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Rev 3/11/24 AN Received 03/01/2024 by SP/Vanc	Teri Gardner 3-13-24 Teri Gardner 3-1-24
L&I Apprenticeship Consultant	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: **King County Metro Transit Joint Apprenticeship Committee #2181**

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 3/1/2024	☐ Secretary	Date
Print Name: Troika Braswell		Print Name:	
Signature: Troika Braswell		Signature:	

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

Attach additional sheets if necessary

Occupational Objective(s):	SOC#	Term [WAC 296-05-015]
BUILDING OPERATING ENGINEER (HVAC)	**49-9021.00**	**8,000 HOURS**
MAINTENANCE PAINTER	**47-2141.00**	**6,000 HOURS**
RAIL ELECTRICAL WORKER	**49-2095.00**	**8,000 HOURS**
RAIL SIGNALS AND COMMUNICATION TECHNICIAN	**49-9097.00**	**4,000 HOURS**

Sponsor Introductory Statement (Required):

The purpose of this program is to establish an apprenticeship program, which will lead to the status of certified journey-level building operating engineer, journey-level rail electrical worker, ~~and~~ journey-level maintenance painter~~.~~, and journey-level rail signals and communication technician.

IV. TERM OF APPRENTICESHIP:

The term of the Building Operating Engineer, (BOE), apprenticeship will be 48 months or 8,000 hours. The term of the Rail Electrical Worker, (REW), apprenticeship will be 8,000 hours.
The term of the Maintenance Painter apprenticeship will be 36 months or 6,000 hours.
The term of the Rail Signals and Communication Technician apprenticeship will be 4,000 hours.

V. INITIAL PROBATIONARY PERIOD

C. The initial probationary period for the Building Operating Engineer (HVAC), Maintenance Painter and Rail Electrical Worker is the first six months or 1040 hours of the apprenticeship.

The initial probationary period for the Rail Signals and Communication Technician is 800 hours of the apprenticeship.

VI. RATIO OF APPRENTICES TO JOURNEY-LEVEL WORKERS

E.

4. Rail Signals and Communication Technician
There will not be more than (1) apprentice to every (3) journey-level worker employed in the Rail Signals and Communication Technician classification at the time of hire.

VII. APPRENTICE WAGES AND WAGE PROGRESSION:

C.

Rail Signals and Communication Technician

Step	Hour Range or competency step	Percentage of journey-level wage rate
1	**0000 - 1000 hours**	**70%**
2	**1001 – 2000 hours**	**80%**
3	**2001 – 3000 hours**	**90%**
4	**3001 – 4000 hours**	**95%**

VIII. WORK PROCESSES:

D. Rail Signal and Communication Technician **Approximate Hours**

1. Fundamental Skills .....380 hours
- **a. Rail System Safety Protocols**
- **b. Rail System Components**
- **c. Rail System Familiarization**

2. Control Panels and Cab and Wayside Signaling.....540 hours
- **a. Functions and Block Diagram Readings**
- **b. Maintain General Inspection of Control Panels**
- **c. Troubleshoot General Repair of Control Panels**
- **d. LCC Routing LRV Train Traffic**
- **e. General Inspection and Maintenance of Cab and Wayside Signaling**
- **f. General Troubleshooting and Repair of Cab and Wayside Signaling**
- **g. Microprocessor based Signal Equipment**

3. Track Circuits .....1,000 hours
- **a. Track Circuit Inspection and Maintenance**
- **b. DC Track Circuit Inspection and Maintenance**
- **c. AC/PF Track Circuit Inspection and Maintenance**
- **d. AF Track Circuit Inspection and Maintenance**
- **e. General Troubleshooting and Repair of Track Circuits**

4. Grade Crossing.....680 hours
- **a. Warning Devices and Systems**
- **b. Crossing Gates and Mechanisms**
- **c. Grade Crossing Inspections and Maintenance**
- **d. General Troubleshooting and Repair of Grade Crossing**

5. Switches and Derails .....1,000 hours
- **a. Overview and System Familiarization**

b. Inspection, Maintenance, and Troubleshooting of Switches and Derails
c. Electro – Hydraulic Switch Inspection and Maintenance, Troubleshooting and Repair

6. Interlocking.....400 hours
a. Interlocking and Relay Logic
b. Theory of Operations and Print Reading
c. General Troubleshooting and Repair of Interlockings

Total Hours: 4,000

IX. RELATED/SUPPLEMENTAL INSTRUCTION:

A.

(X) Other (specify)**: Classes approved by the King County Metro Transit Joint Apprenticeship Committee, Signal Training Solutions**

B. **(See Below)** Minimum RSI hours per year defined per the following [see WAC 296-05-015(6)]:

1. **Building Operating Engineer: minimum of 201 hours per year.**
2. **Rail Electric Worker: minimum of 242 hours per year.**
3. **Maintenance Painter: minimum of 150 hours per year.**
4. **Rail Signals and Communication Technician: minimum of 144 hours per year**

(**X**) Twelve-month period from date of registration.*
Rail Electrical Worker, ~~and~~ Maintenance Painter, and Rail Signals and Communication Technician
(**X**) Defined twelve-month school year: **(September)** through **(June)**.
Building Operating Engineer
( ) Two-thousand hours of on the job training.

X. ADMINISTRATIVE/DISCIPLINARY PROCEDURES:

A.3.a.

3) Rail Signals and Communication Technician Apprentice

a) Apprentices will work with the Chief, Lead, and Apprenticeship Coordinator to ensure that apprentices are meeting their learning objectives outlined in these standards and in the Rail Signals and Communication Technician Apprenticeship Program Manual.

b) Apprentices will be required to take employer provided courses on all subjects as determined by the KCMT Wayside Apprenticeship Subcommittee.

c) Apprentices will be required to log on-the-job hours for each area of hands-on work as outlined in the Rail Signals and Communication Technician Apprentice Program Manual. The Apprentice Program Manual and Hours Log shall be available from the Apprenticeship Coordinator.

d) Complaints shall be brought to any KCMT Wayside Apprenticeship Subcommittee member who will attempt to resolve the complaint immediately. However, the KCMT Apprenticeship Subcommittee member shall report all complaints to the KCMT Apprenticeship Subcommittee at the next meeting, whether resolved or not.

B.

3. Sponsor Disciplinary Procedures:

a. Building Operating Engineer Apprentice ~~and~~, Maintenance Painter Apprentice, Rail Electrical Worker Apprentice and Rail Signals and Communication Technician Apprentice [ref. CBA and MOA between Metro Transit Department and ATU Local 587] ~~and Mainiker Apprentice [ref. CBA and MOA between Metro Transit Department and ATU Local 587].~~

XII. SUBCOMMITTEE:

~~Rail Electrical Worker~~ Wayside Apprenticeship Subcommittee

a. The employer representatives shall be:

Jerome Carini, Secretary
Traction Power Superintendent
3407 Airport Way S.
Seattle, WA 98134

Nick Keolker
Signals Superintendent
3407 Airport Way S.
Seattle, WA 98134

Raul Rico
Traction Power Superintendent
3407 Airport Way S.
Seattle, WA 98134

James Sanderson
Signals Chief
3407 Airport Way S.
Seattle, WA 98134

Allison Maynard, Alternate
Signals Chief
3407 Airport Way S.
Seattle, WA 98134

Kevin Gumke, Alternate
Rail Training Superintendent
3407 Airport Way S.
Seattle, WA 98134

b. The employee representatives shall be:

Pavel Starikov, Chair
IBEW 77 REW Representative
3407 Airport Way S.
Seattle, WA 98134

Ian Tromble
ATU 587 Signals Representative
3407 Airport Way S.
Seattle, WA 98134

Matt Gains, Alternate
IBEW 77 Representative
19415 International Blvd
SeaTac, WA 98188

Jeremy Thomas
ATU 587 Signals Representative
3407 Airport Way S.
Seattle, WA 98134

Jeff Gansz, Alternate
IBEW 77 Representative
19415 International Blvd
SeaTac, WA 98188

Brett Nation
ATU 587 Signals Representative
3407 Airport Way S.
Seattle, WA 98134

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L&I Apprenticeship Consultant	L&I Admin

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

Apprenticeship Related/Supplemental Instruction (RSI) Plan Review

Program Name	
King County Metro Transit Joint Apprenticeship Committee #2181	
Occupation	
Rail Signals and Communication Technician	
Term/OJT Hours	Total RSI Hours
4000	288
Training Provider	
Signal Training Solutions	

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 2/7/2024	☐ Secretary	Date
Print Name: Troika Braswell		Print Name: Troika Braswell	
Signature: Troika Braswell		Signature:	

Training Provider Signature

Approved By (Print Name): Caleb Srp	Title: Manager of Technical Training
Signature of the Training Provider:	
Date: 03/01/24	

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	Occupational Objective
King County Metro Transit Joint Apprenticeship Committee #2181	Rail Signals and Communication 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: Introduction and Preliminaries – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Progression of signaling; fundamentals of signals. – Lab Activities: Symbols and nomenclature	

Element/Course: Signal Test Equipment and Basic Electricity – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Review of basic electricity, energy distribution, batteries, and charging equipment. Lab Activities: Basic Electricity trainer and Batteries and Configurations.	

Element/Course: Relay Logic- Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Relay logic training that involves using electrical relays as switches in electrical circuits to control the flow of electricity.	

Element/Course: Track Circuits Bonding, Grounding, and Surge Protection – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Track circuit electrical circuit training understanding the use to detect the presence or absence of a train on a section of railway track. Safety features that help prevent collisions by ensuring that trains are not allowed to enter a section of track that is already occupied by another train; Bonding, grounding, and surge protection. Lab Activities Track circuit simulators.	

Element/Course: Introduction to Automatic Block Signal Systems (ABS) – Year 1	Planned Hours: 16
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Introduction to Automatic Block Signal Systems and understanding the safe and efficient method of train control. These systems are designed to automatically detect the presence of a train in a block and provide	

information to the train operator. By using Automatic Block Signal Systems, train traffic can be efficiently managed and the risk of collisions and other accidents can be greatly reduced. Lab Activities: ABS Simulators

Element/Course: Introduction to Traffic Control Systems and Switch Circuit Controllers – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Introduction to traffic control systems and Switch Circuit Controllers. Learning about the basic working principles of these systems, their components, and their uses; understanding of how these systems work and how they help in managing traffic flow. Lab Activities: Switch Circuit Controllers	

Element/Course: Introduction to Electric Switch Locks – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Introduction to Electric switch locks mechanism designed to secure electrical devices, switch or lever that controls the electrical device, preventing it from being turned on or off. Lab Activities: Electric Switch Locks.	

Element/Course: Introduction to Power-Operated Switch Machines – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Introduction to Power-Operated Switch Machines	

Element/Course: Automatic Block Signal Systems – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: ABS Simulators	

Element/Course: Coded and Non-Coded Track Circuits – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Coded and Non-Coded Track Circuits training on the two different methods of signaling in railway tracks. Understanding both methods serve the purpose of detecting the presence of a train on a particular track section. Lab Activities: Coded Track Circuit Simulators	

Element/Course: Electric Switch Locks – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Lab Activities: Electric Locks training/Simulator	

Element/Course: Traffic Control Systems – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course:	

TCS Simulator

Element/Course: Introduction to Microprocessor – Based Controlled Interlocking –Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Description of element/course: Introduction to Microprocessor – Based Controlled Interlocking	

Element/Course: Introduction to Programmable Logic Controllers – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Introduction to Programmable Logic Controllers	

Element/Course: Power-Operated Switch Machines – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Lab Activities: POSM Simulators	

Element/Course: Introduction to Highway Grade Crossings – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Relay-Based Crossing Control Simulator	

Element/Course: Crossing Gate Mechanisms and Cross Grounding Testing – Year 1	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Gate Mechanisms and Crossing Control Simulators.	

Element/Course: Interlocking Principles – Year 2	Planned Hours: 16
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Relay-Based Systems; Locking Testing; Processor systems. Lab Activities: Interlocking Simulator	

Element/Course: Crossing Warning Systems – Year 2	Planned Hours: 24
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Principles and Methods of motion detection; Constant warning devices. Lab Activities: Crossing Simulators, Motion Detectors, Event recorders	

Element/Course: Microprocessor-Based Interlocking Controllers – Year 2	Planned Hours: 16
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Programmable Logic Controller trainers, VHLC, and ElectrologIXS VLC.	

Element/Course: Wayside Detection Systems – Year 2	Planned Hours: 8
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Training on train tracks for potential issues. Understanding of the sensors that can detect abnormalities in the track, such as cracks or breaks, as well as the condition of the train wheels and other components. Identifying and alerting maintenance crews to these issues early on using Wayside Detection Systems.	

Element/Course: Crossing Warning Systems - Year 2	Planned Hours: 40
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Program focuses on teaching the fundamentals of highway-rail grade crossing warning systems. We cover all aspects of these systems, including gate mechanics and constant warning theory, and we reinforce our training with a thorough study of FRA Part 234 - Grade Crossing Signal System Safety.	

Element/Course: Advanced Crossing Warning Systems – Year 2	Planned Hours: 40
Mode of Instruction (check all that apply) ☒ Classroom ☒ Lab ☐ Online ☐ Self-Study 50% classroom, 50% lab Provided by: Signal Training Solutions	
Advanced Crossing Warning Systems Training Program examines application guidelines and typical setup procedures for crossing locations. The program also introduces the logic compiler and software elements of processor-based control equipment.	

Additional Training Providers (if necessary)

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

Signature: *Troika Braswell*

Email: tbraswell@kingcounty.gov

Apprenticeship Related/Supplement Instruction (RSI) Plan Review (F100-520-000)

Final Audit Report 2024-03-01

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