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Received 08/18/2025-CA L&I Apprenticeship Consultant	Teri Gardner 8-18-25 L&I Admin

Department of Labor and Industries
Apprenticeship Section
PO Box 44530
Olympia WA 98504-4530

Request for Revision of Standards

TO: Washington State Apprenticeship & Training Council

FROM: **IAM/Boeing Joint Apprenticeship Committee #154**

Please update our Standards of Apprenticeship to reflect the following changes:

- Additions shall be underlined (<u>underlined</u>).
- Deletions shall be struck through (~~struck through~~).
- See attached.

Form must be signed by Committee Chair *and* Secretary *or* Program's Authorized Signer

☐ Chair ☒ Authorized Signer	Date 08/14/2025	☐ Secretary	Date
Print Name: Raymond Miller		Print Name:	
Signature: Raymond Miller		Signature:	

Approved By: **Washington State Apprenticeship & Training Council**
Signature of Secretary of the WSATC:
Date:

Attach additional sheets if necessary

FROM: **IAM/Boeing Joint Apprenticeship Committee #154**

Occupational Objective(s):	SOC#	Term [WAC 296-05-015]
FACILITIES MAINTENANCE TECHNICIAN	**49-9071.00**	**8000 HOURS**

IV. TERM OF APPRENTICESHIP:

The term of apprenticeship will be 8,000 hours of reasonably continuous employment and experience in the principal operations of the trade for the following occupations:

Facilities Maintenance Technician

VII: APPRENTICE WAGES AND WAGE PROGRESSION:

C. Wage Progression Schedules

For Facilities Crane Maintenance Mechanic; **Facilities Maintenance Technician; and Model Maker programs.**

VIII. WORK PROCESSES:

E. Facilities Maintenance Technician **Approximate Hours**

1. **General Shop Equipment……...600**
2. **Preventative Maintenance……2050**
3. **Facility Repair & Maintenance……2500**
4. **Specialized/Building Specific……700**
5. **Treatment System Operations & Maintenance……...2150**

Total Hours: 8,000

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Journey Level Wage Rate

From which apprentices' wage rates are computed

TO: Washington State Apprenticeship & Training Council

FROM: IAM/Boeing Joint Apprenticeship Committee #154

Occupation:	County(ies):	Journey Level Wage Rate:	Effective Date:
Facilities Maintenance Technician	King, Pierce, Snohomish	$ 56.97	6/26/2025
		$	
		$	
		$	

Sponsors must submit the journey-level wage at least annually or whenever changed to the Department.

Form must be signed by Committee Chair *and* Secretary *or* Program's Authorized Signer

☐ Chair ☒ Authorized Signer	Date 08/07/2025	☐ Secretary	Date
Print Name: Raymond Miller		Print Name:	
Signature: Raymond Miller		Signature:	

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Apprenticeship Related/Supplemental Instruction (RSI) Plan Review

Program Name IAM/Boeing Joint Apprenticeship Committee	
Occupation Facilities Maintenance Technician	
Term/OJT Hours 8000	Total RSI Hours 600
Training Provider Boeing- customized course curriculum provided by NCCER	

By the signature placed below, the **program sponsor** agrees to provide the prescribed RSI for each registered apprentice and assures that:

1. The RSI content and delivery method is and remains reasonably consistent with the latest occupational practices, improvements, and technical advances.
2. The RSI is coordinated with the on-the-job work experience.
3. The RSI is provided in safe and healthful work practices in compliances with WISHA and applicable federal and state regulations.
4. The RSI Plan is maintained, updated and submitted to the Department a minimum of once every 5 years (WSATC Policy 2015-01; rev, 10-21-21).
5. The RSI will be conducted by instructors who meet the qualification of the “competent instructor” as described in WAC 296-05-003:
    a. Has demonstrated a satisfactory employment performance in her/her occupation for a minimum of three years beyond the customary learning period for that occupation; and
    b. Meets the State Board for Community and Technical Colleges requirements for a professional technical instructor (see WAC 131-16-080 through -094), or be a subject matter expert, which is an individual, such as a journey worker, who is recognized within the industry as having expertise in a specific occupation; and
    c. Has training in teaching techniques and adult learning styles, which may occur before or within one year after the apprenticeship instructor has started to provide the related technical instruction.
6. If using alternative forms of instruction, such as correspondence, electronic media, or other self-study, instruction shall be clearly defined.

Signatures on next page

Form must be signed by Committee Chair *and* Secretary *or* Program's Authorized Signer

☐ Chair ☒ Authorized Signer	Date: 08/18/2025	☐ Secretary	Date
Print Name: Raymond Miller		Print Name:	
Signature: Raymond Miller		Signature:	

Training Provider Signature

Approved By (Print Name): Shelley Wilson	Title: BPS Senior Leader
Signature of the Training Provider:	
Date: 08/18/2025	

If additional training providers are needed, go to page 4.

SBCTC

Print Name:	Title:
Signature of the Program Administrator:	
Date:	
☐ SBCTC recommends approval	☐ SBCTC recommends return to sponsor

Program Name IAM/Boeing Apprenticeship Committee	Occupational Objective Facilities Maintenance Technician

Note: The description of each element must be in sufficient detail to provide adequate information for review by the SBCTC and Review Committee. To add more elements, click on the plus sign that appears below the "Description of Element/Course" field.

Describe minimum hours of study per year in terms of (check one):

☐ 12-month period from date of registration.

☒ Defined 12-month school year.

☐ 2,000 hours of on-the-job training.

Element/Course: Business Communication for Manufacturing – year 1	Planned Hours: 50
Mode of Instruction (check all that apply) ☐ Classroom ☐ Lab ☒ Online ☐ Self-Study Provided by: Boeing	
Description of element/course: This instructor-led course focuses on developing job-ready skills for Apprentices in today's complex mobile and social workplace. This course will help Apprentices develop and strengthen vital communication skills that are critical in the manufacturing industry. These skills include effective verbal and written communication, critical thinking, and teamwork skills by utilizing the Microsoft Office Suite: Outlook, Word, Excel, and PowerPoint (all 365). Proprietary Boeing applications and tasks like "InSite" and tie-ins will be covered in this course.	

Element/Course: Basic HVAC, Electricity and Heating/Distribution Systems - year 1	Planned Hours: 50
Mode of Instruction (check all that apply) ☐ Classroom ☐ Lab ☒ Online ☒ Self-Study Provided by: Boeing	
Description of element/course: Covers the basic principles of heating, ventilating and air conditioning, basic safety principles, trade licensure and EPA guidelines. Introduces the concept of power generation and distribution, common electrical components, AC and DC circuits, and electrical safety. Covers the fundamentals of heating systems and the combustion process. Provides the different types and designs of gas furnaces and their component and basic procedures for their installation and service Describes the factors related to air movement and its measurement in common air distribution systems. Presents the required mechanical equipment and materials used to create air distribution systems and basic system design principles for both hot and cold climates.	

Element/Course: Introduction to Cooling, Piping Practices and Applied Trade Math - year-1	Planned Hours: 50
Mode of Instruction (check all that apply) ☐ Classroom ☐ Lab ☒ Online ☒ Self-Study Provided by: Boeing	
Description of element/course: Demonstrates how to solve HVACR related problems involving the measurement of lines, area, volume, weights, angles, pressure, vacuum, and temperature. Also includes a review of scientific notation, powers, roots, and basic algebra and geometry. Explains the fundamental operating concepts of the refrigeration cycle and identifies both primary and secondary components found in typical HVACR systems. Also introduces common refrigerants. Describes principles of heat transfer and the essential pressure-temperature relationships of refrigerants. Introduces basic control concepts for simple systems. Explains how to identify types of copper tubing and fittings used in the HVACR industry and how they are mechanically joined. Also presents the identification and application of various types of plastic piping, along with their common assembly and installation practices	

Element/Course: Tools, Techniques and Devices in HVAC - year 2	Planned Hours: 50

Mode of Instruction (check all that apply)

☐ Classroom ☐ Lab ☒ Online ☒ Self-Study

Provided by: Boeing

Description of element/course:

Introduces the equipment, techniques, and materials used to safely join copper tubing through both soldering and brazing. Covers the required personal protective equipment, preparation, and work processes in detail. Also provides the procedures for brazing copper to dissimilar materials. Covers the principles of reverse cycle heating. Describes the operation of heat pumps and explains how to analyze heat pump control circuits. Includes heat pump installation and service procedures. Covers the operating principles, applications, installation, and adjustment of fixed and adjustable expansion devices used in air conditioning equipment.

Element/Course: Compressors, Refrigerants and Airside Systems - year 2	Planned Hours: 50

Mode of Instruction (check all that apply)

☐ Classroom ☐ Lab ☒ Online ☒ Self-Study

Provided by: Boeing

Description of element/course:

Explains operating principles of compressors used in comfort air conditioning and refrigeration systems. Includes installation, service, and repair procedures. Covers characteristics and applications of pure and blended refrigerants and provides extensive coverage of lubricating oils used in refrigeration systems. Describes the commercial airside systems, equipment, and operating sequences, the configurations such as constant volume single-zone and multi-zone, VVT, VAV, and dual-duct VAV. Explains how to identify various carbon steel piping materials and fittings. Covers the joining and installation of threaded and grooved carbon steel piping systems, including detailed descriptions of threading and grooving techniques.

Element/Course: Basic Maintenance and Safety in Servicing - year 2	Planned Hours: 50

Mode of Instruction (check all that apply)

☐ Classroom ☐ Lab ☒ Online ☒ Self-Study

Provided by: Boeing

Description of element/course:

Covers information related to maintenance-oriented materials, as well as guidelines for the inspection and periodic maintenance of various systems and accessories. Also covers the application of gaskets and seals, as well as the adjustment of different types of belt drives. Includes information on inspection and maintenance requirements for selected equipment. Covers refrigerant handling and equipment servicing procedures for HVAC systems in an environmentally safe manner.

Element/Course: Alternating Current, Circuits and HVAC Components - year 3	Planned Hours: 50

Mode of Instruction (check all that apply)

☐ Classroom ☐ Lab ☒ Online ☒ Self-Study

Provided by: Boeing

Description of element/course:

Covers transformers, single-phase and three phase-power distribution, capacitors, theory and operation of induction motors, and the instruments and techniques used in testing AC circuits and components. Also reviews electrical safety. Covers a variety of fasteners, hardware, and wiring terminations used in HVAC systems including the installation of these components Provides information and skills to troubleshoot control circuits and electric motors found in heating and cooling equipment

Element/Course: Refrigeration Systems and Introduction to Hydronic Systems – year 3	Planned Hours: 50
Mode of Instruction (check all that apply) ☐ Classroom ☐ Lab ☒ Online ☒ Self-Study Provided by: Boeing	
Description of element/course: Covers the applications, principles, and troubleshooting of refrigeration systems, learn skills to maintain refrigerated systems in cafeteria areas. Introduces the information and skills needed to troubleshoot and repair zones, ductless, and variable refrigerant flow systems. Introduces hot water heating systems, focusing on safe operation of the low-pressure boilers and piping systems.	

Element/Course: Air Quality, Steam Systems and Troubleshooting – year 3	Planned Hours: 50
Mode of Instruction (check all that apply) ☐ Classroom ☐ Lab ☒ Online ☒ Self-Study Provided by: Boeing	
Description of element/course: Defines the issues associated with indoor air quality and its effect on the health and comfort of building occupants. Provides guidelines for performing an IAQ survey and covers the equipment and methods used to monitor and control indoor air quality. Learn the use of steam for storing and moving energy in HVAC systems. Review the fundamentals of water that relate to steam and basic steam system cycle, operational components-steam boilers and their accessories and controls, steam system loads, including heat exchangers/converters, and terminal devices. Steam system valves and piping are covered in detail, including common types of piping arrangements, the components of a condensate return/feedwater system; steam and condensate pipe sizing; and pressure-reducing valves and thermostatic valves. Covers information and skills needed to troubleshoot gas-fired furnaces and boilers. Covers relevant information and skills needed to troubleshoot various air treatment accessories used with heating and cooling equipment.	

Element/Course: Hydronic Systems, Water Treatment, Startup/Shutdown - year-4	Planned Hours: 50
Mode of Instruction (check all that apply) ☐ Classroom ☐ Lab ☒ Online ☒ Self-Study Provided by: Boeing	
Description of element/course: Reviews basic properties of water and describes how water pressure is related to the movement of water through piping systems. Describes various types and components of commercial hot-water heating and chilled-water cooling systems and examines how those systems function. Explains water problems encountered in heating and cooling systems and identifies water treatment methods and equipment. Covers basic water testing procedures and chemistry. Explains how computers and microprocessors are used to manage zoned HVAC systems. Provides coverage of various network protocols and systems controllers and introduces trainees to the various means of connection and system interface. Presents the procedures for the startup and shutdown of hot water, steam heating, chilled water, and air handling systems. Also covers the start-up and shutdown of typical cooling towers and packaged HVAC units. The procedures for both short- and long-term shutdowns are included.	

Element/Course: Industrial Refrigeration and Troubleshooting Cooling – year 4	Planned Hours: 50
Mode of Instruction (check all that apply) ☐ Classroom ☐ Lab ☒ Online ☒ Self-Study Provided by: Boeing	
Description of element/course: Expands on the study of product and process refrigeration equipment by describing systems used in cold storage and food processing applications, as well as transportation refrigeration. Various types of defrost systems are covered in detail Provides guidance related to troubleshooting cooling systems. Describes alternative devices used to reduce energy consumption, including wood, coal, and pellet-fired systems, waste-oil heaters, geothermal heat pumps, solar heating, in-floor radiant heating, and direct-fired makeup units. Also introduces application-specific computer room environmental and air turnover systems.	

Element/Course: System Designs, Drawings and Specifications- year-4	Planned Hours: 50
Mode of Instruction (check all that apply) ☐ Classroom ☐ Lab ☒ Online ☒ Self-Study Provided by: Boeing	
Description of element/course: Teaches how to interpret drawings used in commercial construction, including mechanical drawings, specifications, shop drawings, and as-builts. Explains how to perform takeoff procedures for equipment, fittings, ductwork, and other components. Identify factors that affect heating and cooling loads. Explains the process by which heating and cooling loads are calculated, and how load calculations are used in the selection of heating and cooling equipment. Covers basic types of duct systems and their selection, sizing, and installation requirements. Covers air properties and gas laws, as well as the use of psychrometric charts. Describe the tools, instruments, and procedures used to balance an air distribution system.	

Additional Training Providers (if necessary)

Click or tap here to enter text.	
Print Name Training Provider	Signature of Training Provider
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