all funds in that job number. The proposed Agreement amount is based on current apprentice training demands.

**ET09-0359: The 19% performance was due to the consequences of the economic downturn in the construction industry. According to the Contractor, funding for both residential and public works projects was put on hold or no longer available, which kept the majority of sheet metal workers unemployed or underemployed. The effects were: (1) trainees could not satisfy the retention requirement; (2) employer contributions to the training fund were reduced, which lowered the amount of training that the Trust could conduct; and (3) the need for pre-apprentices declined. The upswing in the Construction industry is now evidenced by the improved performance under ET11-0262 which had earnings of 94%. [Note: There was no apprenticeship training in this Agreement, which preceded the Pilot.]

RECOMMENDATION

Staff recommends approval of this proposal.

DEVELOPMENT SERVICES

California Labor Federation in Sacramento and Strategy Workplace in Oakland assisted with the development of this proposal at no cost.

ADMINISTRATIVE SERVICES

Strategy Workplace will also perform administrative services for a fee not to exceed 13% of payment earned.

TRAINING VENDORS

N/A

Exhibit B: Menu Curriculum

Class/Lab Hours

8 - 200

Trainees will receive any of the following

Journeyman Training

COMMERCIAL SKILLS

- ✚ Intro to Welding (Welding Basics)
- ✚ MIG Welding (GMAW)
- ✚ TIG Welding (GTAW)
- ✚ Stick Welding (SMAW)
- ✚ Architectural & General Sheet Metal Skills:
 - Roofing Panels
 - Flashings
 - Architectural Metal Panel Design
 - Soldering of Metals
 - Roof Penetrations
 - Types of Sealants
 - Compatibility of Sealants
 - Water Infiltration
 - Louvers and Ventilators
 - Seismic Joints
 - Gutters and Downspouts
 - Roof Drainage Systems
 - Shop Drawings
 - Shop Fabrication
 - Field Installation
 - Contract Documents
 - Submittals
 - Creating Fabrication Drawings
 - Handling Materials
 - Project Management
 - Types of Materials
 - Electrolysis
 - Fasteners
 - Supports and Substrates
 - Clips and Cleats
 - Wind Loads
 - Planning, Staging, Distribution, and Sectioning
 - Building Papers and Membranes
 - Field Measurements
 - Plumb, Level, Square

COMPUTER SKILLS

- ✚ AutoCAD (Introduction, Intermediate, Advanced):
 - CAD and the Sheet Metal Industry
 - Detailing
 - Administration
 - Fabrication
 - Commissioning
 - Estimation
 - Field Installation
 - Project Management
 - Drawing Basics
 - Drafting Settings
 - Display Control
 - Managing Layers
 - Object Properties
 - Utility and Inquiry Tools
 - Complex Objects
 - Annotation Objects
 - Modify Objects: Manipulation and Alteration Commands
 - 2D Parametric Drawings
 - Dimensioning
 - Interface Customization
 - Print and Plot Preparation
 - Blocks and Attributes
 - External References and Reusable Content
 - AutoCAD Utilities
 - Command Customization
 - 3D Basics
 - Creating 3D Objects
 - Modifying 3D Objects
 - Creating Non-Printed Output

- ✚ Benchmark Certification (CAD):
 - Common Menu Commands
 - Links Ribbons
 - Creating Discussion Threads
 - Benchmark Forum Site Features
 - Downloading and Installing Benchmark Software
 - Action and Assign Buttons
 - Expand and Collapse Arrows
 - Reports
 - Standards
 - Database Permissions

- Setting Up and Using Benchmark for your Company
- Benchmark Administrations
- Benchmark Reports in AutoCAD
- Benchmark Drawing Annotations
- Piping Connectors
- Hanger Standards
- Materials
- Connectors
- Seams

✚ HVAC (CAD):

- Modern Refrigeration
- Electric Motors and Starters
- Electrical Theory
- Equipment Start-Up
- Piping Systems
- Refrigeration and Air Conditioning Technology
- Duct Leakage Testing
- Energy Management in Commercial Building Systems
- Indoor Air Quality
- Psychometrics
- Fans
- Sound and Vibration Technology
- EPA Certifications
- Automatic Control Systems
- Field Installation
- Dampers

✚ Energy Auditing:

- Modern Refrigeration
- Recovery, Recycle, Reclaim
- Recovery Equipment Types
- Recovery Cylinders
- Shipping and Transportation
- The Recovery Process
- Manifold and Gauges
- Vacuum Pumps
- Refrigerant Oils
- Handling Refrigerants Safely
- Repairing Refrigerant Leaks
- Type I Certification: Small Appliances
- Type II Certification: High Pressure Appliance/Very High Pressure Appliance

- Type III Certification: Low Pressure Appliance
- Universal Certification: Certification in Type I, II, III

🔥 Fire, Life, Safety Certification 1 & 2:

- Codes and Standards
- Basic Construction
- Damper Selection
- Damper Installation Methods
- Periodic Testing, Maintenance and Repairs
- Smoke Controls and Smoke Management Systems
- Features and Designs of Smoke Control Systems
- Equipment and Components of Smoke Control Systems
- Inspection and Acceptance Testing for Smoke Control Systems
- Procedures for Inspecting Smoke Control Systems
- Smoke Management Systems

🔧 Mechanical Acceptance Testing Training (Title 24)

- Overview of Title 24 Requirements
- California Energy Commission Mandatory Training
- Outdoor Air Ventilation Systems
- Constant Volume, Single Zone, Unitary Air Conditioners & Heat Pumps
- Air Economizers
- Demand Control Ventilation Systems
- Supply Fan Variable Flow Controls
- Hydronic System Variable Flow Control Acceptance
- Automatic Demand Shed Control Acceptance
- Air Distribution Systems Acceptance
- Supply Water Temperature Reset Controls Acceptance
- Fault Detection & Diagnostics for Packaged Direct-Expansion Units Acceptance
- Fault Detection & Diagnostics for Air Handling Units & Zone Terminal Units Acceptance
- Distributed Energy Storage DX AC System Acceptance
- Thermal Energy Storage System Acceptance
- Supply Air Temperature Reset Controls Acceptance
- Condenser Water Supply Temperature Reset Controls Acceptance
- Energy Management Control System Acceptance
- Mechanical Acceptance Testing Forms

Service & Start-up:

- Service & Start-up Safety
- Customer Relations
- Customer Appearance
- Field Installation
- System and Components
- Furnace Troubleshooting
- Furnace and Condenser Wiring
- Condenser Troubleshooting
- Electrical Wiring
- Reading Equipment Schematics
- Thermostats
- Air Pressure
- Common Electrical Symbols
- Common Electrical Terms
- Psychometrics
- HVAC Refrigeration Loops
- Heat Pump Loops
- Refrigerant
- Tools and Equipment
- Heating
- Cooling
- Motor Controls
- Digital Controls
- Servicing HVAC Systems
- Brazing

TAB Certification:

- Testing, Adjusting & Balancing
- General Care of Instruments
- Basics of HVAC Systems
- Airflow
- Psychometrics
- Heat and Heat Transfer
- Fundamentals of Electricity
- Electrical Measurements
- Motors and Starters
- Rotational Speed Measurements
- Temperature Measurements
- Air-Pressure and Airflow Measurements
- Methods of Airflow Measurements
- Duct Systems

- Automatic Controls
- Fans
- Fan Laws and V-Belt Drives
- Preparation for Balancing and TAB Forms
- Methods of Balancing: Proportional and Sequential
- Hydronic Systems
- Hydronic Pressure and Flow Measurements
- Pumps and Pump Laws
- Principles of the Cooling Tower
- Hydronic Balancing: Flow Meter Method/Thermal Method
- TAB related Disciplines

Class/Lab Hours

8 - 210

Apprentice Training

COMMERCIAL SKILLS

⚡Core I (Safety/Tools):

- Shop Safety
- Hand Tools
- Shop Equipment
- Shop Fabrication
- Seams, Locks, and Edges
- Sheet Metal Math
- Drafting Equipment and Materials
- Principles of Layout
- Layout of Metal
- Introduction to Radial Lines, Parallel Lines, and Triangulation
- Organizing Your Time
- Geometric Construction
- Lines and Lettering
- Field Safety
- Communication
- Emergency Procedures
- Hazard Communication
- Hoisting and Rigging
- Knots
- Safety in Field Installation

⚡Core II (Safety/Tools):

- Layout of Penetrations
- Organizing Tools and Equipment for a Job

- Duct Elevations and Clearance
- Field Measurements
- Preparing the Duct
- Safety in Field Installation
- Sheet Metal and Metal Products
- Pictorial Drawings
- Freehand Sketching
- Using Radial Line, Parallel Line, and Triangulation for Layout
- Pattern Development
- Shop Fabrication and Safety
- Equipment
- Material Take-Offs
- Creating Cut Lists and Fabrication Sheets
- Different Types of Metals
- Use of Sheet Metal Programmable Calculator
- Sheet Metal Math

✚Core III (Safety/Tools):

- Duct S Offsets
- Equipment Safety
- Personal Protective Equipment
- Sheet Metal Math
- Use Of Radial Lines
- Use of Parallel Lines
- Use of Triangulation
- Pattern Development
- Layout of Many Sheet Metal Products
- Duct Change Elbows
- Change Ogee Offsets
- Y Branches
- Soldering of Metals
- Shop Fabrication
- Field Measurements
- Roof Jacks
- Conductor Heads
- Round Tapers
- Spot Welding

✚Core IV Architectural Principles:

- Introduction to Architectural Sheet Metal
- Architectural Sheet Metal Practices
- Roof Drainage Systems

- Flashings
- Waterproofing Roof Edges & Walls
- Additional Architectural Sheet Metal Work
- Miters
- Expansion and Contraction
- Seams
- Types of Sheet Metal Joints
- Seismic Joints
- Laps
- Spot Welding
- Coordination of Building Trades
- Column Covers

✚ Plans & Specifications:

- The Contract Documents
- Specifications and Divisions
- Architectural Drawings
- Structural Drawings
- Mechanical Drawings
- Electrical Drawings
- Sheet Metal Shop Drawings
- Material Take-Offs
- RFI's
- CAD and the Sheet Metal Industry
- Architect Supplemental Instructions
- Reference Details
- Use and Measurements of Architects Scale/Ruler
- Floor Plans
- Roof Plans
- Elevation Views
- Section Views
- Reflected Ceiling Plan
- Interior Plan

✚ Architectural Installation:

- Planning Architectural Installation
- Installing Architectural Sheet Metal Items
- Architectural Sheet Metal Shop Drawings
- Creating Shop Detail
- Advanced Sheet Metal Fabrication
- Advanced Roof Drainage Systems
- Gutters and Downspouts
- Miters

- Material Coatings and Finishes
- Roof Panels
- Clips and Cleats
- Fasteners
- Electrolysis
- Building Paper and Membranes
- Field Measurements
- Engineered Panel Systems
- Waterproofing and Water Infiltration
- Penetrations
- Sealants
- Flashings
- Soldering of Different Metal Types
- Supports and Substrates

✚HVAC I:

- Introduction to HVAC Systems
- Systems and Components
- Air and Air Properties
- Ventilation
- Heating
- Cooling
- Duct Systems
- Duct Design
- Indoor Air Quality
- Refrigerant Cycle
- Servicing HVAC Equipment
- Start-Up and Commissioning Systems
- Energy Management Systems
- Special Ventilation Needs
- Dampers

✚HVAC II:

- TAB Work
- TAB Instrument Use
- Refrigerant Cycle
- Electricity
- Controls
- Automatic Controls
- Servicing HVAC Systems
- Start-Up and Commissioning Systems
- Field Installation
- Refrigeration

- Project Management
- Load Calculations
- Clean Rooms
- Installing HVAC Systems
- Installing Central HVAC
- Installing Package Units

Sheet Metal Welding:

- Introduction to Welding
- Welding Safety
- Welding Equipment Safety
- Welding Equipment Set-Up
- Equipment Maintenance
- Codes and Symbols
- GMAW Process
- SMAW Process
- GTAW Process
- Gas Cutting (Oxygen and Acetylene)
- Tolerances
- Weld Ability
- Material Safety Data Sheets
- Tools and Abrasives
- Gas Cylinders (Uses and Safety)
- Materials
- Consumables
- Types of Welds and Positions
- Productivity
- Coatings
- Shapes
- Certifications
- Permits
- Work Procedures
- Manuals
- Fire Watch and Dangers
- Hazmat

Foreman & Project Management Training:

- Introduction to Supervision
- Supervisory Training
- Human Relations
- Planning and Organizing
- Personnel Records
- Foreman Training

- Project Management
- Construction Documents
- Controlling Costs
- Preparing for the Project
- Schedules and Meetings
- Paperwork
- Daily Reports
- Quality Control
- Productivity
- Tools, Equipment, and Materials
- Legal Considerations
- Completing the Project

OSHA 10(OSHA CERTIFIED INSTRUCTOR)

- OSHA 10 (requires completion of 10 hours)

Safety training cannot exceed 10% of total training hours.

Safety training cap does not apply to Hazardous Materials or OSHA 10 training.

Note: Reimbursement for Job Number 1 is capped at 200 total training hours per trainee. Reimbursement for Job Number 2 Apprenticeship training is capped at 200 total training hours per trainee in Commercial Skills and 10 hours of OSHA10 for a total of 210 hours.