

Appendix A

TRADE SCHEDULE FOR: SHEET METAL WORKER O*NET-SOC 47-2211.00

This trade schedule is attached to and a part of the Apprenticeship Standards for the above identified occupation.

1. TERM OF APPRENTICESHIP

The minimum term of the occupation shall be 4* years with an OJT attainment of approximately 6,400 hours supplemented by the 240 required hours of related technical instruction.

*A year is considered to be 1600 hours of OJT.

2. RATIO OF APPRENTICES TO JOURNEYWORKERS

The ratio of apprentices to journeypersons is established by the current labor agreement, which allows no more than one apprentice for the first journeyperson at the job site and not more than one apprentice for every two additional journeypersons. Changes may be made with any provisions of the collective bargaining agreement and approval of the Nevada State Apprenticeship Council.

3. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on a percentage of the current journeyperson base wage rate, **OR** as per the Collective Bargaining Agreement.

4 Year Term Wage Schedule:

1 st 6 Months + 800 hours = <u>45%</u>	5 th 6 Months + 800 hours = <u>65%</u>
2 nd 6 Months + 800 hours = <u>50%</u>	6 th 6 Months + 800 hours = <u>70%</u>
3 rd 6 Months + 800 hours = <u>55%</u>	7 th 6 Months + 800 hours = <u>75%</u>
4 th 6 Months + 800 hours = <u>60%</u>	8 th 6 Months + 800 hours = <u>80%</u>

4. SCHEDULE OF WORK EXPERIENCE (See attached Trade Schedule)

5. SCHEDULE OF RELATED INSTRUCTION (See attached Course Outline)

SCHEDULE OF WORK EXPERIENCE Sheet Metal Worker

Core sheet metal work

**First half of Apprenticeship
Approximate Maximum Hours**
3,200

Career Paths:

Choose one or more of the following career paths, subject to approval by the JATC:

**Second half of apprenticeship
Approximate Maximum Hours**

Architectural Sheet metal work.....	3,200
Residential HVAC \ Service work	3,200
Commercial HVAC work	3,200
(The nature of the work in this path could fulfill the "CORE" hours)	
Industrial sheet metal \ Welding work (blow pipe,	3,200
Cyclones, bag houses, conveyor systems, etc.)	
Testing and Balancing\ Commissioning\ Filtration.....	3,200
Sign work	3,200
Commercial-Industrial Service work	3,200
Detailing (Developing coordination drawings, Field measuring,.....	3,200
Construction Documents, etc.) This path requires the apprentice	
to work a minimum of 3,200 hours in HVAC commercial work.	

Supplemental work

The supplemental hours are provided in addition to the Core and Career Paths. Select any of the following to enhance the apprentice's employability.

Approximate Maximum hours

Project Management work.....	900
Foreman work	900
Welding work.....	900
Blueprint reading	900

TOTAL MINIMUM HOURS OF OJT

6,400

RELATED CLASSROOM INSTRUCTION

Sheet Metal Worker

Sheet Metal Curriculum(s) (Choose one or more of the following career paths)	Approximate hours
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Sheet Metal Core	400
Architectural	400
Residential HVAC/Service	400
HVAC.....	400
Industrial Sheet Metal (Includes Welding Supplemental).....	560
Testing and Balancing	300
Sign Work	400
Commercial-Industrial Service Work	400
Detailing	400

Supplemental Curriculums	Approximate hours
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The supplemental curriculums are provided in addition to the Core and Career Paths. Select any of the following to enhance the apprentice's employability.

Project Management.....	200
Foreman.....	200
Welding.....	160
Blueprint Reading (Plans and Specifications	200

SCHEDULE OF RELATED INSTRUCTION FOR DIFFERENT CURRICULUMS

Suggested Outline for Core Curriculum

I. Trade Overview	XXXVIII. Round Elbow Layout
II. Trade History	XXXIX. Round Taper Layout
III. Roles and Responsibilities	XL. Roof-Jack Layout
IV. Getting Along at Work	XLI. Offset Square-to-Round Layout
V. Good Communication	XLII. Layout of Rectangular Transitions
VI. Respect	XLIII. Duct-Change Elbow Layout
VII. Teamwork	XLIV. Regular and Change-Ogee Offset
VIII. Ethics	XLV. Round Y-Branch Layout
IX. Conflict	XLVI. Gutters and Ventilators
X. Survival Skills	XLVII. Safety: OSHA 10
XI. Personal Finance	XLVIII. Introduction to OSHA
XII. Looking Ahead	XLIX. Electrical Safety
XIII. Trade materials	L. Fall Protection
XIV. Properties of Metal	LI. Tool Safety
XV. Architectural Principles	LII. Scaffold Safety
XVI. Alternative Materials	LIII. Stairway and Ladder Safety
XVII. Hardware of the Craft	LIV. Personal Protective Equipment (PPE)
XVIII. Fabrication	LV. Materials Handling and Storage
XIX. Sheet Metal Hand Tools	LVI. Fire Safety
XX. Seams, Locks and Edges	LVII. Hazard Communications
XXI. Shop Procedures	LVIII. Safety
XXII. Shop Equipment	LIX. Job-Site Safety
XXIII. Drafting	LX. Confined Spaces
XXIV. Drafting Tools	LXI. Blood borne Pathogens
XXV. Lines and Lettering	LXII. Forklift Safety
XXVI. Computers and CAD	LXIII. Motor Vehicle Safety
XXVII. Orthographic Projection	LXIV. HAZMAT
XXVIII. Pictorial Drawings and Sketches	LXV. Ergonomics
XXIX. Plans and Specifications	LXVI. Welding Safety
XXX. Layout	LXVII. Field Installation
XXXI. Layout Construction	LXVIII. Organizing Tools and Equipment
XXXII. Layout Tools and Terms	LXIX. Materials Handling and Staging
XXXIII. Principles of Layout	LXX. Field Installation by Specialty
XXXIV. Parallel-Line Layout	LXXI. Plans, Specifications
XXXV. Radial- Line Layout	LXXII. Costing and Bidding
XXXVI. Triangulation	
XXXVII. Round Tee Layout	

TOTAL: 400 HOURS

Suggested Outline for Architectural Curriculum

I.	Introduction to ASM	XL.	
II.	Overview	XLI.	Materials Handling
III.	Relationships	XLII.	Transporting
IV.	Safety in ASM	XLIII.	Staging
V.	Career Specialties	XLIV.	Wall Systems
VI.	Materials	XLV.	Overview
VII.	Properties of Metals	XLVI.	Wall Panels
VIII.	Characteristics of Metals	XLVII.	Screens and Curtains
IX.	Gauging of Metals	XLVIII.	Shop Layout and Fabrication
X.	Non-Metal materials	XLIX.	ASM Shop
XI.	Moisture Control	L.	Layout
XII.	Water Movement	LI.	Fabrications
XIII.	Expansion and Contraction	LII.	Supports and Substrates
XIV.	Problems	LIII.	Structure
XV.	Solutions	LIV.	Underlayments
XVI.	Sealants	LV.	Roof Drainage Systems
XVII.	Functions, Types, and Uses	LVI.	Design Factors
XVIII.	Packaging and Application	LVII.	Downspouts
XIX.	Soldering	LVIII.	Gutters
XX.	Flashing	LIX.	Additional parts
XXI.	Flashing Overview	LX.	Miscellaneous Components
XXII.	Types and Installation	LXI.	Installation
XXIII.	Seams, Locks, and Edges	LXII.	Roof Systems
XXIV.	Lap and Butt Seams	LXIII.	Overview
XXV.	Interlocking Seams	LXIV.	Metal Panels
XXVI.	Edges	LXV.	Types of metal Roofs
XXVII.	Fastening and Joining	LXVI.	Roofing Accessories
XXVIII.	Fastening Types	LXVII.	Louvers
XXIX.	Compatibility	LXVIII.	Ventilators
XXX.	Tools and Equipment	LXIX.	Special ASM
XXXI.	Hand Tools	LXX.	Typical Miscellaneous Work
XXXII.	Shop Equipment	LXXI.	Restoration and Repair
XXXIII.	Measurement	LXXII.	Project Management
XXXIV.	Techniques	LXXIII.	Plans and Specs
XXXV.	Tools	LXXIV.	Scope of Work
XXXVI.	Practical Applications	LXXV.	Costing
XXXVII.	Field Installation	LXXVI.	Implementation
XXXVIII.	Installation Steps		
XXXIX.	Cleaning Metals		
			<u>TOTAL: 400 Hours</u>

Suggested Outline for Residential/Service Curriculum

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| I. Role of the Tradesperson | XXVIII. Design and Installation |
| II. The Necessary Qualities | XXIX. Types and Efficiencies of Duct Systems |
| III. Qualities of Residential HVAC Installers | XXX. Professionalism |
| IV. New Construction Installers | XXXI. Interacting with Clients |
| V. Residential Safety | XXXII. Productivity |
| VI. OSHA and Safety Standards | XXXIII. Working with other Trades |
| VII. Safety Equipment | XXXIV. Continuing Education |
| VIII. Avoiding Injuries | XXXV. Industry Knowledge |
| IX. Fall Protection Railings | XXXVI. Installing New Construction Materials |
| X. Environmental Conditions | XXXVII. General Installation Process |
| XI. Electrical Hazards | XXXVIII. Cutting Penetrations for Ductwork |
| XII. Ladder Safety | XXXIX. Installing Ductwork |
| XIII. Lifting | XL. Ductwork materials |
| XIV. HVAC Systems Theory | XLI. General Duct Installation Guidelines |
| XV. HVAC System Breakdown | XLII. Installing Sheet Metal Duct |
| XVI. Goals and Components of an HVAC System | XLIII. Installing Flexible Duct |
| XVII. An HVAC Systems Treatment of Air | XLIV. Installing Dryer Vents |
| XVIII. HVAC Components | XLV. Installing Kitchen Vents |
| XIX. Furnaces | XLVI. Installing Bath Fans |
| XX. Air Conditioning Units | XLVII. Installing Combustion Flues and Vents |
| XXI. Heat Pumps | XLVIII. Installing Thermostat Wiring |
| XXII. Air Filtering Systems | XLIX. Installing Laundry Chute |
| XXIII. Humidifiers and Dehumidifiers | L. Installing a Manufactured Fireplace |
| XXIV. Thermostats | |
| XXV. Heat and Energy Recovery Ventilators | |
| XXVI. Zone Controls | |
| XXVII. High Velocity Systems | |
- TOTAL: 400 HOURS**

Suggested Outline for Commercial Heating, Ventilating and Air Conditioning Curriculum

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| I. Introduction to HVAC | XXXV. Hoisting and Rigging |
| II. The Job of the HVAC Technician | XXXVI. Installing HVAC Systems |
| III. The HVAC Curriculum | XXXVII. Retrofitting HVAC Systems |
| IV. Systems and Components | XXXVIII. Plans and Specifications |
| V. HVAC Systems | XXXIX. Lessons Learned |
| VI. Heating Systems | XL. Contractual Obligations |
| VII. Cooling Systems | XLI. Using Specifications |
| VIII. Ventilation | XLII. Pick-off/take-Off Lists |
| IX. Heating | XLIII. Submittals |
| X. Heat Transfer | XLIV. Case Studies |
| XI. British Thermal Units | XLV. Load Calculation and Duct Design |
| XII. Heat Sources and Systems | XLVI. Unit Size and Duct |
| XIII. Piping | XLVII. Configuration Concepts |
| XIV. Installation and Startup | XLVIII. Load Calculation |
| XV. Refrigeration | XLIX. Duct Design |
| XVI. Introduction to Cooling | L. Basic TAB |
| XVII. How Refrigerants Work | LI. Introduction to TAB |
| XVIII. Components and Operation | LII. Preparing for a TAB Job |
| XIX. Cycling On and Off | LIII. Instruments |
| XX. Heat Pumps | LIV. Duct Leakage testing |
| XXI. Chillers | LV. Fluid Flow |
| XXII. Installation and Service | LVI. Fans |
| XXIII. Chlorofluorocarbons and Startup | LVII. Centrifugal Pumps |
| XXIV. Understanding Electricity | LVIII. Commissioning |
| XXV. Introduction to Electricity | LIX. The Commissioning Process |
| XXVI. Measuring and Testing | LX. Indoor Air Quality |
| XXVII. Understanding Automatic Control Systems | LXI. Energy Retrofitting |
| XXVIII. Introduction to Automatic Control Systems | LXII. Project Management |
| XXIX. Pneumatic Controls | LXIII. Manage the Work |
| XXX. Digital Control Systems | LXIV. Manage the People |
| XXXI. Field Installation | LXV. Make a Profit |
| XXXII. Field Measurements | LXVI. Closing out a Project |
| XXXIII. Penetration Layout | LXVII. How to become a Project Manager |
| XXXIV. Installing Ductwork | |
- TOTAL: 400 HOURS**

Suggested Outline for Industrial Sheet Metal and Welding Curriculum

I. Introduction to Industrial Sheet Metal Work	LIII. Field Skills
II. Scope of Work	LIV. Job Sites
III. Safety	LV. Job Site protocol
IV. Situational Awareness	LVI. Field Installation
V. Job Site Safety	LVII. Staging Areas
VI. HAZMAT	LVIII. Crew Size/Composition
VII. Material Safety Data Sheets (MSDS)	LIX. Permits
VIII. Confined Spaces	LX. Shutdowns
IX. Helicopter Safety	LXI. Scope of Work
X. Responsibility to the Industry	LXII. Forms
XI. Productivity	LXIII. Scheduling
XII. Opportunities: Salesmanship	LXIV. Coordinating with Other trades
XIII. Materials	LXV. Field measuring
XIV. Types of Metal materials	LXVI. Transit
XV. Types of Non-Metallic materials	LXVII. Lasers
XVI. Weldability	LXVIII. Total Station
XVII. Shapes	LXIX. Lagging
XVIII. Coatings	LXX. System Design Basics
XIX. Linings	LXXI. Hood and Duct Design
XX. Tolerances	LXXII. Material Properties
XXI. Fasteners	LXXIII. Cubic Feet per Minute (CFM)
XXII. Welding	LXXIV. Collection
XXIII. Welding Symbols	LXXV. System Types
XXIV. Code Awareness	LXXVI. Conveyors
XXV. Pipe Welding	LXXVII. Separation
XXVI. Flanges	LXXVIII. Filtration
XXVII. Braze Welding	LXXIX. Seismic Bracing for Ventilation/Exhaust Systems
XXVIII. Grinding and Finishing Stainless Steel	LXXX. SMACNA Industrial Duct Standards
XXIX. Tools and Abrasives	LXXXI. Industrial Ventilation Manual
XXX. Procedures	LXXXII. Hoisting and Rigging
XXXI. Non-Destructive testing (NDT)	LXXXIII. Licensing
XXXII. Shop Skills	LXXXIV. Rigging Objectives
XXXIII. Power Equipment Operation	LXXXV. Managing Risks
XXXIV. Press Brakes	LXXXVI. Wire Rope
XXXV. Power Slip Rolls	LXXXVII. Synthetic Rope
XXXVI. Shears	LXXXVIII. Chains
XXXVII. Rotary machines	LXXXIX. Communication
XXXVIII. Saws	XC. Overhead Crane
XXXIX. Plasma Cutters	XCI. Jib Crane
XL. Ironworkers	XCII. Helicopter
XLI. Rotary Punches	XCIII. Mobile Crane
XLII. Lathes	XCIV. Boom Truck
XLIII. CNC Machines	XCV. Winches
XLIV. Manual Tools	XCVI. Chain fall
XLV. Power Tools	XCVII. Come-a-Long
XLVI. Using Tools Safely	XCVIII. Glossary of Terms and Definitions
XLVII. Layout kills	
XLVIII. Parallel Line Development	
XLIX. Radial Line Development	
L. Triangulation	
LI. Basic layout	
LII. Fabrication Skills	

TOTAL: 400 HOURS

Suggested Outline for Testing, Adjusting and Balancing of Air and Hydronic Systems

- I. A Future in Testing, Adjusting and balancing
- II. General Care of Instruments
- III. Basics of an HVAC System
- IV. Airflow
- V. Psychrometrics
- VI. Heat and Heat transfer
- VII. Fundamentals of Electricity
- VIII. Electrical Measurements
- IX. Motors and Starters
- X. Rotational Speed Measurements
- XI. Temperature Measurements
- XII. Air pressure and Air Flow Measurements
- XIII. Methods of Air Flow Measurements
- XIV. Duct Systems
- XV. Automatic Controls
- XVI. Fans
- XVII. Fan Laws and V-Belt Drives
- XVIII. Preparation for Balancing and TAB Forms
- XIX. Methods of Balancing: Proportional and Sequential
- XX. Hydronic Systems
- XXI. Hydronic Pressure
- XXII. And Flow Measurements
- XXIII. Pumps and Pump Laws
- XXIV. Principles of the Cooling Tower
- XXV. Hydronic Balancing: Flow Meter Method
- XXVI. Hydronic Balancing: Thermal Method
- XXVII. TAB Related Disciplines

TOTAL: 300 HOURS

Suggested Outline for the Sign Industry Curriculum

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| I. Basics | LIII. The Years Ahead |
| II. Starting Your Apprenticeship | |
| III. Working with People | |
| IV. Organizing Your Time | |
| V. Measurement and Numbers | |
| VI. Types of Signs | |
| VII. Lighting | |
| VIII. Safety | |
| IX. Field Safety | |
| X. Electrical Safety | |
| XI. Hazardous materials | |
| XII. Emergency Procedures | |
| XIII. Tools and Equipment | |
| XIV. Hand Tools | |
| XV. Shop Equipment | |
| XVI. Materials | |
| XVII. Types of Metals | |
| XVIII. Plastics | |
| XIX. Other materials | |
| XX. Fasteners | |
| XXI. Drafting | |
| XXII. Geometric Construction | |
| XXIII. Pictorial Drawing | |
| XXIV. Reading Sign Drawings | |
| XXV. Computers | |
| XXVI. Using Computers | |
| XXVII. Computer Programs | |
| XXVIII. Layout | |
| XXIX. Basic layout on Metal | |
| XXX. Parallel Line Layout | |
| XXXI. Parallel Line Layout for Curved Surfaces | |
| XXXII. Radial Line Layout | |
| XXXIII. Triangulation | |
| XXXIV. Triangulation for Square Tapers | |
| XXXV. Triangulation for Round Tapers | |
| XXXVI. Letters | |
| XXXVII. Channel Letters | |
| XXXVIII. Reverse Channel Letters | |
| XXXIX. H Letters | |
| XL. Beveled letters | |
| XLI. Prismatic letters | |
| XLII. Adler letters | |
| XLIII. Soldering and Welding | |
| XLIV. Soldering | |
| XLV. Overview of Welding | |
| XLVI. Field Installation | |
| XLVII. Outside Equipment | |
| XLVIII. Ladders and Scaffolds | |
| XLIX. Hoisting | |
| L. Rigging | |
| LI. Moving Signs and other Heavy Loads | |
| LII. Installing Signs | |

TOTAL: 400 HOURS

Suggested Outline for Commercial-Industrial Service Work Curriculum

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| <ul style="list-style-type: none"> I. Tools, Instruments, Tubing and Torch Equipment II. Environmental Service Industry III. Hand Tools IV. Instruments and Gauges V. Refrigeration Tubing and Pipe VI. Tubing Fabrication Procedures VII. Oxy-Acetylene Torch Equipment VIII. Filler Alloys and Fluxes IX. Preparing Joint – Solder or Braze X. Introduction to Refrigeration Principles XI. Pressure and Pressure Measurements XII. Temperature and Characteristics of Heat XIII. Methods of Heat Transfer XIV. Heat Content XV. Heat Transfer Capacity XVI. Pressure/Temperature Relationships XVII. T-P Chart and Refrigerant Conditions XVIII. Components XIX. Low Side Terminology XX. High Side Terminology XXI. Refrigeration Cycle Operation XXII. Major Components-Performance Factors XXIII. Refrigeration Systems XXIV. Basic Air Conditioning XXV. Psychrometric Properties of Air XXVI. Comfort Conditions and Room Air Distribution XXVII. Filtration-Ventilating-Mixing XXVIII. Basics of Air Flow and Duct Systems XXIX. Air Moving Devices XXX. Air Systems Measurement XXXI. Refrigerant Circuit Component Removal or Replacement XXXII. Opening Systems for Repairs XXXIII. Recovering-Recycling-Reclaiming XXXIV. Diagnostics and Refrigeration Cycle Operation XXXV. System Working Relationships XXXVI. Condensing Units versus Piping Losses XXXVII. Measuring Refrigeration Cycle Vital Signs XXXVIII. Inspections and Measurements XXXIX. Basic Analysis <ul style="list-style-type: none"> XL. Component Analysis XLI. System Analysis XLII. Low Capacity Analysis XLIII. Basic Concepts of Electricity XLIV. Ohms and Power Law XLV. Circuit Layouts XLVI. Circuit Faults XLVII. Electrical Meter XLVIII. Circuit Operating Characteristics XLIX. Alternating Current Circuit Principles <ul style="list-style-type: none"> L. Measuring and AC Circuit Values LI. Opposition to Current Flow in AC Circuits LII. Capacitors and Capacitor Testing | <ul style="list-style-type: none"> LIII. AC Power and Power Factor LIV. Single Phase Transformers LV. Three Phase Transformers LVI. Electrical Service Layouts LVII. Low Voltage and its Impact on Motors LVIII. Voltage Imbalance and Phase Loss on Three Phase Systems LIX. Single Phase Induction Motors LX. Three Phase Induction Motors LXI. Special Motors LXII. Servicing Electric Motors LXIII. Motor Circuits (Protection) LXIV. Line Duty Control Circuit LXV. Pilot Duty Control Circuit LXVI. Low Voltage Control Circuit LXVII. Additional Control Circuit Components LXVIII. Hermetic Compressor Motors and Start Relays LXIX. Hermetic Compressor Motor Protection LXX. Servicing Hermetic Motors LXXI. Hermetic Motor Burnouts LXXII. Diagnosing Compressor Circuit Problems LXXIII. Electrical Schematics and Diagrams LXXIV. Trouble Shooting a System with Electrical Diagrams LXXV. Introduction to Electronic Devices LXXVI. Basic Electronic Devices LXXVII. Circuits LXXVIII. Electronic Device Applications LXXIX. Electrical Safety for Service Work LXXX. Business and Shop Operations LXXXI. Service Trucks and Field Procedures LXXXII. Regulatory Environment LXXXIII. Business Practices LXXXIV. Introduction to HVAC Systems and ventilation LXXXV. Air and its Properties LXXXVI. Fans and Air Flow in Duct LXXXVII. Duct Systems LXXXVIII. Duct Design LXXXIX. Outlets and Other Buyout Items XC. Dampers XCI. Balancing the System XCII. Instruments and Air Cleaning XCIII. Basic Heating Elements XCIV. Hydronic Heating XCV. Oil Furnaces XCVI. Electric Heating XCVII. Alternative Heating Methods and Humidification XCVIII. Heat Loads for heating XCIX. Air Conditioning Systems Concepts <ul style="list-style-type: none"> C. Central Air Conditioning Systems CI. Chilled Water System Concepts CII. Chilled Water Comfort Cooling Systems CIII. Systems using Air Cooled Condensers |
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CIV.	Systems using Water Cooled Condensers	CXXXII.	Servicing Refrigerant Controls, Electric Motor Circuits, Hermetic Compressors, Condenser Controls and Refrigerant Lines
CV.	Compressor Protection Devices	CXXXIII.	Commercial Systems Heat Loads
CVI.	Compressor and Condensing Unit Capacities	CXXXIV.	Constant Volume Air Conditioning System
CVII.	Refrigerant Line Components	CXXXV.	Constant Volume/Variable Temperature Multi-zone Units
CVIII.	Refrigerant Lines and Capacities	CXXXVI.	Control Systems –Fundamentals
CIX.	Pressure Regulating and Flow Control Valves	CXXXVII.	Pneumatic Control Systems
CX.	Heat Loads for Cooling	CXXXVIII.	Pneumatic Thermostats
CXI.	Heat Pump Operation	CXXXIX.	Pneumatic Auxiliary Devices
CXII.	Heat Pump Operating Cycles and Efficiency ratings	CXL.	Pneumatic Damper and Valve Control
CXIII.	Heat Pump Compressors, Motors, and Motor Control	CXLI.	Pneumatic System Calibration/Trouble Shooting/Maintenance
CXIV.	Heat Pump Refrigerant Controls	CXLII.	Electric Control Systems
CXV.	Heat Pump Reversing Valves	CXLIII.	Electronic Control Systems
CXVI.	Heat Pump Condenser and Evaporator Coils	CXLIV.	Computerized Building Management
CXVII.	Heat Pump Defrost	CXLV.	Zone Control Systems
CXVIII.	Heat Pump Heaters and Two Speed Units	CXLVI.	Operation and Service of Zone Control
CXIX.	Heat Pump Installation	CXLVII.	Variable Air Volume System
CXX.	Heat Pump Electrical Controls	CXLVIII.	VAV Terminal Control (DDC)
CXXI.	Heat Pump Startup and Servicing	CL.	Direct Digital Control Systems
CXXII.	Safety	CLI.	DDC Install/Service/Diagnostics/Repair
CXXIII.	Commercial Systems Application	CLII.	Energy Management
CXXIV.	Commercial Systems Evaporators	CLIII.	Timers, Thermostats and Load Controllers
CXXV.	Evaporator Installation and Capacities	CLIV.	Energy management – Economizers
CXXVI.	Commercial Defrost Systems	CLV.	Safety
CXXVII.	Additional Commercial System Components		
CXXVIII.	Installing Commercial Systems		
CXXIX.	Starting, Charging, and testing Commercial Systems		
CXXX.	Servicing Commercial Systems and Components		
CXXXI.	Leak Testing and Evacuating Commercial Systems		
			<u>TOTAL: 400 HOURS</u>

Suggested Outline for Detailing Curriculum

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| I. Introduction to Detailing | XXVIII. The Take-Off Process |
| II. For Detailing Students | XXIX. Introduction to AutoCAD |
| III. For JATC Training Coordinators | XXX. Understanding AutoCAD |
| IV. For Business Owners | XXXI. Plan Drawings |
| V. Computers | XXXII. Elevation Drawings |
| VI. Inside the Computer | XXXIII. Mechanical Drawings |
| VII. Microsoft Office Applications for the Detailer | XXXIV. Advanced AutoCAD |
| VIII. Organizing and sharing your work | XXXV. Three Dimensional Drawings |
| IX. Computer Maintenance | XXXVI. Industry Standards |
| X. Security | XXXVII. Paper Space |
| XI. Job Documents | XXXVIII. Plotting |
| XII. Construction Management-The Big Picture | XXXIX. Coordination |
| XIII. Workflow and Job Documents | XL. The Coordination Meeting |
| XIV. HVAC System Design Resources | XLI. Construction Coordination Software |
| XV. Plans & Specifications | XLII. Third Party Software |
| XVI. Project Correspondence | XLIII. Construction Coordination Software (CCS) |
| XVII. The Writing Process | XLIV. Advanced Detailing |
| XVIII. Effective Writing | XLV. Introduction |
| XIX. Preparing Project Correspondence | XLVI. Detailing Project Workflow |
| XX. Field Measurement | XLVII. Review of Detailing |
| XXI. Introduction to Field Measurement | XLVIII. Value Engineering |
| XXII. How Field Measurement Works | XLIX. Employing Field Measurement |
| XXIII. Field Measurement Tools | L. Elementary School Project |
| XXIV. On the Job Site | LI. Hospital project |
| XXV. Back at the Shop | |
| XXVI. Take-Off Procedures | |
| XXVII. Introduction to Take-Offs | |
- TOTAL: 450 HOURS**

Suggested Outline for Project Management Curriculum

- I. The Project Manager
- II. Construction Documents
- III. Controlling Costs
- IV. Preparing for a Project
- V. Schedules and Meetings
- VI. Paperwork

- VII. Quality Control and Productivity
- VIII. Tools, Equipment, and Materials
- IX. Legal Considerations
- X. Completing the Project
- XI. The Future

TOTAL: 250 HOURS

Suggested Outline for Foreman Work Curriculum

- I. Introduction to Foreman Work
- II. Self-Evaluation
- III. Successful Foreman Attributes
- IV. Managing and Leading Others
- V. Project Management

- VI. Safety Culture
- VII. Human Relations
- VIII. Professional Development

TOTAL: 250 HOURS

Suggested Outline for Welding Curriculum

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| I. Oxy-Fuel Gas Cutting | XXXIV. Perform Shape and Pierce Cutting Operations (PAC) |
| II. Perform Safety Inspections (OFC) | XXXV. Metallurgy |
| III. Making Minor External Repairs (OFC) | XXXVI. Basic Electricity |
| IV. Set-Up for Oxy-Acetylene Cutting Operations | XXXVII. Flux Core Arc Welding (FCAW) |
| V. Operating Oxy-Fuel Gas Cutting Equipment | XXXVIII. Perform Safety Inspections (FCAW) |
| VI. Performing Straight Cutting Operations (OFC) | XXXIX. Make Minor External Repairs (FCAW) |
| VII. Performing Shape Cutting Operations (OFC) | XL. Set-Up for Flux Core Operations |
| VIII. Performing Bevel Cutting Operations (OFC) | XLI. Operate FCAW Equipment |
| IX. Performing Weld Removal Operations (OFC) | XLII. Deposit Beads on Flat Plate (FCAW) |
| X. Performing Pierce (Hole) Cutting Operations (OFC) | XLIII. Deposit Lap Beads on Flat Plate (FCAW) |
| XI. Shielded Metal Arc Welding (SMAW) | XLIV. Fillet Welds (FCAW) |
| XII. Perform Safety Inspections (SMAW) | XLV. Groove Welds in 2G, 3G and 4G Positions (FCAW) |
| XIII. Make Minor External Repairs (SMAW) | XLVI. Gas Tungsten Arc Welding (GTAW) |
| XIV. Set-Up SMAW Equipment | XLVII. Perform Safety Inspections (GTAW) |
| XV. Operate SMAW Equipment | XLVIII. Make Minor External Repairs (GTAW) |
| XVI. Depositing Beads on Flat Plate (SMAW) | XLIX. Basic GTAW Set-Up |
| XVII. Depositing Lap Beads on Flat Plate (SMAW) | L. Operate GTAW Equipment |
| XVIII. Gas Metal Arc Welding (GMAW) | LI. Deposit Beads on Flat Plate (GTAW) |
| XIX. Perform Safety Inspections (GMAW) | LII. Deposit beads on Typical Sheet Metal Joints (GTAW) |
| XX. Make Minor External Repairs (GMAW) | LIII. Carbon Arc Welding (CAW) |
| XXI. Set-Up for Gas Metal Arc Welding Operations | LIV. Perform Safety Inspections (CAW) |
| XXII. Operate Gas Metal Arc Welding Equipment | LV. Make Minor External Repairs (CAW) |
| XXIII. Deposit Beads on Typical Sheet Metal Joints (GMAW) | LVI. Set-Up CAW Equipment |
| XXIV. Fillet Welds (GMAW) | LVII. Operate CAW Equipment |
| XXV. Single V-Groove Welds in the 2G, 3G, and 4G Positions (GMAW) | LVIII. Oxy-Acetylene Welding |
| XXVI. Groove Welds/Short Circuit Transfer (GMAW) | LIX. Perform Safety Inspections (OAW) |
| XXVII. 1G (Flat) Groove Welds with Spray Transfer (GMAW) | LX. Make Minor External Repairs (OAW) |
| XXVIII. Plasma Arc Cutting (PAC) | LXI. Set-Up for Oxy-Acetylene Welding Operations |
| XXIX. Perform Safety Operations (PAC) | LXII. Operate Oxy-Acetylene Welding Equipment |
| XXX. Making Minor External Repairs (PAC) | LXIII. Gas Metal Arc Welding-Pulsed Spray Transfer (GMAW-P) |
| XXXI. Set-Up for Plasma Cutting Operations | LXIV. Perform Safety Inspections (GMAW-P) |
| XXXII. Operate Plasma Arc Cutting Equipment | LXV. Set-Up GMAW-P Equipment |
| XXXIII. Perform Straight Cutting Operations (PAC) | LXVI. Operate GMAW-P Equipment |
| | LXVII. Gas Tungsten Arc Welding- Pulse |
| | LXVIII. Perform Safety Inspections (GTAW-P) |
| | LXIX. Set-Up GTAW-P Equipment |
| | LXX. Operate GTAW-P Equipment and Deposit Beads on Plate with and without Filler Metal |
| | <u>TOTAL: 500 HOURS</u> |

Suggested Outline for Blueprint (Plans Specifications) Curriculum

- | | |
|--|---|
| I. Overview | XLVI. Conflicts Between Plans and Specifications |
| II. Construction Documents | XLVII. The Organization of Specifications |
| III. The Professionals Who Shape the Documents | XLVIII. How to Find Information |
| IV. Why Do Plans and Specifications Matter? | XLIX. Revisions of Plans and Specifications |
| V. Significance of Plans and Specifications | L. Addenda |
| VI. Types of Firms | LI. Documents for Changing Plans and Specifications |
| VII. Unique Factors | |
| VIII. How are Plans and Specifications Used? | |
| IX. Plans | |
| X. Specifications | |
| XI. Organizing Plans | |
| XII. Where to Begin | |
| XIII. Title Sheets | |
| XIV. Title Blocks | |
| XV. Civil Drawings | |
| XVI. Architectural Drawings | |
| XVII. Structural Drawings | |
| XVIII. Mechanical Drawings | |
| XIX. Electrical Drawings | |
| XX. Industrial and Specialty Drawings | |
| XXI. Schedules | |
| XXII. Detail Drawings | |
| XXIII. The Big Picture Behind a Set of Plans and Specifications | |
| XXIV. Submitting a Bid | |
| XXV. The Construction Specifications Institute Master Format 2004 | |
| XXVI. System of Organization | |
| XXVII. A Closer Look at Plans | |
| XXVIII. The Basics of Plans | |
| XXIX. The Procedures for Handling Plans | |
| XXX. Drawings from Three Different Points of View | |
| XXXI. Using Coordinates to Understand the Relationships Between Drawings | |
| XXXII. Coordinates | |
| XXXIII. Detail Drawings and Detail References | |
| XXXIV. Lines and Their Meanings | |
| XXXV. Types of Lines | |
| XXXVI. Scaled Drawings | |
| XXXVII. How to Use a Scale | |
| XXXVIII. A Closer Look at Specifications | |
| XXXIX. Why We Need Specifications | |
| XL. How Specifications Are Used | |
| XLI. Specifications and the Construction Process | |
| XLII. Using Specifications to Make a Bid | |
| XLIII. Coordination Meetings | |
| XLIV. Using Specifications in the Shop and the Field | |
| XLV. Using Specifications After Initial Construction is Complete | |

TOTAL: 250 HOURS

Recommended Reference Books

A. International Training Institute for the Sheet Metal and Air Conditioning Industry

- 1) Sheet Metal CORE Curriculum
- 2) Sheet Metal HVAC Curriculum
- 3) Industrial Sheet Metal and Welding Curriculum
- 4) Sheet Metal Roofing Curriculum
- 5) Project Management
- 6) Electrical Theory
- 7) Sound and Vibration Technology
- 8) Equipment Start Up
- 9) Piping Systems
- 10) Psychrometrics
- 11) Electric Motors and Starters
- 12) Indoor Air Quality
- 13) Pumps
- 14) Fans
- 15) Direct Digital Controls
- 16) Variable Air Volume Systems
- 17) Lock-Out Tag Out
- 18) Soldering Curriculum
- 19) Aerial Lift Safety
- 20) Powder Actuated Tool Safety
- 21) Physical Stress Management
- 22) Hoisting and Rigging
- 23) The Sheet Metal Craftsman
- 24) Safety Handbook
- 25) Servicing Environmental Systems, Books 1 through 4
- 26) Testing, Adjusting, and Balancing of Environmental Systems
- 27) Reading Plans and Specifications
- 28) Sheet Metal Welding Workbook I
- 29) Surveying Environmental Systems for Retrofit (Energy Auditing)
- 30) Residential Sheet Metal Workbooks 1 through 2
- 31) Modern Refrigeration & Air Conditioning
- 32) Sheet Metal Foreman's Training
- 33) Asbestos Abatement, Removal and Disposal (AARD) Student Workbook
- 34) Energy Management and Retrofit Environmental Systems
- 35) Sheet Metal Mathematical Textbook
- 36) Architectural Sheet Metal
- 37) Food Service
- 38) Hazardous Communication Textbook
- 39) Sign Industry Textbook with Workbook
- 40) Duct Leakage Manual
- 41) Together We Do It Better
- 42) CSI Master Format 2004

B. Sheet Metal Worker's International Association

- 1) Constitution and Ritual of the Sheet Metal Worker's International Association, Washington, DC
- 2) The affiliated Local Union Collective Bargaining Agreement (CBA)

C. Sheet Metal and Air Conditioning Contractors' National Association, Inc.

- 1) Accepted Industry Practice for Industrial Duct Construction
- 2) Architectural Sheet Metal Manual
- 3) Building Systems Analysis & Retrofit Manual
- 4) Ducted Electrical Heat Guide for Air Handling Systems
- 5) Energy Systems Analysis & Management Manual
- 6) Fibrous Glass Duct Construction Standards
- 7) Fire, Smoke & Radiation Damper Installation Guide for HVAC Systems
- 8) Guide for Steel Stack Construction
- 9) HVAC Air Duct Leakage Test Manual
- 10) HVAC Duct Construction Standards, Metal and Flexible
- 11) HVAC Duct Systems Inspection Guide
- 12) HVAC Systems Commissioning Manual
- 13) HVAC Systems-Duct Design
- 14) HVAC Systems-Applications
- 15) HVAC Systems-Testing, Adjusting, and Balancing
- 16) IAQ Guidelines for Occupied Building under Construction
- 17) Indoor Air Quality A System Approach
- 18) Managers' Guide for Welding
- 19) Rectangular Industrial Duct Construction Standard
- 20) Residential Comfort System Installation Standards Manual
- 21) Round Industrial Duct Construction Standard
- 22) Seismic Restraint Manual, Guidelines for Mechanical Systems
- 23) SMACNA Master Index of Technical Publication
- 24) Thermoplastic Duct (PVC) Construction Manual

Appendix B

NEVADA STATE APPRENTICESHIP AGREEMENT

Appendix C

AFFIRMATIVE ACTION PLAN

ADOPTED BY

Northern Nevada Sheet Metal Workers JATC

**AS REQUIRED UNDER TITLE 29, CODE OF FEDERAL REGULATIONS, PART 30
AMENDED MAY 12, 1978**

**DEVELOPED IN COOPERATION WITH THE
OFFICE OF APPRENTICESHIP
U. S. DEPARTMENT OF LABOR**

**APPROVED BY _____
REGISTRATION AGENCY**

DATE APPROVED: _____

Section I. INTRODUCTION

The JATC enters this Plan with good faith for the purpose of promoting equality of opportunity into its registered apprenticeship program. The local JATC seeks to increase the recruitment of qualified women and minorities for possible selection into the apprenticeship program in the event females and/or minorities are underutilized in the apprenticeship program. The JATC hereby adopts the following nondiscriminatory pledge and Affirmative Action Plan.

This Plan is a supplement to the Apprenticeship Standards. Any changes made by the JATC shall become part of this written Plan, once approved by the State Apprenticeship Council.

Section II. EQUAL OPPORTUNITY PLEDGE

The JATC commits to the following Equal Opportunity Pledge:

“The recruitment, selection, employment, and training of apprentices during their apprenticeship, shall be without discrimination because of race, color, religion, national origin, or sex, sexual orientation or disability. The sponsor will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations, part 30, as amended, and all regulations on equal opportunity of employment in the State of Nevada.”

Section III. UTILIZATION AND ANALYSIS, GOALS AND TIMETABLES

In order to allow positive recruitment and full utilization of minorities and women in the apprenticeship program the JATC pledges to identify outreach efforts under Section IV which will be undertaken. The purpose of the analysis is to determine the minority and women’s labor force in the JATC’s labor market area. Once the labor force is determined, the JATC can determine if deficiencies exist in terms of underutilization of minorities and/or women in the occupations registered with the Registration Agency. (See attached form)

Section IV. OUTREACH AND POSITIVE RECRUITMENT

The JATC’s affirmative action plan includes the following outreach and positive recruitment efforts that would reasonably be expected to increase minority and women’s participation in apprenticeship by expanding the opportunity of minorities and women to become eligible for apprenticeship selection.

- A. ☐ An announcement of apprenticeship openings must be disseminated semi-annually for application to the following agencies/organizations:
- Registration Agency
 - Women's Organizations/Centers
 - Schools
 - Employment Service Centers
 - One Stop Centers
 - Vocational Education Schools
 - Other Organizations/Centers (which can effectively reach minorities and women)
 - Newspapers (which are circulated in the minority community and among women)
- The announcement shall include the nature of the apprenticeship, requirements for admission to apprenticeship, availability of apprenticeship opportunities, sources of apprenticeship applications, and the JATC's equal opportunity policy. Applications will be accepted Monday through Friday, between 8 am and 2 pm, or by appointment, excluding holidays.
- B. ☐ Participation in annual workshops conducted by employment service agencies for the purpose of familiarizing school, employment service and other appropriate personnel with the apprenticeship program and current opportunities.
- C. ☐ Cooperation with school boards and vocational educational systems to develop programs for preparing students to meet the standards and criteria required to qualify for entry into the apprenticeship program.
- D. ☐ Internal communication of the JATC's equal opportunity policy should be conducted in such a manner to foster understanding, acceptance, and support among the JATC's various officers, supervisors, employees, and members, and to encourage such persons to take the necessary action to aid in meeting its obligation under Title 29, CFR part 30.
- E. ☐ Engaging in programs such as outreach for the positive recruitment and preparation of potential applicants for apprenticeships; where appropriate and feasible, such programs shall provide for pre-testing experience and training. In initiating and conducting these programs, the JATC may be required to work with other sponsors and appropriate community organizations. The JATC shall also initiate programs to prepare women and encourage women to enter traditionally male programs.
- F. ☐ Encouraging the establishment and utilization of programs of pre-apprenticeship, preparatory trade training, or others designed to afford related work experience or prepare candidates for apprenticeship. The JATC shall make appropriate provisions in its affirmative action plan to

assure that those who complete such programs are afforded full and equal opportunity for admission into the apprenticeship program.

- G. ☐ Utilizing journeypersons to assist in the implementation of affirmative action in the apprenticeship program.
- H. ☐ Granting advance standing or credit on the basis of previously acquired experience, training, skills, or aptitude for all applicants equally.
- I. ☐ Other appropriate action to ensure that the recruitment, selection, employment, and training of apprentices during their apprenticeship shall be without discrimination because of race, color, religion, national origin, or sex (e.g., general publication of apprenticeship opportunities and advantages in advertisements, industry reports, articles, etc., use of present minority and female apprentices and journeypersons as recruiters; career counseling; development of reasonable procedures to ensure employment opportunity, including reporting systems, on-site reviews, briefing sessions)

Section V. ANNUAL REVIEW OF AFFIRMATIVE ACTION PLAN

The JATC will make an annual review of its current Affirmative Action Plan and its overall effectiveness and institute any revisions or modifications warranted. The review shall analyze (independently and collectively) the affirmative action steps taken by the JATC for evaluating the positive impact, as well as the adverse impact in the areas of outreach and recruitment, selection, employment, and training. They will work diligently to identify the cause and affect those results from their affirmative action measures. The JATC will continually monitor these processes in order to identify the need for a new affirmative action effort and/or deletion of ineffective existing activities). All changes to the Affirmative Action Plan must be submitted to the Registration Agency for registration. The JATC will continually monitor the participation rates of minorities and women in the apprenticeship program in an effort to identify any type of underutilization. If underutilization exists, corrective action will be immediately implemented. The goals and timetables also will be reviewed annually and updated where necessary.

Section VI. OFFICIAL ADOPTION

The Northern Nevada Sheet Metal Workers JATC hereby officially adopts this Affirmative Action Plan on this 22nd day of December, 2015.

SIGNATURE OF JATC CO-CHAIRPERSON

PRINTED NAME

SIGNATURE OF JATC CO-CHAIRPERSON

PRINTED NAME

Insert current affirmative action goals from DOL-OA

Appendix D

**QUALIFICATIONS AND SELECTION
PROCEDURES**

ADOPTED BY

Northern Nevada Sheet Metal Workers JATC

DEVELOPED IN COOPERATION WITH THE
II. OFFICE OF APPRENTICESHIP
U. S. DEPARTMENT OF LABOR

APPROVED BY _____
REGISTRATION AGENCY

DATE APPROVED _____

The certification of this selection procedure is not a determination that, when implemented, the selection procedure meets the requirements of the Uniform Guidelines on Employee Selection Procedures (41 CFR part 60-3) or 29 CFR part 30. Note that selection procedures may need to be modified to provide reasonable accommodations to qualified individuals with disabilities.

Section I. MINIMUM QUALIFICATIONS

Applicants shall meet the following minimum qualifications:

A. Age

Shall be at least 18 years of age.

An applicant who is sixteen (16) years of age and is participating in a school-to-work program or equivalent and who otherwise meets all qualifications may be rated, ranked and placed on the list of eligible applicants. Such an applicant must be eighteen (18) years of age prior to being accepted into the apprenticeship program.

B. Education

A high school diploma or high school equivalency is required. Applicant must provide an official transcript(s) for high school and post high school education and training. All equivalency records must be submitted if applicable.

Applicants must submit a DD-214 to verify military training and/or experience if they are a veteran and wish to receive consideration for such training/experience.

C. Driver's License

Applicants must possess a current valid driver's license.

D. Physical

Shall be physically capable of performing the essential functions of the apprenticeship program without posing a direct threat to the health and safety of the individual or others.

Qualified applicants may be subject to a physical examination or drug screening or both on acceptance into the program and prior to being employed. The cost of the examination and/or drug screening shall be the responsibility of the JATC or the Employer.

Section II. APPLICATION PROCEDURES

A. Applicants shall be accepted throughout the year. All persons requesting an application shall have one made available upon signing the applicant log.

B. All applications shall be identical in form and requirements. The application form shall be numbered in sequence corresponding with the number appearing on the applicant log so that all applications can be accounted for.

Columns will be provided on the applicant log to show race/ethnic and sex identification and the progress by dates and final disposition of each application.

- C. Before completing the application, each applicant will be required to review the Apprenticeship Standards and will be provided information about the program. If the applicant has any additional questions on the qualifications or needs additional information to complete the application, it will be provided by the JATC.
- D. Receipt of the properly completed application form, along with required supporting documents (proof of age - driver's license, birth certificate or other acceptable documentation; copy of driver's license, copy of high school diploma official transcripts, high school equivalency certificate or other acceptable documentation) will constitute the completed application.
- E. Completed applications will be checked for minimum qualifications. Applicants deficient in one or more qualifications or requirements or making false statements on their application will be notified in writing of their disqualification. The applicant will also be notified of the appeals right available to them. No further processing of the application will be taken.
- F. Applicants meeting the minimum qualifications and submitting the required documents will be notified where and when to appear for the math test.
- G. Applicants meeting the minimum qualifications and submitting the required documents will be notified where and when to appear for the interview upon completing the math test.

Section III. SELECTION PROCEDURES

- A. Applicants meeting the minimum qualifications for application shall be required to complete a math test. The JATC will schedule the math test and all applicants will be notified of the date, time, and place to appear. The math test score shall be added to the applicants score for ranking purposes.
- B. Upon completion of the math test applicants will be scheduled for the interview and evaluation session. All applicants who have completed the math test must be notified of the date, time, and place to appear for the interview.
- C. The interviewer(s) will rate each applicant during the interview on each of the factors on the Applicant Rating Form taking into account the information on the application, required documents, if applicable, and the judgment derived from the interview.

- D. After completing the interview and evaluation of the applicants, the individual rating scores of the interviewer(s) will be added together and averaged and then added to the math score to determine the applicant's final rating.
- E. Applicants will be placed on the appropriate ranking list according to their chosen career path and scores at the evaluation session, with the applicant having the highest score being at the top of that list, and all applicants then listed in descending order based on score.
- F. As openings for the registration of new apprentices occur, the highest ranked applicant will be notified of selection. It shall be the responsibility of the applicant to keep the JATC informed of their current mailing address and phone number(s).
- G. Selected applicants must respond to the notice of selection within forty-eight (48) hours of notice. If applicants cannot be reached by telephone, their names will be passed and notice sent to their address by "Certified Mail-Return Receipt Requested," to determine if the applicants are still interested. If no response is received in fifteen (15) working days from the written notice, the applicants' name will be removed from the list. Only one certified notice will be mailed.
- H. Qualified applicants remaining on a preceding ranking list will automatically be carried forward on the new ranking list and slotted in wherever their rating score placed them for a period of two (2) years, unless the applicant has been removed from the list by their own written request or following failure to respond to an apprentice opening. Applicants, who were not placed during the two (2) year period, they were on the ranking list, will be required to reapply.
- I. During the two-year period, applicants who feel that their qualifications have improved since their original rating may submit documented evidence of such additional experience or training and request reevaluation and rating at the next regular processing cycle.

Section IV. DIRECT ENTRY

Sponsors who wish to invoke the direct entry provision may do so without regard to the existing selection procedure or minimum qualifications used for entry into the apprenticeship program. Individuals selected into the apprenticeship program via direct entry shall only include those individuals described below who have received training or employment in an occupation directly or indirectly related to the occupation(s) registered in these Standards. The Sponsors will award Credit for Previous Experience in accordance with Section XI of these Standards, and will pay the apprentice(s) at the wage rate commensurate with their skill attainment. The Credit for Previous Experience shall be awarded without regard to race, color, religion, national origin or sex. The methods for direct entry shall include the following:

- A. Youth who complete a Job Corps training program in any occupation covered in these Standards, who meet the minimum qualifications of the apprenticeship program, may be admitted directly into the program, or if no apprentice opening is available, the Job Corps graduate may be placed at the top of the current applicant ranking list and given first opportunity for placement. The Sponsor will evaluate the Job Corps training received for granting appropriate credit on the term of apprenticeship. Entry of Job Corps graduates will be done without regard to race, color, religion, national origin, or sex. ***(Note: This is a method of direct entry into the apprenticeship program.)***
- B. Youth who complete a Youth Build U.S.A. training program in any occupation covered in these Standards who meet the minimum qualifications of the apprenticeship program, may be admitted directly into the program, or if no apprentice opening is available, the Youth Build U.S.A. graduate may be placed at the top of the current applicant ranking list and given first opportunity for placement. The Sponsor will evaluate the Youth Build U.S.A. training received for granting appropriate credit on the term of apprenticeship. Entry of Youth Build U.S.A. graduates will be done without regard to race, color, religion, national origin, or sex. ***(Note: This is a method of direct entry into the apprenticeship program.)***
- C. Those who graduate from a Technical Training School in any occupation covered in these Standards that has been reviewed and approved by the Joint Apprenticeship and Training Committee who meet the minimum qualifications of the apprenticeship program, may be admitted directly into the program, or if no apprentice opening is available, the Technical Training School graduate may be placed at the top of the current applicant ranking list and given first opportunity for placement. The Sponsor will evaluate the Technical training received for granting appropriate credit on the term of apprenticeship. Entry of Technical School graduates will be done without regard to race, color, religion, national origin, or sex. ***(Note: This is a method of direct entry into the apprenticeship program.)***
- D. Military veterans who completed military technical training school and/or elect to participate in the Building and Construction Trades Helmets to Hardhats Program or a registered apprenticeship program or related craft while in the military in the occupations registered in the Sheet Metal Industry, may be given direct entry into the apprenticeship program. The JATC shall evaluate the military training received for granting appropriate credit on the term of apprenticeship and the appropriate wage rate. The JATC will determine what training requirements they need to meet to ensure they receive all necessary training for completion of the apprenticeship program. Entry of Military Veterans shall be done without regard to race, color, religion, national origin, or sex. ***(Note: This is a method of direct entry into the apprenticeship program.)***

- E. An employee of a non-signatory employer not qualifying as a journeyperson when the employer becomes signatory, will be evaluated by the JATC in accordance with the procedures for the granting of credit for previous experience, and indentured at the appropriate period of apprenticeship based on previous work experience and related training. Any employee not eligible for receipt of credit must make application in accordance with the normal application procedures. Entry into the program through this method shall be done without regard to race, color, religion, national origin, or sex. **(Note: This is a method of direct entry into the apprenticeship program.)**
- F. An individual who signs an authorization card during an organizing effort, wherein fifty-one percent (51%) or more of the employees have signed authorization cards, whether or not the employer becomes signatory, and is an employee of the non-signatory employer and does not qualify as a journeyperson, will be evaluated in accordance with the procedures for the granting of credit for previous experience and indentured by the JATC at the appropriate period of apprenticeship based on previous work experience and related training. Any employee not eligible for receipt of credit must make application in accordance with the normal application procedures. Entry into the program through this method shall be done without regard to race, color, religion, national origin, or sex. **(Note: This is a method of direct entry into the apprenticeship program).** For such applicants to be considered they must:
1. be employed in the JATC's jurisdiction when the authorization card was signed;
 2. have been employed by the employer before the organizational effort commenced;
 3. have been offered the opportunity to sign authorization cards and be evaluated along with all other employees of the employer;
 4. and provide reliable documentation to the JATC to show they were an employee performing Sheet Metal work prior to signing the authorization card.
- G. An individual who is or who has worked for a signatory or non-signatory employer and who, of his/her own choosing, solicits membership as a journeyperson and does not qualify as a journeyperson, will be evaluated in accordance with the procedures for granting of credit for previous experience and indentured by the JATC at the appropriate period of apprenticeship based on previous work experience and related training. Any employee not eligible for receipt of credit must make application in accordance with the normal application procedures. Entry into the program through this method shall be

done without regard to race, color, religion, national origin, or sex. **(Note: This is a method of direct entry into the apprenticeship program).**

H. Transfer of Apprenticeship. In order to transfer an apprenticeship agreement between two Local Sheet Metal JATC's registered apprenticeship programs, the following requirements must be met **(Note: This is a method of direct entry into the apprenticeship program):**.

1. The apprentice must submit a written request for transfer, describing in detail the needs and reasons upon which the request is based.
2. The apprentice's sponsoring JATC must agree to the transfer.
3. The receiving JATC must agree to accept the transfer.
4. The two Sheet Metal Worker Unions must agree to the transfer.
5. The receiving JATC shall have complete access to all apprenticeship records pertaining to the transferring apprentice.
6. Upon being accepted by the receiving JATC, the apprentice's existing apprenticeship agreement shall be terminated.
7. Indenture proceedings shall be initiated with the receiving JATC and the appropriate Registration Agency. The Registration Agency will be provided with all documentation necessary and/or required to verify that the transfer is justifiable.
8. Apprentices accepted for transfer will be given full credit for on-the-job learning experience and related instruction successfully completed while indentured in a Sheet Metal Worker International Association apprenticeship program.
9. The transferring apprentice must:
 - a) Complete an application form, accurately responding to all questions.
 - b) Provide the receiving JATC official documentation pertaining to their participation in the apprenticeship program that they are transferring from.
 - (i) An official copy of all records established with the sponsoring JATC (including a copy of the application form and the apprenticeship agreement properly registered with the Registration Agency) and other information submitted shall be

provided to the receiving JATC. The receiving JATC will examine all documentation submitted before granting permission to transfer. All such records shall become part of the receiving JATC's permanent files.

- I. If there is a recognized shortage of skilled workers in a particular facet of the sheet metal industry, an individual with experience in the recognized area of shortage who meets the minimum qualifications of the apprenticeship program, may be admitted directly into the program. The Sponsor will evaluate the individual for granting appropriate credit on the term of apprenticeship. Entry of individuals into the program based on skilled worker shortages will be done without regard to race, color, religion, national origin, or sex. **(Note: This is a method of direct entry into the apprenticeship program.)**

Section V. COMPLAINT PROCEDURE

- A. Any apprentice or applicant for apprenticeship who believes that he or she has been discriminated against on the basis of race, color, religion, national origin, or sex, with regard to apprenticeship or that the equal opportunity standards with respect to his or her selection have not been followed in the operation of an apprenticeship program, may personally or through an authorized representative, file a complaint with the U. S. Department of Labor or, at the apprentice or applicant's election, with the private review body established by the local JATC (if applicable).
- B. The complaint shall be in writing and shall be signed by the complainant. It must include the name, address, and telephone number of the person allegedly discriminated against, the JATC involved, and a brief description of the circumstances of the failure to apply equal opportunity standards.
- C. The complaint must be filed not later than 180 days from the date of the alleged discrimination or specified failure to follow the equal opportunity standards, and, in the case of complaints filed directly with the review bodies designated by the JATC to review such complaints, any referral of such complaint by the complainant to the Department must occur within the time limitation stated above or 30 days from the final decision of such review body, whichever is later. The time may be extended by the Department for good cause shown.
- D. Complaints of sexual harassment in the workplace may be filed and processed under Title 29, CFR part 30, and the procedures as set forth above.
- E. The JATC will provide written notice of their complaint procedure to all applicants for apprenticeship and all apprentices.

Section VI. MAINTENANCE OF RECORDS

The JATC will keep adequate records including a summary of the qualifications of each applicant, the basis for evaluation and for selection or rejection of each applicant, the records pertaining to interviews of applicants, the original application for each applicant, information relative to the operation of the apprenticeship program, including but not limited to job assignment, promotion, demotion, layoff, or termination, rates of pay or other forms of compensation or conditions of work, hours including hours of work and, separately, hours of training provided, and any other records pertinent to a determination of compliance with these regulations, as may be required by the Department. The records pertaining to individual applicants, selected or rejected, shall be maintained in such manner as to permit the identification of minority and female (minority and non-minority) participants.

In addition to the above requirements, adequate records shall include a brief summary of each interview and the conclusions on each of the specific factors, e.g., motivation, ambition, and willingness to accept direction which are part of the total judgment. Records shall be maintained for 5 years and made available upon request to the Department of Labor or other authorized representative.

Section VII. OFFICIAL ADOPTION OF SELECTION PROCEDURES

The Northern Nevada Sheet Metal Workers JATC hereby officially adopts these Selection Procedures on this 22nd day of December, 2015.

SIGNATURE OF JATC CO-CHAIRPERSON

PRINTED NAME

SIGNATURE OF JATC CO-CHAIRPERSON

PRINTED NAME