On-the-Job Training Standards
For
Grade Crossing Safety Maintenance Personnel

March 30, 2023

Foreword

The OJT tasks identified below assumes a continuous and ongoing positive conversation between the designated instructor / qualified person and trainee. It means enough opportunity for conversational feedback before, during, and after any task is undertaken. The purpose of this conversation is to ensure learning transfer occurs. Depending on task complexity and learner skill level, most adults gain mastery of new skills through practice and repetition. OJT standards provide the basis for measuring mastery of new skills in a fair and objective manner. It is understood that many of the tasks below are presented in a manner that may suggest non-complying conditions must be present for the trainee to demonstrate proficiency. That is not the case and it is for this reason that a positive conversation between teacher and learner is encouraged throughout the OJT process.

Please also note that there is no obligation under 49 CFR Part 243 for employers to train safety-related railroad employees on skills they will never apply in connection with their duties. For example, if an employee will not be required to perform duties in passenger service, no training on those tasks is required.

On-the-Job Training Roles and Responsibilities – Example Template

1. The **designated instructor** serves as the overall coordinator of the specific OJT program and is primarily responsible for:

    - Acting as the principal point of contact for the process, and ensuring the process is properly implemented.

    - Ensuring that all trainees and qualified persons involved in the OJT process have received hard copies of the OJT program or electronic copies of the checklist.

    - Providing guidance to both the trainee and qualified person in the process once they have received the OJT program.

    - Ensuring that trainees have access to all the supporting publications listed in this OJT program.

    - Ensuring the trainee has successfully completed all safety-related tasks to become a qualified member of an occupational category or subcategory.

2. The **qualified person** (sometimes referred to as a peer trainer) may serve as the mentor/coach for trainees. The qualified person must be qualified and has a duty to communicate with the trainees to ensure OJT is properly administered throughout the process. The qualified person will also provide daily briefings at the beginning and end of each day regarding the specific tasks focused on during that day. The trainee may perform OJT under the direct onsite observation of any qualified person, provided the qualified person has been advised of the circumstances and is capable of intervening if an unsafe act or noncompliance with Federal railroad safety laws, regulations, or orders is observed. **However, the trainee must demonstrate OJT proficiency to the satisfaction of the designated instructor to become a qualified member of an occupational category or subcategory.** A designated instructor and qualified person can be the same person.

3. The **trainee** (new hire) has the responsibility to pay close attention to the qualified person providing OJT, and to take advantage of the knowledge and experience he or she has to offer. Tracking progress of the OJT is essential and is the trainee's responsibility. Trainees should be aware of, and abide by, the following:

    - The designated instructor and/or qualified person will provide practical information and advice on the requirements and responsibilities of assigned duties.

    - Trainees are responsible for completing any narrative and self-study assignments outside the scope of this OJT program. Additional assignments are an integral part of the training experience and must be completed before being deemed qualified by the employer.

    - To gain the maximum benefit from the OJT experience, trainees should:

        - Remain alert and involved in the training activities.

- Ask questions and learn from feedback.
- Take notes and apply previous lessons.
- Complete all required assignments.
- Become familiar with and comply with FRA regulations, railroad safety rules, and other procedures mandated as a condition of employment by the employer.
- Develop and maintain a learning attitude.

- The OJT experience is designed to be much more than following a qualified person around and watching what he or she does. Trainees must take an active role in the OJT and thoroughly engage in the various job tasks outlined in this OJT program.

- Expect the qualified person to say, "Here, you give it a try." Remember, while progressing through the OJT program, trainees can learn skills, to develop knowledge, and to adopt work habits and routines that will last throughout a railroad career.

- Tracking and documenting OJT progress is an essential process step.

Guidelines for On-the-Job Training Program Coordination and Administration

In most cases, the first week or so of employment will involve administrative details and an overall orientation. Although it is understood that a trainee's duties may overlap with other organizational requirements, each day of OJT should focus on one of the major duties of the OJT program to the extent possible. Once the tasks have been selected, there should be both an initial briefing on the tasks to be completed at the beginning and end of each day.

- The purpose of the debriefing is to go through the day's activities, and to focus on each of the tasks associated with the task selected.

- There is no required sequential order for completing the OJT associated with any task, and no attempt is made to prioritize any tasks. Although OJT should be focused on a task, it is anticipated that the task standards will be accomplished based on available training opportunities.

Important Note: Although OJT is a critical aspect of 49 CFR Part 243, FRA will consider, on a case by case basis, alternate approaches to OJT in lieu of the traditional approach (*see 49 CFR § 243.5- On-the-job training*). For example, some employers or training organizations may have access to state of the art indoor/outdoor training facilities that permit students to practice tasks that require neuromuscular coordination to learn in a controlled environment with minimal or no risk of personal injury. Other approaches may include; classroom practical exercises, role play, lab simulation, virtual reality (VR), and other emerging technologies. While FRA does encourage alternate approaches to OJT to lessen the risk of personal injury exposure to students, enough detail must be included in the submission and satisfy the regulatory requirements of 49 CFR § 243.101(d) (1-3).

Task 1: Apply 49 CFR Part 234, Subpart D, Maintenance, Inspection, and Testing		
Performance **Tasks**	**Conditions** **Tools, Equipment, Documents, Practice**	**Standards** **Time, Completeness, or Accuracy**
Task 1-1: Ground tests (234.249) Test for and detect circuit grounds.	Given a VOM meter, and the applicable circuit plan, the employee must be able to demonstrate the ability to: Reference: 49 CFR §§ 234.213 and 234.103.	Determine which circuits affect the proper function of the warning system. Detect any circuit ground or combination of grounds that permit a current flow of 75 percent or more of the release value of any relay or electromagnet device in the circuit. Troubleshoot, locate, and eliminate the ground or grounds. Alternatively, if the ground(s) cannot be eliminated or reduced to less than 75 percent of the release value of any relay or electromagnet device in the circuit, take appropriate action(s) to warn highway traffic and railroad employees. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.
Task 1-2: Standby power (234.251) Test standby power system for proper function and capacity.	Given a highway-rail grade crossing warning system circuit plan, an accurate timing device, and a VOM , hydrometer, or a peak hold meter the employee must be able to demonstrate the ability to: Reference: 49 CFR § 234.215.	Determine if the standby power system provides sufficient capacity to operate the warning system for the time that is specified on the location circuit plans. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.

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Task 1-3: Flashing light units and lamp voltage (234.253) Test and inspect flashing light units and lamp voltage.	Given a VOM, an accurate timing device, and appropriate hand tools, the employee must be able to demonstrate the ability to: This standard must be successfully completed on at least three warning systems. If three systems are not available, the task must be completed three times on the same warning system on three different inspections. Reference: 49 CFR §§ 234.217 and 234.221.	Determine if each flashing light unit is positioned and aligned properly and visible to highway users approaching the crossing. Determine that each flashing light unit is sealed properly to prevent dust and moisture from entering the unit. Determine that all light units flash alternately at a rate between 35 and 65 flashes per minute. Determine that the voltage to each lamp is maintained at not less than 85 percent of the rated voltage for each incandescent lamp or LED. Clean lenses as needed. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.

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Task 1-4: Gate arm and gate mechanism (234.255) Test each gate arm and gate mechanism.	Given an accurate watch or other timing device and necessary hand tools, the employee must be able to demonstrate the ability to: This standard must be successfully completed on at least three warning systems. If three systems are not available, the task must be completed three times on the same warning system on three different inspections. Reference: 49 CFR § 234.223.	Determine that each gate arm extends across each lane of approaching highway traffic. Ensure that the gate arm is maintained in a condition sufficient to be clearly seen by an approaching motorist or pedestrian. Determine that the gate arm starts downward movement after a delay of at least 3 seconds of the activation of the warning system. Ensure that the gate arm is in its full horizontal position no less than 5 seconds before the arrival of a normal train movement. Determine the proper function of each gate mechanism's hold clear device. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.

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Task 1-5: Warning system operation (234.257) Operationally test the highway-rail grade crossing system.	Given an accurate watch or other timing device and a .06 ohm shunt, the employee must be able to demonstrate the ability to: Reference: 49 CFR §§ 234.105, 234.227, and 234.229.	Confirm that each direct current (DC), alternating current (AC), and electronic track circuit within the system detects the presents of a .06 ohm shunt across the rails. Determine if sand, rust, dirt, grease, or other foreign matter is preventing effective train detection and take appropriate action to ensure the safety of motorist and pedestrians. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.
Task 1-6: Warning time (234.259) Operationally confirm the warning time of the highway-rail grade crossing system.	Given a watch or other accurate timing device, the employee must be able to demonstrate the ability to: Reference: 49 CFR § 234.225.	Determine that the warning system activates no less than 20 seconds before the crossing is occupied by rail traffic. This can be accomplished by observation, calculation, or shunt simulation. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.

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Task 1-7: Highway traffic signal pre-emption (234.261) Operationally confirm the proper operation of any highway traffic signal pre-emption interconnections.	Given the appropriate circuit plans, the employee must be able to demonstrate the ability to:	Determine that the appropriate output is being provided to the highway traffic signal systems. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.

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Task 1-8: Relays (234.263) Test relays for proper operation.	Given the appropriate relay test device and the appropriate manufacturer's design specification and condemning limits, the employee must be able to demonstrate the ability to: **Note:** This test is required: Every 4 years for DC relays, Every 2 years for AC relays, and Every year for AC centrifugal relays. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task. Reference: 49 CFR § 234.247.	Test at least 6 DC relays to ensure that they are operating within the manufacturer's design parameters (if applicable). Test at least 6 AC vane-type relays to ensure that they are operating within the manufacturer's design parameters (if applicable). Test at least 6 AC centrifugal relays to ensure that they are operating within the manufacturer's design parameters (if applicable). If a relay fails to function in accordance with the manufacturer's design parameters, remove the device from service. The employee should observe the relay for improperly installed or burnt ribbons and contacts, moisture, or foreign materials within the relay. The employee must complete this task with 100-percent accuracy.

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Task 1-9: Timing relays and timing devices (234.265) Test timing relays and timing devices.	Given a watch or other accurate timing device, the employee must be able to demonstrate the ability to: This standard must be successfully completed on at least three warning systems. If three systems are not available, the task must be completed three times on the same warning system on three different inspections. Reference: 49 CFR § 234.247.	Determine that timing relays and timing devices are maintained such that the timed intervals are no less than 90 percent and not more than 110 percent of the value as indicated on the circuit plans. If the timing relay or timing device fails to function as intended, make the necessary adjustment, repair, replacement, or other action to ensure the safety of motorists and pedestrians. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.

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Task 1-10: Insulation resistance tests, wires in trunking and cables (234.267) Test insulation resistance of wires in trunking and cables.	Given a megohmmeter or other high-voltage resistance-checking device, the employee must be able to demonstrate the ability to: **Note:** This test is required every 10 years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.	Determine if wires, cables, and insulation are dry. Determine the insulation resistance value of at least 10 conductors, between each other and between each conductor and the ground. Take action to repair or replace any wire or cable with resistance between any wires or between any wires and the ground is less than 500,000 ohms. Immediately remove from service any wire or cable with insulation resistance between wires or between any wire and the ground is less than 200,000 ohms. If the trunking or cable fails to function as required above, make the necessary repair or replacement, or take action as required by 49 CFR § 234.247. This task must be successfully completed on at least two (2) trunkings or two (2) multiconductor cables. The employee must complete this task with 100-percent accuracy.

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Task 1-11: Cut-out circuits (234.269) Operationally test each cut-out circuit.	Given a highway-rail grade crossing warning system, the appropriate circuit plan, and a switch obstruction gauge (if necessary) the employee must be able to: This standard must be successfully completed on at least three warning systems. If three systems are not available, the task must be completed three times on the same warning system on three different inspections. Reference: 49 CFR § 234.237.	Determine that each cut-out circuit is functioning as intended. If the cut-out circuit is used to detect a reversed switch, it must only cut out the warning system when the switch point is within one-half inch of the full reverse position. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.

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Task 1-12 Insulted rail joints, bond wires, and track connections (234.271) Ensure the physical integrity and functionality of insulated rail joints, bond connections, and track connections.	Given a highway-rail grade crossing warning system installation and the appropriate circuit plans, the employee must be able to: This standard must be successfully completed on at least three warning systems. If three systems are not available, the task must be completed three times on the same warning system on three different inspections. Reference: 49 CFR §§§ 234.231, 234.233, and 234.235.	Inspect the highway-rail grade crossing warning to ensure that all fouling wires consist of two discrete conductors and that each conductor is of sufficient conductivity to ensure proper operation of the warning system when the train detection circuit is shunted. Inspect the highway-rail grade crossing warning to ensure that each non-insulated rail joint in the train detection circuit is bonded and maintained in such condition as to ensure conductivity. Inspect and/or test all insulated joints in the warning system to ensure that no current is flowing between rails separated by the insulated joint sufficient to interfere with the proper function of the warning system. The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.