TCRP E-07 Establishing a National Transit Industry Rail Vehicle Technician Qualification Program: Building for Success

Appendixes E to P

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Appendix E: Learning by Doing: Hands-On Training for Transportation Technicians

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Learning by Doing

Hands-On Training for Transportation Technicians

JOHN SCHIAVONE, TRANSPORTATION LEARNING CENTER

DR. ROBERT GLOVER, UNIVERSITY OF TEXAS AT AUSTIN

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Introduction

More than twenty-four centuries ago, Aristotle observed: *What we learn to do, we learn by doing* (adapted from Aristotle, 350 BC). Yet traditional learning today consists of sitting students in a classroom and having an instructor lecture them.
But is this approach appropriate for teaching technicians the advanced skills needed to maintain and repair today's highly sophisticated transit equipment? For many, the answer is a resounding "no" regardless of the subject being taught. John Dewey, progressive American philosopher, psychologist, and educational reformer, questioned the traditional approach of "learning by passive absorption" in his 1916 book entitled *Democracy and Education*:

> Why is it that … learning by passive absorption … [is] still so entrenched in practice? That education is not an affair of "telling" and being told, but an active constructive process, is a principle almost as generally violated in practice as conceded in theory. Is not this deplorable situation due to the fact that the doctrine is itself merely told? But its enactment in practice requires that the school environment be equipped with agencies for doing ... to an extent rarely attained." (p. 46)

During the 90 plus years since Dewey made these remarks, many have advocated "learning by doing" methods over traditional teaching approaches. In reality, the process is not fully utilized despite research that strongly suggests those being trained in technical trades acquire knowledge and skills best by doing or through practice. One book title puts it succinctly: *Telling Ain't Training* (Stolovitch and Keeps, 2001).

In fact, many of today's baby-boomer technicians now retiring in droves began their careers without first receiving any formal training, learning by being thrown into the fire so to speak and receiving informal "training as you go" provided by fellow workers, many of whom lacked essential skills themselves. Vehicles and technologies were much simpler then, and some basic knowledge and skills were acquired as teenagers by working on rudimentary automobiles of the 1950s, 60s and early 70s.

The technology landscape is far different today. Transit buses and trains are controlled by electronics that surpass those found in spacecraft when baby boomers first began working as mechanics. Yesterday's mechanics are now technicians using laptop computers to program and diagnose equipment, and apply highly specialized tools and procedures to maintain and repair mechanical, hydraulic, pneumatic and chemical equipment that simply did not exist even 10 years ago.

Today, formal training is absolutely essential to produce technicians capable of providing safe, efficient and cost-effective transport services. The consequences of jeopardizing passenger and public safety are just too great to turn inexperienced workers loose on advanced transit vehicles without proper training, hoping they will learn "as they go." The question becomes how best to construct an effective training program. This paper examines the subject of technical training and advocates "learning by doing" as an essential element to acquiring needed technical knowledge and skills. It stands to reason that someone attracted to becoming a technician is interested in working with his or her hands. Training, therefore, should make use of that natural inclination and engage students in hands-on activities throughout the entire learning process.

Learning: An Overview

Over the past century, research has generated new conceptions of learning. The National Research Council has commissioned a series of publications summarizing what is known about learning and enhancing human performance based on evidence (See Druckman and Boark 1991, and Bransford, Brown and Cocking. 1999). In addition, the subject of expertise and its acquisition has been much researched (Ericsson et al, 2006). The American Society for Training and Development (ASTD) and others have published numerous books providing practical guidance on training to build expertise (see, for example, Stolovitch and Keeps, 2001; Clark, 2008).

How people learn is a complex subject and numerous theories have been developed through the years. Each approach has advantages and disadvantages, and implies different roles for learners and facilitators of learning (Rothwell 2009). Most agree that to be effective, the design of instruction must fit the needs of the learners and the aim of the training. Individuals vary in their approaches, strategies, and preferences during learning activities.

Training needs to take account of learners' characteristics, learning preferences, and foundation knowledge, as well as the training content and instructional goals. Teachers need to adapt instructional methods most appropriate for the experience level of their learners and for the job performance outcomes required. In short, there is no one best way to conduct training for everyone. Nevertheless, research findings point to approaches and principles that can be helpful in designing and implementing training especially for maintenance technicians, whose job requirements tend to be largely tactile which favors a hands-on approach to training.

A traditional model of classroom education which many of us have experienced, involves a lecture-based delivery method where a professor/instructor who has been deemed a subject matter expert speaks at length on the theory and application of the course content. Interaction is kept to a minimum to minimize opportunities for potential disruption of the instructor/professor's narrative and to allow the greatest chance for students to take in the knowledge through listening and/or taking notes. In his seminal work, *Pedagogy of the Oppressed*, published in 1970, Brazilian educator Paulo Friere, aptly labeled this approach to education as the "banking concept of education" (Friere, 1993). With this approach, knowledge is seen as a gift given by those who consider themselves knowledgeable to those who are considered to know nothing.

Friere goes on to describe how this approach teaches students to be passive observers in the workplace and society. Problems can result when employees are trained in this method when viewed by both a labor and management perspective (Friere, 1993, chp. 2). From a labor perspective, people taught to be passive will be less willing to take action to improve their work conditions. From a management perspective, passive employees tend to be less willing to demonstrate creative problem solving or to take on the challenges of new technology.

Research indicates that a learner-centered approach – which focuses on providing the maximum opportunity for students to interact with each other, the content and the instructor – is the most successful at producing an effective transfer of learning from the classroom to

the jobsite. Recent studies have demonstrated that methods that focus on problem-solving such as guided discovery methods where the students are given a problem to work out with the instructor serving as a guide to lead in the right direction without providing them the answers, is an effective way to build motivation, confidence and skills in the students. Other recommendations include providing students with the opportunities to work with and learn from one another, and using a variety of instructional strategies including small group tutorials, peer tutoring, and computer-based material. To be effective, employee training should also reflect the actual work tasks and conditions that the students will be asked to perform in post-training (Merriam and Leahy, 2005).

Too often, technical training is taught in a detached way, in which students learn formal scientific laws that define the domain but not their context of use (Gott and Lesgold, 2000). For example, in electrical systems, the series of laws that describe the fundamental relations among voltage, current, and resistance in a circuit (i.e., Ohm's Law and Kirchoff's Laws) are in many cases taught as detached pieces of declarative knowledge to be learned and then regurgitated on a test. Rarely does instruction take the next step and provide the student with learning experiences where, for example, resistance can be manipulated in a circuit to demonstrate how the law works in practice.

Contextual Learning

Learning involves interaction between short-term and long-term memory where limited "chunks" of information presented during instruction as short term memory becomes integrated with existing knowledge already encoded into long-term memory. Information presented during training needs to contribute to something the learner can use to build on. In other words, adult learners want to know, "What's in this for me, why do I need to learn this?" Providing a reason and a context for the instruction helps motivate the student to learn the required knowledge and skills.

Contextual learning occurs when students connect information in such a way that it makes sense to them in their frame of reference (their own inner world of memory, experience, and response). Contextual learning allows students to carry out activities and solve problems in a way that reflects what they'll be doing in the real world. Hands-on training exercises reinforce contextual learning because students are able to take what they've learned and apply it to jobs for which they are being trained. An abstract description of how an internal combustion engine works, for example, becomes more understandable when students can then follow-up by interacting with real pistons, cylinders and crankshafts.

Clarification of Terms

There are several terms associated with training. Simply put, *learning* is a process of gaining knowledge and skills or expertise (Knowles et al, 2005, p. 17). *Knowledge* refers to cognitive competence and information assimilation (e.g., understanding how an electro-mechanical relay functions). *Skill development* involves gaining psychomotor competence (e.g., being able to replace or rewire a relay). *Performance* is implementing the knowledge and skills that have been gained (e.g., being able to diagnose a faulty relay).

Procedural knowledge is knowing how to execute the procedures necessary to perform a given task. Procedural knowledge underlies cognitive and motor skills (many of them

automated), such as how to use a typewriter by touch, operate a computer, disassemble and reassemble a rifle, drive an automobile, ride a bicycle, or play a game (Druckman and Boark 1991, p. 24).

Skills are acquired mainly by doing or practice and are not learned quickly. Using the example above, learning the fundamentals of how an electro-mechanical relay functions can be taught through lecture; however, by applying electrical current to an actual relay and physically observing electrical connections being made and broken, the learner is better prepared to replace a relay and later diagnose relay related failures. Using lecture alone to progress students through the various levels of learning, skill development and performance is difficult, if not impossible, regardless of how skilled or talented the lecturer may be. Classroom instruction simply cannot teach a technician how much force is required to remove a fastener securing a relay, the feel of removing an electrical connector or relay cover, or how to repair a wire connector if it comes apart while replacing a relay. These tasks are only learned by doing. It goes unquestioned that to become a skillful baseball player you need to practice catching and hitting. Similarly, to become a skillful technician you need to perform the real world tasks of replacing relays, starters, alternators, etc.

Retention of skills, or the lack thereof, is typically measured by the extent to which they can be performed, rather than by the extent to which they can be recalled. In fact, at high levels of skill, where many of the procedural components of a skill become automatic or unconscious, people often become unable to describe in any detail what procedures they are carrying out and in what order (Druckman and Boark, 1991, p. 24). This “automaticity” expands the ability of experts to perform and learn, but commonly makes it difficult for them to teach their skills to novices, or to perform well on written tests. This phenomenon helps to explain why some expert technicians have failed pen-and-paper certification tests recently developed for transit bus technicians.

The major goal of any training program is to prepare students to perform effectively on post-training tasks in a real-world setting. Learning with actual equipment in a hands-on setting better prepares students for the tasks that await them. When confronted with a faulty relay, for example, the student who received classroom lecture training and successfully memorized terminal markings for a particular relay may become disoriented when a different brand relay has other markings. The student who learned by doing, however, is more likely to have the ability to remove the relay cover and identify functions of the various terminal connections regardless of vendor markings.

Motivation: The Beginning Point of Learning.

Learner motivation is critically important. Studies show that if learners do not value the new content being taught, there is little hope for retention or transfer to the workplace. As Malcolm Knowles emphasized, adults learn best when convinced of the need for knowing the information (1990).

Relevance is an essential motivator; learners are motivated when they can see the usefulness of what they are learning and can respond to the adage, “What’s in this for me?” The answer may not always be clear in a classroom setting where lecture often comes across as abstract and foreign, thereby causing students to lose interest and daydream about other things. Conversely, contextual learning that engages students through visual

and hands-on exercises tends to encourage the learning process. Learning how a turbocharger works becomes more relevant when students can see a cut-away or one installed on an engine and visualize the path of air and exhaust traveling through it.

Another way to instill relevance to stimulate learning is by building a "mental scaffold" to prepare learners for new instruction. A simple graphic showing how the parts of instruction are related to the whole provides learners with a roadmap by which to navigate through a large amount of material. This is especially useful for novice learners who have little previous knowledge of the subject. Continuing with the turbocharger example, a graphic of wind causing blades of a windmill to turn will help students understand how engine exhaust gases move the blades of a turbocharger in similar fashion. Likewise, a cut-away of an actual engine or representative drawing can effectively illustrate how the up-down motion of engine pistons converts power to the crankshaft and then the flywheel.

The act of creating a basic framework for the learner at the beginning of instruction is a way to focus the learner and to introduce content. The organization of knowledge should be an essential concern so that the direction from simple to complex is not from arbitrary, meaningless parts to meaningful wholes, but instead from simplified wholes to more complex wholes (Knowles, 1988). Organization of knowledge in the beginning stages of instruction also serves the even larger purpose of memory retention and retrieval upon completion of instruction.

As stated earlier with regard to contextual learning, people simply learn better when they can build on what they already understand. Activating *prior knowledge* in the long-term memory relevant to the new content will optimize the integration process underlying learning (Clark, 2008, p. 55).

Another way to build motivation before students even begin the learning process is to use recruiting efforts to present public transit as offering high-tech opportunities and as a positive force in society to improve the environment and reduce traffic congestion, in addition to providing essential transportation services. Just as some students are drawn to being mechanics through an interest in motor racing, others with more altruistic values, and a desire to compete in high-tech fields can be drawn to a career in transit maintenance.

Non-Sequential Learning

Learning can take place sequentially or non-sequentially. When sequential learning is enforced, students receive training in a specified order and cannot advance to the next module without having completed the previous one. However, altering training from its traditional sequence of presentation can be more effective in certain cases, allowing greater flexibility to present material in an order that best achieves the desired result.

For example, it may be beneficial to provide a brief overview of theory to introduce a complex topic, and then return to provide more detailed theory after some practical experience has been gained. Multiplexing is a relatively new technology that reduces the amount of electrical wiring in vehicles and allows electrical faults to be more easily diagnosed. It also allows control functions to be programmed without adding new wiring and switches, such as making the headlights go on automatically when windshield wipers are deployed. A traditional sequential approach to multiplex training would be to provide

detailed theory upfront describing the intricacies of data networking, ladder logic, and the sophisticated electronic processing that takes place within the multiplexing system.

Using a non-sequential approach, a minimal amount of theoretical instruction on multiplexing would only be provided in introductory terms, followed immediately by hands-on instruction where students review the operation of multiplexing installed on a training mock-up board or on a vehicle. Here students will see what the multiplexing control modules look like, how and where they're installed, the data cabling that connects the various system modules, and the built-in troubleshooting lights that indicate whether a circuit is functioning or not. Once the student has placed basic theoretical information in context, then the instructor can go back and provide more detailed theoretical information. In fact, advanced theoretical, diagnostic and programming training could take place well after the technician gains some experience working with multiplexing.

It is important to emphasize that learners can only absorb so much material at one time, and as described earlier, will lose interest if what they've learned is not relevant to real world applications. *Cognitive load* is a term that refers to the load on working memory during instruction. Because working memory capacity is limited, it's important that the attention of learners is focused on aspects related to the learning goal. This is especially true when learners are new to the content and the content is complex, as in the case with electrical and electronic applications. Trainers can maximize learning by minimizing irrelevant cognitive load and maximize productive material. Keeping cognitive load germane to the learning goal is critically important for novice learners.

To avoid cognitive overload, initial training may cover only *how* to perform a task, leaving the full explanation of *why* the task is performed that way until after the learner has accumulated some hands-on practical experience. Using the multiplexing example, technicians can be taught "how" to replace a multiplexing module after someone with more experience has diagnosed it as defective without understanding "why" it needs replacing. Doing so gives the technicians first-hand experience with handling the equipment, allowing them to see individual components in the context of a much larger system. The supervisor can then verify the installation and provide additional insight into the failure.

Trainers from the sequential school of education may have a difficult time understanding this concept, believing that learners should have full knowledge of the entire subject before being allowed to work on individual pieces of a larger system. However, technicians that start off by becoming simple parts changers are in a better position to learn the nuances of technical systems and become proficient at troubleshooting than those given countless hours of sequential classroom training with little or no contextual reference. Important exceptions include rail and hybrid bus applications where students need to thoroughly understand high voltage electrical and complex electronic aspects of equipment to prevent safety incidents.

Reinforcement through Active Learning

Once students grasp the first pieces of information, the instructor must pursue the transfer of this new knowledge from short-term memory into long-term memory. Information that is rehearsed becomes encoded for storage in the long-term memory (Gage and Berliner, 1988). Instructors can support this rehearsal by incorporating active learning (Gage and

Berliner, 1988). Active learning, in which learners take a participative role rather than a passive role, facilitates both learning and retention (Campbell, 1988; Perry and Downs, 1985). Further, learning on the job provides a context that helps assure that training will match the real-life world in which training must eventually be applied. This type of contextual learning, which many technicians and instructors understand to be the case anecdotally, is supported by the work of Jean Piaget, John Dewey, Carl Rogers, David Kolb, and others. According to John Dewey, who was quoted at the introduction to this paper, all genuine education comes through experience (1938, p. 13).

When it comes to acquiring advanced expertise in troubleshooting and dealing with unusual situations, learning by doing is the primary and most powerful method of instruction (Gott and Lesgold, 2000). The learning-by-doing instructional environment produces technicians with both accelerated and adaptive expertise, as compared to the time needed to acquire similar expertise using traditional learning methods. With these accomplishments the Gott and Lesgold study found how best to teach apprentices to prepare them for performance in high-tech, information-age workplaces.

Observation, Coaching and Practice

Traditional apprenticeship is based on a thorough integration of hands-on experience with classroom instruction. Apprenticeship, which has proven quite successful in teaching physical skills, typically involves three key components for learners who already have workplace experience:

1) the instructor performs the task while the apprentice watches (*observation)*;

2) the apprentice then attempts to perform the task with the instructor offering supervision and guidance (*coaching)*; and

3) the apprentice assumes an increasingly larger burden for performing the task (*practice)*.

Observation. During the observation phase the apprentice participates as a spectator, observing an expert executing the target skill.

Coaching. Coaching refers to the guidance that the expert provides while apprentices attempt to perform the task on their own. Coaching physical skills involves two key features. First, the coaching or feedback is given in a continuous fashion. The form of guidance provided in traditional apprenticeship is often physical demonstration, not just verbal instruction.

Second, the master or mentor provides support in the form of reminders and help necessary for the apprentice to perform an approximation of the composite task. The degree of support provided depends on the extent of help the apprentice needs. As the apprentice improves, the support can be diminished. The expert, therefore, must monitor the apprentice's “zone of proximal development” (Vygotsky, 1978). The zone of proximal development is the distance between the developmental levels at which learners can perform a task alone and the level at which they can perform it with some assistance.

Practice. As they say, “practice makes perfect.” The apprentice continues to perform tasks

with the master present pursuing the goal of making the students' performance approximate the expert's performance as closely as possible. In traditional apprenticeship, coaching is fairly constant and continuous throughout the practice period.

Expertise is acquired gradually over time, built through deliberate practice, rather than routine practice. The rationale for deliberate practice is that “effective improvement of performance requires the opportunity to find suitable challenging but attainable training tasks that the performer can master …typically monitored by a teacher or coach who provides feedback” (Ericsson, 2006, p. 692). The role of a mentor in training is an essential one. Performing technical tasks for the first time can be rewarding, especially when the fear of failure is removed because the mentor is present to point out and correct any miscues.

Having a knowledgeable mentor observe and guide the process of on-the-job training (OJT) builds the confidence needed to develop required experience and allows learners to tackle more demanding tasks. During deliberate practice, good performers concentrate on specific skills that are just beyond their current proficiency levels (Clark, 2008, p.11). Although tasks can become routine as more experience is gained, new challenges are presented when finding novel ways to do the job more efficiently or when an unexpected snag is overcome by applying creative solutions. Again, getting students involved with real world tasks quickly with oversight from a mentor or instructor is far better than doing passive seat time in a classroom. In the process of repairing and maintaining equipment, technicians often encounter unexpected problems that simply cannot be duplicated or resolved in a classroom setting.

While OJT has many positive attributes, to be effective it must be done in a structured way with clear objectives, through defined exercises and follow-up. Simply placing apprentices alongside veterans to “watch them work” is not a useful approach to OJT.

The three-step approach to training of observation, coaching and practice described above mirrors the Nine Events of Instruction identified by education researcher Robert Gagne (Gagne, 1985):

1. Gain Attention
2. Inform learners of the objective
3. Stimulate recall of prior learning
4. Present the content
5. Provide learning guidance
6. Elicit performance (practice)
7. Provide feedback
8. Assess performance
9. Enhance retention and transfer to the job

Impediments to Learning by Doing

There are two reasons why learning by doing is not our normal form of education (Schank, 1995). First, it is difficult to implement without "doing devices" – the actual equipment or fully functional simulations of it. As Dewey said: “… enactment in practice requires that the school environment be equipped with agencies for doing ... to an extent rarely attained." It is far easier to construct a classroom setting with chairs, tables and a lectern than it is to

provide interactive devices. Despite this, many in transit have purchased training modules such as component cutaways and interactive training “boards” where subcomponents that make up an entire system such as braking are placed in working condition on a display board. Not only are the devices helpful to illustrate how each individual part functions within the overall system, they can be rigged with faults to become highly effective diagnostic training tools. Students use the skills taught in class to troubleshoot and repair planted faults on these boards.

Some transit agencies that participate in maintenance “roadeos” – competitive events designed to test the abilities of bus and rail technicians – use training boards and other interactive, hands-on training equipment to prepare team members for competition. One method used to obtain this equipment is to make it part of the vehicle procurement process. Another is to take worn or defective components such as entire engines and transmissions, cutaway certain sections to gain a better view of what’s inside, and use them to illustrate function and provide assembly and disassembly experience to new learners.

In addition to hands-on training equipment, several training instructors make effective use of photographs and illustrative graphics to make technical points in class. The old adage “a picture is worth a thousand words” applies to technical training. An illustration of pedaling a bicycle where one leg exerts pressure downward while the other gets a “free ride” upwards is more effective at describing how a crankshaft and connecting rods interact in an engine than trying to do it verbally. Through the Transportation Learning Center’s courseware sharing project, many of these graphics and illustrative tools developed by instructors can be exchanged with others.

The second reason why learning by doing is not our normal form of education, according to Schank, is that educators and psychologists have not really understood why learning by doing works, and thus detest insisting upon it. They can't say exactly what it is that learning by doing teaches. And while they admit that it teaches skills needed in the real world, they are concerned about facts, committed to what they know -- the "drill-them-and-test-them" school of educational thought.

Another reason for keeping the status quo is inertia. Many transit instructors use curriculum and training approaches handed to them over time and see no need to change. However, given the complexities of today’s equipment and the findings of years of educational research, it’s time for many instructors and transit leaders to break with the past and institute learn-by-doing approaches. As baby-boomer technicians retire and other industries compete for a limited pool of replacement workers, outdated educational approaches will not help the recruitment process and leave transit short-staffed. There is a strong need for effective instructor development to assist technical instructors to move away from traditional lecture to more interactive, hands-on based instruction.

Yet another impediment to effective approaches to hands-on learning stems from a particular belief held by executives and other policy makers, many of whom succeeded in traditional college classroom settings. They assume that everyone learns in the same way as they and their college-educated peers did – by books and lectures first. It comes as no surprise, therefore, that 70 percent of the training budget in US workplaces goes to 30 percent of employees who already have a college degree.

The Case for Learning by Doing

Learning in the context real world experiences is the natural venue of learning by doing. It makes sense that the best way to teach anybody is to let them work on a job that requires the skills we are trying to teach. Natural learning occurs best when it's done on an "as needed" basis. In such learning situations motivation is never a problem, we learn because something has caused us to want to know. But classroom lecture presentations often produce little in the way of natural motivation, especially with regard to technical training. One could easily make the case that all technical instruction should be hands-on where motivation for learning is easier to achieve. For example, the case for wearing personal protective equipment (PPE) such as goggles and gloves is more convincing in a shop setting when the instructor runs a metal rod against a grinding wheel with sparks and metal pieces flying off in many directions. The motivation for using PPE on the job now becomes real. Having sample PPE in the room also allows students to gain real life experience properly fitting the equipment. All of this could be taught through lecture, but it would have been nearly as effective.

Real life learning takes place in the workplace, "on the job." The reason for this seems simple enough. Humans are natural learners and they learn from everything they do (Schank, 1995). If you want employees to learn their job, then, it stands to reason the best way is to engage them directly in the work. Doing so also gives students a true sense of what the occupation is really like. The term "technician" is a more accurate title and may sound better than "mechanic," but in reality the job of maintaining and repairing transit buses, trains and related equipment is hard and dirty work. Students not well suited to this work are better off becoming aware of this in real world settings as soon as possible, thereby giving them an out to pursue another occupation.

Students are better served by instructors who teach them to do things, rather than telling them how to do it. If you want to become an athlete, practice your sport. If you want to become a mechanic – repair and maintain equipment. Learn-by-doing methods should not, however, come at the expense of neglecting to present factual information about theory of operation, safety and other matters. However, that information is best presented in a hands-on setting where factual information is placed in context with real world tasks. In some cases, the information is also more effective when presented in non-sequential format, pulled in as needed to reinforce contextual learning.

Instructional System Development (ISD), which supports learn-by-doing methods, is a series of processes to address decisions about exactly "what, where, how and when" to teach the skills, knowledge and attitudes needed to perform every task selected for instruction (U.S. Department of the Air Force, 1993). The use of ISD can assist organizations in identifying when it is most effective to present content using sequential or non-sequential formats. Traditional chain of command organizations, including the United States Navy and Air Force, have adopted ISD to increase the effectiveness and efficiency of instruction. Through the implementation of ISD and current learning theory, the U.S. Navy has determined that lecture should be reserved for large group presentations lasting less than 30 minutes, and that the most common method of instruction is interactive. (U.S. Department of the Navy, 1992)

Learn by Doing vs. Community College

Learning that takes place in the context of worker's job or job they would like to hold is much less abstract than most college courses and is better suited to the active learning styles of many adult learners. While community colleges play important roles in education, their application to technical training has certain disadvantages when compared to OJT and hands-on training. For one, community colleges typically experience dropout rates in the 50 percent range. People who have not thrived in classrooms earlier in their educational experience are not likely to be enthusiastic about returning to a traditional classroom environment.

Additionally, earnings for workers not headed toward a four-year college degree are often higher as a result of receiving workplace-based training than those attending community college. Whereas completing an Associate's degree increases worker wages to 33 percent more than a high school graduate, a worker participating in a training program organized to focus on a specific industry sector experiences a 73 percent earnings gain. Better yet, a graduate of a joint labor-management apprenticeship program experiences an 88 percent wage gain, more than two and one half times the earnings gain from a community college degree (Transportation Learning Center, 2010).

Joint Labor-Management Partnerships

You cannot teach what you do not know (Gott and Lesgold, 2000). This principle applies in multiple ways and strongly supports the involvement of subject matter experts in every aspect of training system development. In particular, expertise from the field and the industry at large is needed to ensure the training is meaningful in the context of learning and real world problem-solving. Expert guidance is also needed to ensure coaching provided during problem-solving is truly appropriate to the specific contexts in which it is given.

In cases where transit agencies include training as part of the competitive procurement process, some vendors have been known to provide instructors that simply "read from a script" and have no direct practical experience. In other cases transit agencies hire instructors that are not fully capable of performing that role.

A sensible way to ensure that training is effective is to approach training as a joint labor management effort where both sides agree to the subjects that need to be taught and how training is best delivered. The American Public Transportation Association (APTA), the Transportation Learning Center, and major transit labor unions including the Amalgamated Transit Union (ATU) and the Transport Workers Union (TWU) have worked in partnership to develop standards that define training subjects and learning objectives.

This paper is a start in the direction of developing standards for establishing *how* those subjects are taught. Expert technicians with many years of on-the-job experience and expertise are well placed to work with management to provide valuable input into how training can be made more effective.

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Appendix F: Mentoring Guidebook

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TRANSIT MAINTENANCE MENTORING GUIDEBOOK

Transportation Learning Center
November, 2012

PURPOSE & INTRODUCTION

Mentoring provides an excellent training opportunity because it links an experienced person (mentor) with a less experienced trainee to help foster the trainee's abilities, career development, and professional growth. A structured mentoring process requires that the mentor and trainee work together in actual work settings to reach specific learning goals and to provide sufficient feedback to ensure that goals are reached. With so many highly experienced transit technicians on the verge of retiring, mentoring offers those individuals an opportunity to pass on their vast amount of experience to others. Although not all highly proficient technicians have what it takes to become mentors, there are those with right attributes to provide excellent on-the-job training in real-world job settings.

The purpose of this report is to serve as a guidebook, offering information that transit agencies can use to establish mentoring as a training method with guidance, suggestions, and examples to implement or expand upon existing mentoring programs. It is based on a generic mentoring guidebook developed by the USDOT, modified and enhanced to reflect transit maintenance applications. The guidebook was produced as part of Transportation Research Board project E-7: Initiating a National Joint Transit Industry Rail Vehicle Technician Qualification Program: Building for Success. It has also benefitted from research done under other grants from the U. S. Department of Transportation and U. S. Department of Labor.

Information collected in this document is intended to guide transit agency personnel through the mentoring process, defining what it means to be a mentor, the roles and responsibilities during the tutelage period, and the different styles that can be adopted to forge a mentoring relationship. It also describes various learning styles and how to cultivate trainee-mentor relationships along with potential obstacles to mentoring. Finally, guidance is offered on developing task sheets that can be used within a structured mentoring program. Task Sheets consist of specific learning objectives (e.g., demonstrate uses of a torque wrench) that can be developed from common agency jobs or taken from the National Training Standards and modified as needed to establish on-the-job learning activities. A sample Task Sheet adapted from the National Training

Standard on *Tools and Material Handling* is included as an appendix to this Guidebook.

WHAT IS A MENTOR?

A mentor is a teacher who assigns tasks and reviews performance. A mentor also facilitates personal and professional growth in an individual by sharing knowledge learned throughout the years. The desire to want to share these "life experiences" is characteristic of a successful mentor. In maintenance, a mentor is one who shows a trainee how best to diagnose, maintain, repair and overhaul equipment. Because not all procedures are clearly spelled out in the classroom or in manuals, mentors fill in the missing elements by showing trainees how jobs get done in actual work settings.

Mentoring takes place informally in workshops every day, especially in cases where agency training is lacking and technicians must turn to their peers for assistance and guidance. Without structure, however, it's just as easy for bad traits to get passed on. This paper focuses on formal the mentoring program where mentor roles are defined, and where tasks and goals are made clear. Structured mentoring is learn-by-doing in its best form!

Mentoring can be highly effective at imparting technical skills and knowledge, especially at a time when so many highly experienced technicians are about to retire. Many soon-to-be retirees would be willing to pass along their experiences if only given an opportunity. Before doing so, however, the mentor needs to be prepared and the overall mentoring process needs to be organized to be effective. This is best done on a joint labor-management basis where both sides work together on a program to provide beneficial outcomes for the trainee, the mentor, the labor union, and the transit agency.

Mentoring is best accomplished as part of a formal apprenticeship training program where:

- Classroom training provides students with basic theory and general understandings;

- Hands-on instruction applies that understanding in a lab or controlled work environment; and

- Mentoring where students get to work alongside an experienced professional in a workshop setting to apply the knowledge and skills they've learned in other aspects of their training to real-life jobs -- jobs they'll be expected to do every day.

While mentoring is typically associated with apprenticeship, it can also be used to target specific training needs. When part of the promotional process, mentoring can be applied to elevate technicians from one level to another, providing needed training to move, for example, from a second class technician position to first class. Experienced mentors could also be used to train other seasoned technicians on new technology, or to help them master a particularly difficult task. While there is no one correct way to establish a mentoring program, this guidebook provides information needed to develop an approach suitable for your agency, resources and needs.

TYPES OF MENTORING

There are three types of mentoring approaches:

- Informal Mentoring
- Self-mentoring
- Formal Mentoring

Informal Mentoring

Informal mentoring, also known as traditional mentoring, is loosely structured where tasks and outcomes are not defined. The primarily focus is on the trainee and there's little consideration given to broader organizational benefits. In many cases this approach results in trainees just becoming the mentor's helper, running errands and doing menial jobs the mentor would rather avoid such as cleaning or retrieving parts.

Self-Mentoring

Self-mentoring is more of a strategy than a type. Instead of having an established mentoring program that seeks to promote the development of a trainee and enhance agency goals, the worker takes the initiative to cultivate his or her own professional growth. Self-mentoring is where workers seek the advice of respected technicians, and use self-tutoring and resource-finding techniques to better their technical abilities. Self-mentoring requires the worker to be highly motivated and self-disciplined. This type of mentoring typically prevails in cases where agency-provided training is extremely limited and where no other type of mentoring program exists.

Formal Mentoring

Formal mentoring, also known as planned mentoring, is the focus of this guidebook. It specifically defines mentor-trainee tasks and responsibilities, monitors trainee progress, and integrates mentoring as part of an overall training and apprenticeship program. Within formal mentoring are different levels of

structure depending on agency resources, commitment, and the amount of time and effort an agency is willing to invest in the program. Levels range from those with limited scopes to those that provide mentors with specialized training to prepare them for their unique roles. Formal mentoring programs tend to look beyond trainee benefits by also focusing on enhancing the goals of the organization by increasing productivity, improving safety, and by reducing costs, employee turnover and absenteeism.

Ultimately, each labor-management team needs to decide on the approach or combination of approaches to pursue based on their resources and overall commitment to training.

PROGRAM BENEFITS

There are several benefits to a structured mentoring program:

- Provides a way for senior technicians to share their knowledge, experience, skills and insights with those just beginning their career or those needing specialized training.

- Helps ensure that trainees learn jobs the right way from the start, lessons that will stay with them throughout their careers.

- Provides a natural extension to classroom training where students can put learning to use in real-world shop setting with a skilled professional providing oversight.

- Expands an agency's training capacity by utilizing skilled technicians as instructors, thereby freeing up dedicated instructors to provide additional classroom and lab training.

- Shop work is getting done as part of the training.

- Improves work efficiency and safety because trainees are being taught by seasoned professionals.

- Strengthens labor-management relationships as both sides develop the mentoring program and provide needed oversight throughout the program.

Potential Disadvantages

As with any program there are certain disadvantages associated with mentoring.

● Scheduled mentoring tasks may need to be postponed due to equipment not being available for training because of operational commitments.

● Mentoring is typically conducted one-on-one. This method of training takes a great deal of time; so does mentor preparation.

● Certain equipment may be dangerous in the hands of a trainee even under close supervision. (A simulator training setting would be a more desirable setting for tasks that fall in this category.) There is also a chance that a trainee may damage equipment in the process of learning how to repair and maintain it.

MENTOR ROLES

There are nine essential roles of a successful mentor:

1. Teacher
2. Guide
3. Counselor
4. Advisor
5. Motivator
6. Door Opener
7. Coach
8. Role Model
9. Referral Agent

Which roles a mentor assumes depends on the mentor's abilities, the trainee's needs, and the type of relationship the mentor is capable of building with the trainee.

Teacher

This role requires the mentor to share accumulated experiences. First, however, the mentor needs to be aware of the skills needed to properly perform job tasks. As discussed below under *Essential Element #3: Prepare Mentors*, even seasoned veterans need to brush up on jobs they may not have had in a while or involve new technologies. Taking refresher courses is highly recommended. Once this is done the mentor can more effectively help the trainee develop the necessary knowledge and skills.

As a teacher it's important to also share lessons learned from past mistakes. Doing so can strengthen the mentor-trainee relationship. The teaching role also requires mentors to step back and understand that the trainee is just beginning the learning process. Because veteran technicians are so thoroughly familiar with their work, they tend to falsely assume that trainees already have some basic understanding. Instead, mentors need to place themselves in the shoes of the trainee and remember how difficult it was to learn new skills from scratch.

The teacher's role also requires the mentor to communicate trainee progress, recommended schedule changes, and participate in all relevant meetings related to trainee's development work.

Guide

As a guide the mentor helps navigate the trainee through the inner workings of the transit agency and labor union to decipher the "unwritten rules" -- the behind the scenes dynamics or shop politics that are not always apparent but need to be understood.

Counselor

The role of counselor requires the mentor to establish a trusting and open relationship. To do this the mentor needs to ensure confidentiality and show respect for the trainee. Mentors can promote confidentiality by not disclosing personal information shared by the trainee. Listening attentively is another way to show respect.

Advisor

This role requires the mentor to help trainees set realistic career goals. As an advisor, the mentor needs to discover where the trainee wants to go professionally. Keep in mind that the process of setting goals must be flexible enough to accommodate changes in the workplace.

Motivator

Generating motivation in the trainee is a difficult yet essential mentor role. Motivation can be learned but is typically a natural inner drive that compels a person to be positive and succeed. Mentors can motivate trainees to succeed by offering encouragement and support.

Door Opener

In the role of door opener the mentor helps the trainee establish a network of contacts within union and agency ranks, giving trainees a chance to meet the

shop steward, supervisors and others within the organization to spur professional and social development.

Coach

In the role of coach a mentor helps the trainee overcome difficult and challenging maintenance jobs. Coaching is a complex and extensive process, a skill not easy to perform. Specifically, coaching involves providing feedback. This is best done while the trainee performs work tasks and the mentor observes, giving positive and constructive feedback as the situation demands. Good mentors will not provide feedback when they don't know much about the subject or circumstances, or when inappropriate such as in the presence of others.

Role Model

As a role model the mentor sets an example of the values, ethics, and professional practices of the agency and union. Most trainees, in time, imitate their mentors. Therefore, a mentor must have high standards of professionalism, a solid work ethic and positive attitude.

ESSENTIAL ELEMENT #1: SELECT THE RIGHT MENTORS

Popular and highly skilled technicians do not always make the best mentors. They may be unwilling or incapable of assuming the roles listed above, or may not have the right attributes needed to become an effective mentor. Finding the right mentors will take time and effort. Although having a marginal mentor is better than having none at all, having the wrong mentors can do more harm than good.

Attributes of a Successful Mentor

Selecting the right mentors is critical to the program's success. There's a guidebook section below dedicated to the selection process. The attributes have been summarized in a checklist (Appendix A) to help labor and management select the right mentor, and for technicians with an interest in becoming mentors to determine if they have those attributes. Key among them is the ability to be supportive, patient and respected:

> Supportive: A mentor has the ability and desire to support the needs and aspirations of a trainee.
>
> Patient: A mentor is patient and willing to spend time performing mentoring responsibilities.

Respected: A mentor has earned the respect of his/her peers, the union, and the transit agency.

To successfully assume the different roles of a mentor, several additional characteristics are also needed:

People Oriented: A mentor is genuinely interested in people and has a desire to help others.

Good Motivator: A mentor is someone who inspires a trainee to do better, being able to motivate a trainee by offering feedback and challenging work assignments.

Effective Teacher: A mentor must not only teach the "skills of the trade," but must also be capable of managing the trainee's learning. A "sink or swim" approach is not an effective mentoring method.

Secure In Position: A mentor must be confident in his or her career so that pride for the trainee's accomplishments can be genuinely expressed.

An Achiever: A mentor is usually a professional achiever--one who sets career goals, continually evaluates these goals, and strives to reach them. A mentor attempts to inspire a trainee with the same drive for achievement.

Provide Trainee Visibility: A mentor is someone who can give the trainee the right amount of exposure within the agency and union. One way to do this is to arrange challenging projects for the trainee to succeed. Another is to tell others about the trainee's accomplishments.

Values the Organization and Work: A mentor takes pride in the transit agency and union and understands their mission, vision, and values. A mentor should be well-versed in agency and union policies and in the procedures of the particular administrative environment in which he or she works. Someone who speaks badly of the agency or union should not be used as a mentor.

Respect for Others: A mentor is one who shows regard for another's well being. A mentor also accepts a trainee's weaknesses and minor flaws, just as the trainee must learn to accept the weaknesses and flaws of the mentor.

Recruiting Technicians to be Mentors

The process to recruit mentors involves soliciting recommendations from four sources:

Supervisor and Shop Steward Recommendations

Recommendations from supervisors and shop stewards are important in selecting a mentor. Each gets to know how proficient technicians are regarding their work skills, their personality traits and how well they work with others. It's important, however, that their recommendations are not based on favoritism or wanting to see their buddies get financial or other incentives that may come with being a mentor.

Instructor Recommendations

Instructors also serve as a good source for indentifying mentors. During training courses there are students who typically go out of their way to help others in the class understand a particular problem or hands-on exercise. Instructors are good at identifying students in their class who have what it takes to become effective mentors.

Peer Recommendations

Recommendations from fellow technicians are also helpful in the mentor recruitment process. Once again, peer recommendations should be made based on the desired characteristics presented throughout this guidebook, not on friendships.

Self-Nomination/Recommendation

Asking for volunteers is actually one of the best methods of recruiting mentors. Soliciting self-nominations, however, should be done as an ordered process:

- Clearly define mentor responsibilities up front.

- Hold an informational meeting for prospective mentor candidates. Explain how the program will work, how the role of the mentor is defined, what the expectations are, and what mentors are expected to do throughout the mentoring process.

- Acknowledge that not everyone is well suited to become a mentor.

Mentor Incentives

In a perfect world mentor candidates are willing to share their skills and knowledge without compensation. However, incentives provide fair recognition for the contributions mentors will make not only in enhancing the careers of others, but for advancing the efficiency and safety of the entire maintenance organization. Typical incentives include an increase in hourly pay, certificates, and other forms of recognition denoting that exceptional technicians have been selected among their peers to serve as a mentor to others.

ESSENTIAL ELEMENT #2: SELECT THE RIGHT TRAINEES

Trainee Characteristics

In addition to selecting the right mentor, a successful mentoring relationship also requires the trainee to have certain characteristics. Most mentors admit that they see characteristics in their trainees that they see in themselves, such as:

> Eagerness to Learn: A trainee should have a strong desire to learn and develop new skills and abilities.
>
> Ability to Work as a Team Player: Because of the need to interact with others, it's important that the trainee cooperate and learn how to be a team player -- to contribute as much as possible to the mentoring relationship.
>
> Patience: A trainee should be realistic enough to know that accomplishments and career advancement do not happen overnight.
>
> Challenge Seeker: A trainee must be able to move beyond tasks that he or she has mastered and accept new and more challenging experiences, giving up the known for the unknown.
>
> Positive Attitude: An optimistic trainee is more likely to tackle difficult work tasks and to stay on course. A trainee with a poor or "defeatist" attitude will not move ahead.

Trainee Roles

Just as the mentor has various roles, so too does the trainee. A trainee is the one that takes the initiative to ask for help or advice, and lets the mentor know when he or she is ready to tackle more challenging technical work.

Other trainee roles include:

- Following established safety and maintenance procedures related to work assignments.
- Asking the mentor to clarify maintenance procedures and safety applications.
- Participating in all meetings to review progress and current status in achieving objectives defined in task sheets.

After absorbing the mentor's knowledge, trainees must also have the ambition to use that knowledge by applying what's been learned. A trainee must also be willing and capable of blending mentoring with other training opportunities.

ESSENTIAL ELEMENT #3: PREPARE MENTORS

Technicians may be considered proficient in their work, have the admiration of their peers, and have a natural ability to communicate and relate to others. However, they still need some level of preparation to become successful mentors. First and foremost is that mentors have the *correct* technical skills to pass on to trainees. Therefore, mentors should first take a refresher course and be evaluated by the training department to ensure that the procedures they will demonstrate on the shop floor matches procedures taught in class. A potential downside is to have mentors teach short cuts or work processes that go against agency and union accepted practices. As described below under "Task Sheets," an ideal training scenario is one where labor and management work together to develop written procedures for common job tasks. These written job procedures, which represent the best thinking on performing specific job tasks based on the manufacturer's recommendations and local experiences, clearly identify the essential steps needed to properly do the job. The existence of these written procedures helps ensure that all technicians perform job tasks to accepted standards, and that the training is consistent with those standards. Regardless of whether written procedures exist at an agency, steps must be taken to make certain that what mentors teach in the shop is consistent to what's being taught in the classroom.

Mentors must be given some guidance on how to become teachers. Although they may have solid technical understanding and skills, mentors need soft skills training so they can pass on their skills to others. One such resource for providing this training comes from a course prepared by the National Transit Institute (NTI). The course was developed in response to a request by the APTA Bus Maintenance Training Committee, which includes Transportation Learning Center staff and subject matter experts (SMEs) from both labor and management. Although the course was developed for maintenance instructors, mentors could also benefit from the instruction provided.

Key points from the NTI course include:

- Jobs become “automatic” when done many times. Then, when we try to teach the job to others we tend to make assumptions and leave out important steps. Make sure to identify all the tasks included in the job and break them down into simple sub-tasks in order to teach it.
- Decide what you want the trainee to know or be able to do. State it in words that are specific and measurable.
- Learn how to be an active listener.
- Understand that trainees have different learning styles (see “Learning Styles” below for details)
- Adult learners choose to learn when they:
    - See a need or benefit
    - Have a problem to solve
    - Can relate new information to what they already know (“indexing”)
    - Can apply what they learn in the “real world”
    - Trust the trainer

Much of the training needed to become an effective mentor involves building a positive mentor/trainee relationship as presented below. Potential mentors must first, however, determine if they’re cut out for the job. Conducting a mentoring self evaluation is an essential first step.

Mentoring Self-Evaluation

Once labor-management representatives have identified eligible candidates, those candidates need to decide for themselves if they really want to be a mentor. While some technicians welcome the opportunity others are reluctant to share experiences that have taken them an entire career to acquire. To help make the decision, eligible mentors should consider these questions:

- Do I have the potential to build a mentor/trainee relationship?
- Would I feel comfortable building this kind of relationship?
- Would a trainee benefit from my expertise?
- Am I willing to invest the time to pass on my experience to a trainee?

An essential step in this process is to conduct a self evaluation to determine which mentoring characteristics apply, and which need to be cultivated or improved upon. Mentors can evaluate themselves by using the same Appendix A checklist used by labor and management to select them in the first place. While not all characteristics are needed to become a successful mentor, the self-evaluation process allows potential mentors to identify some characteristics that need to be improved upon, or they may realize that being a mentor is not appropriate for them right now.

Building Positive Mentor/Trainee Relationships

Unlike learning how to master a technical skill that can be taught in the classroom and through on-the-job training, much of the preparation needed to be an effective mentor is not easily obtained. One of the best methods to learn these skills is to become aware of the many elements that go into building positive mentor/trainee relationships.

Essential features of building a positive relationship with trainees include:

- Trust
- Self esteem
- Respect

Trust

Establishing trust is essential to a successful mentoring relationship. Trust is created through a number of factors that include being able to effectively communicate with the trainee. This consists of actively listening, valuing the trainee's opinions, and letting the trainee know that he or she is being taken seriously. A good mentor also should be available and willing to meet with the trainee whenever he or she needs assistance. Another factor in building trust is to provide consistent feedback, direction, and advice.

Self-Esteem

Another important element to a successful mentoring relationship is having the ability to build the trainee's self-esteem. All people have the desire to be worthwhile and valuable, and trainees are no exception.

Respect

Of the most essential elements to a successful mentoring relationship is to build respect. Respect is established when the trainee recognizes knowledge, skills, and abilities in the mentor that he or she too would like to have. The trainee then attempts to acquire these much-admired characteristics. Respect usually increases over time and is not easily acquired. As the saying goes, it must be earned.

Learning Styles

When preparing mentors, it’s important to understand the trainee’s preferred learning style. There are basically three types: auditory, visual and kinesthetic.

●Visual learners want to see a picture, a chart or something written down to learn something. They prefer to get directions, information, etc. in writing.

●Auditory Learners tend to use their voice and ears to learn, and remember what they hear and say.

●Tactile-Kinesthetic Learners learn best by doing. They want to move, touch, create and physically interact.

Although mentoring essentially assumes a tactile-kinesthetic approach to learning, mentors may find that trainees who are strong visual learners would benefit from diagrams or drawings of the work to be accomplished before beginning the hands-on exercises. Likewise, if a trainee favors an auditory style, the mentor could spend more time upfront carefully explaining job procedures. Understanding an individual's learning style is beneficial to both mentor and the trainee because it helps the mentor define the training approach and allows the trainee to more easily grasp the material being taught.

Appendix B includes a simple test to determine a person's preferred learning style.

ESSENTIAL ELEMENT #4: STRUCTURE THE MENTORING PROGRAM

Although mentoring needs to be structured, there's no right or best way to accomplish this. Joint labor-management representatives and mentors should first read this guidebook and then meet to plan a mentoring approach that works best for all parties, especially the trainees.

Having a structure defines how the mentoring program begins, activities that take place during mentoring, work tasks to be accomplished, and determining when and how to end the mentoring relationship. While having a structure is important, there's no reason why the approach can't be modified as the program develops. Guidance provided below is intended to assist agencies formulate their own mentoring structure.

Coordinating Classroom Training With Mentoring

An essential structured activity, and one that makes mentoring far more effective, is to coordinate it with classroom activities. Classroom instruction on brakes, for example, will provide trainees with basic information about braking safety, theory and component functions. That training experience is greatly enhanced when trainees are then paired with a mentor proficient in brake repairs, thereby engaging trainees with meaningful on-the-job learning.

The coordination of these activities needs to take place in close proximity of each other while the classroom leaning is still fresh in the trainee's mind. Going from the classroom to on-the-job learning in quick order reinforces abstract learning with real-life work experiences. Waiting too long to make the connection will

result in the trainee forgetting much of what was originally learned and burdens the mentor with more training responsibilities.

The coordination of classroom and on-the-job learning is best done when both labor and management cooperate in the process. An ideal scenario is one where both sides see to it that classroom training on a given subject is followed by pairing the trainee with a mentor on the same subject. The importance of this planning cannot be overemphasized. Placing trainees with mentors without giving thought to the learning that takes beforehand is far less effective than following a structured learning progression.

Trainee Orientation

Once mentors and trainees have been identified, an important next step is to plan a trainee orientation. Senior representatives from labor and management should kick off the orientation meeting by welcoming mentors and trainees to the program, to offer mutual support, and let the trainee know that both are available for consultation as needed. The mentor should then review the program, discuss expectations with the trainee, review work tasks and goals, and communicate the mentor's expectations to the trainee. Asking the trainee about his or her expectations is important. This is best done by asking the trainee:

- What do you want to gain from this mentoring relationship?
- How should we work together to make the most of this mentoring experience?
- What do you expect from your position/job?
- Where do you want your career to go?

Schedule

During orientation the mentor should develop a daily or weekly schedule with the trainee to ensure enough time will be devoted to mentoring. The schedule will depend on the time labor and management has set aside for the mentor training, the work load of the mentor, and the type of work the mentor is engaged in, and the instruction to be carried out. In some shops the mentor may work in several different areas. In other shops mentors may be assigned to one area (e.g., brakes) for extended periods of time. Labor and management must determine how best to utilize mentors as part of the initial planning, understanding that trainees may be best paired with multiple mentors.

Establish Roles

Another important step during the orientation is to establish the appropriate roles of the mentor and trainee as identified earlier in this guidebook. This is best done

through conversation, ensuring that the trainee is fully aware of the roles he or she is expected to perform. In basic terms, the role of the mentor is to instruct, the role of the trainee is to learn. More specifically, the respective roles will revolve around specific learning objectives defined by task sheets – actual work jobs that provide the context for learning. Task sheets are discussed in greater detail later in this guidebook.

The training department itself must also assume certain responsibility for the mentoring program. One key role is to provide mentors with a classroom evaluation of the trainee's performance to reveal strengths and weaknesses. As mentioned earlier, the training department is also responsible for ensuring that mentor provided training is consistent with classroom instruction. The training department will also be required to participate in meetings related to trainee development, and to provide educational support to shop locations to assist in trainee development.

Mentoring Stages

Before addressing work tasks, a discussion of the different mentoring stages can be useful to formulating a structured process. Mentoring is a dynamic process consisting of different stages that provide a trainee with the opportunity to learn and grow. A mentor needs to be aware of each of the four stages, each requiring that different roles be assumed. The four stages of mentoring are:

- Prescriptive
- Persuasive
- Collaborative
- Confirmative

<u>Prescriptive Stage</u>

In the first mentoring stage, the Prescriptive Stage, the trainee usually has little or no workplace experience. Here the trainee depends almost exclusively on the mentor for support and direction. This is where the mentor will devote most of the time upfront providing detailed guidance and advice to the trainee, showing him or her how tasks are performed. As mentioned earlier, mentors in this stage need to assume the trainees know very little, starting from the beginning to thoroughly describe work tasks.

<u>Persuasive Stage</u>

The Persuasive Stage requires mentors to take a strong approach with trainees. In this stage the mentor actively presses the trainee to find answers and seek challenges. The trainee usually needs some prodding to take risks as they

attempt maintenance and repair tasks unfamiliar to them. Here's where the mentor needs to build confidence in the trainee and prod him/her into performing the procedure(s) with the mentor coaching along the way.

Collaborative Stage

In the Collaborative Stage the trainee gains enough experience and ability that he or she can work together with the mentor to jointly perform maintenance tasks, solve problems through troubleshooting, and participate in more equal communication. In this stage the trainee can be working on one aspect of the job while the mentor is working on another. In this stage the trainee also actively cooperates with the mentor in his or her professional development.

Confirmative Stage

The Confirmative Stage is suitable for trainees who have mastered job requirements, but require mentor insight into specific job details, career choices, and agency/union policies and procedures. In this stage the mentor acts more as a sounding board or empathetic listener.

Task Sheets

One of the most essential elements to a structured mentoring program is to have task sheets – specific learning objectives that the trainee is expected to achieve during the mentoring program. The typical sequence is to have the mentor first show the trainee how to do the task (prescriptive stage), coach the trainee through the task (persuasive stage), and then work with the trainee to collectively perform the task to ensure the trainee is capable (collaborative and confirmative stages). Task sheets are based on common agency jobs such as preventive maintenance (PM) inspections, brake relines, rebuilding of components, and other common maintenance and repair jobs.

Ideally task sheets are those developed from written job procedures or practices generated collectively by management and labor, assuming such procedures exist. Written job procedures represent the best thinking on performing specific job tasks based on manufacturer's recommendations and local experiences. They clearly lay out all of the steps needed to properly perform common jobs, indentifying safety precautions, hazardous materials, special tools and equipment, and providing step-by-step instructions for carrying out the work. Also included are conditions when parts are to be replaced. Written procedures are ideal for mentoring and other training because they represent the collective wisdom of the workforce on how best to perform the most routine maintenance jobs. (For guidance on developing written job procedures see TRCP Report 109, *A Guidebook for Developing and Sharing Transit Bus Maintenance Practices*, http://www.trb.org/Main/Blurbs/156510.aspx)

Another approach to developing mentoring task sheets is to adapt learning objectives contained in the National Training Standards. The standards have been developed in several bus and rail areas (e.g., bus engines, rail couplers, etc.) by subject matter experts (SMEs) from both labor and management. The standards consist of various learning objectives, which represent the knowledge and skills that must be imparted during training.

While some of the learning objectives pertain to general understanding and are better addressed in the classroom (i.e., describe how temperature affects brake performance), others are ideal for hands on tasks. For example, a learning objective in the brake standard is to "determine if brakes are within wear limits." When converted into a mentoring task, the mentor shows the trainee how to inspect brake thickness and determine wear limits, coaches the trainee through the process, and then observes as the trainee performs the task.

A sample task sheet for rail vehicle mentoring is included as Appendix C. It was developed from the National Training Standard for Rail Vehicles, Level 100, Tools and Material Handling. Not all tasks may be applicable to each agency. The task sheet is intended as a guide. Joint labor-management teams are encouraged to tailor mentoring tasks as needed to suit their own learning objectives. A complete listing of the National Training Standards is available from the Transportation Learning Center.

Each learning objective contained in the task sheet should be clearly understood by the mentor and trainee. Likewise, the standards for successful completion of the training also should be clearly understood by both.

Activity Log

As part of a structured mentoring program, agencies should consider implementing a daily or weekly log where the trainee documents activities during the mentoring period. The log is reviewed by the mentor and signed by both parties with copies sent to the maintenance and training departments for review and filing.

ESSENTIAL ELEMENT #5: EVALUATE RELATIONSHIP AND MONITOR MENTORING PROGRESS

Evaluate Relationship

Once mentoring is underway the mentoring relationship needs to be informally evaluated by the mentor by taking time from learning activities and meeting with the trainee on a regular basis to find out if expectations are being met and if both parties are satisfied. When evaluating the mentoring relationship the mentor may

discover there are issues or obstacles that need to be discussed. The mentor, as the senior and more experienced partner, should take the initiative for scheduling these discussions.

Monitor Progress

In addition to evaluations conducted by mentors, the joint labor-management team also needs to periodically monitor the overall mentoring program, not only the mentor-trainee relationship but the progress being made in achieving the established objectives. The team should first meet with the mentor and trainee together to discuss how the relationship is progressing, and to review the task sheets, status of other program objectives, and determine if there are any issues to resolve. The team should then meet with the mentor and trainee separately on a regular basis to obtain their candid views on the program and mentoring relationship. During these meetings the mentor and trainee should be encouraged to reach out to a team member if problems develop and need resolution.

Periodic oversight by the labor-management team will more readily identify strains in the mentor-trainee relationship and keep the program moving in a positive direction.

ESSENTIAL ELEMENT #6: END THE MENTORING RELATIONSHIP

The final step of the mentoring process involves knowing when to end the mentoring relationship. There are typically three reasons why mentoring relationships end:

- When a trainee begins to gain more confidence and starts to perform more independently.
- The mentoring relationship is no longer beneficial to the mentor or trainee. Sometimes the mentoring relationship becomes exploitative and needs to be terminated. When a mentoring relationship ends, reflection and analysis need to take place to discover why.
- Mentor or trainee leaves their position.

OBSTACLES IN A MENTORING RELATIONSHIP

During the course of a mentoring relationship roadblocks and other obstacles may arise that could hinder a developing relationship. There are obstacles unique to each side. Obstacles that could confront a mentor include:

- A mentoring style that does not meet the trainee's needs
- The mentor loses interest
- Insufficient time

- A trainee who has a hidden agenda
- An inappropriate attitude on the part of the trainee.

For trainees, obstacles that may arise include:

- Peer jealousy
- Being accused of "holding on to the coat tails of another"
- Losing respect for the mentor.

It's important to be aware of potential obstacles. Oversight by the labor-management team can play a large role in early identification of problems and working together to resolve them.

If obstacles surrounding the mentor-trainee relationship are just too much to overcome despite efforts taken by the joint labor-management team, the team needs to have a process for dissolving it. The goal of the process is to have an amicable separation where neither the mentor nor the trainee faces any negative repercussions. The team could try paring the mentors and trainees with other individuals, or it may turn out that the mentor and/or trainee are just not cut out for their roles.

SUMMARY

Essential steps to building an effective mentoring program include:

1. Establish the program on a joint labor management basis. To be effective, both sides need to participate in a program that provides maximum effectiveness for the trainee, mentor, agency and union.

2. Find the Right Mentors. The right mentors make all the difference. The process to select mentors needs to be based on the mentor having the proper attributes, not on popularity or friendships.

3. Select the Right Trainees. Like mentors, trainees also need to have certain characteristics to make the mentoring relationship work. A positive attitude and willingness to learn are essential.

4. Prepare Mentors. While ideal mentors will come to the job with many positive attributes, they still need to be prepared for their roles as teachers. In addition to building trust, self esteem and respect with the trainee, the mentor must provide instruction consistent with other agency training and understand the various learning styles of each trainee.

5. Structure the Mentoring Program. A successful mentoring program doesn't happen on its own. Structured elements include establishing mentor-

trainee roles, progressing through a series of mentoring stages, and using task sheets that clearly define the learning objectives.

6. Evaluate Relationship and Monitor Mentoring Progress. Periodic evaluation by the joint labor-management team and mentor ensures that program objectives are being met and helps resolve any conflicts that may develop between the mentor and trainee.

7. End the Mentoring Relationship. At some point the mentoring relationship needs to terminate, either when program objectives have been met or the relationship cannot be sustained.

APPENDIX A: MENTOR ATTRIBUTE CHECKLIST

Desired Mentor Attribute	Does the Candidate Have This Attribute? Y/N	Does Mentor Candidate Need Additional Training to Improve Attribute? Y/N
Is an extremely knowledge technician with exceptional work skills.		
Is considered by peers to be an expert in the field.		
Has earned the respect of his/her peers and the transit agency.		
In addition to having the ability to teach the "skills of the trade," would be willing to manage the trainee's overall learning.		
Sets high standards for themselves.		
Enjoys and is enthusiastic about their work.		
Supports and works within collective bargaining agreements.		
Understands various job classifications and can instruct the trainee not to crossover into the work of other technicians.		
Has willingness to help the trainee take and pass any performance assessments given after the mentoring.		
Continually seeks to update their knowledge and skills.		
Listens to and communicates well with others.		
Likes to help others.		
Exercises good judgment in decisions concerning themselves and the welfare of others.		
Is sensitive to the needs of others, and generally recognizes when others require support, direct assistance or independence.		
Has the ability to support the needs and		

aspirations of a trainee.		
Is patient and would be willing to spend time performing mentoring responsibilities.		
Shows regard for another's well being and would accept a trainee's weaknesses and minor flaws.		
Is people-oriented and has a genuine desire to help others.		
A good motivator, someone who would inspire a trainee to do better.		
Is secure and confident in his/her position and career, and would genuinely express pride in the trainee's accomplishments.		
A professional achiever-- someone who sets lofty career goals and would inspire a trainee with the same drive for achievement.		
Would give the trainee exposure to shop stewards, supervisors and other labor and management personnel.		
Takes pride in the transit agency and union and understands their mission, vision, and values. Is well-versed in agency and union policies and procedures.		
Does not speak badly about the agency, the union or their policies.		

APPENDIX B: DETERMINING LEARNING STYLES

There's a series of 18 questions related to the three main learning styles: visual, auditory, and kinesthetic. This lesson will help you determine which of these learning styles you rely on the most. Read the question and select only those statements that you agree with. Don't spend too much time thinking about the question -- go with your first choice. If you don't agree with a statement, leave it blank and go to the next.

1) _____ I learn from books and written materials.

2) _____ When I read difficult text, it helps me to learn if I say the words to myself.

3) _____ I fidget or tap my feet or move around a lot when I am concentrating.

4) _____ I remember most of what is told to me and do not need to take many notes.

5)_____ I do not understand how something works until I get to work with it with my hands.

6) _____ I am often aware of sounds around me.

7) _____ Looking at diagrams and pictures is a good way for me to learn new concepts.

8) _____ I would rather watch somebody demonstrate before I try something new.

9) _____ I learn best by trial and error.

10) _____ People can usually tell how I feel by my facial expressions.

11) _____ I like to take part in discussions.

12) _____ I tend to keep things organized and orderly at work and at home.

13) _____ I do not like to work very long in a quiet place by myself.

14) _____ It helps me to understand if I draw a picture.

15) _____ I could probably identify a part just by touching it and not seeing it.

16) _____ I like to have several tasks to do at once.

17) _____ I tend to notice signs, street signs and billboards.

18) _____ I follow directions best if they are orally explained to me

Scoring Guide

The scoring guide will help reveal the learner's preference for instruction design, delivery and environmental concerns. While this is not a scientific assessment, it will give you an idea about this aspect of your preferred learning style.

Each of the statements you selected above has a number (1-18) associated with it. In the table below, circle the items you checked. Now total the items circled in each column. For example, if you circled three items in column 1, Visual, put the number 3 in the total for that column.

Visual	Auditory	Tactile-Kinesthetic
1	2	3
7	4	5
8	6	9
12	11	10
14	13	15
17	18	16

The column with the highest number of circled items reflects your primary learning style.

My primary learning style is: _____

While some will favor a specific learning style, others will find they favor two or even three learning styles with equal preference. Keep in mind that most of us use a combination of learning styles to learn new material, dependent upon the time and task. It's natural to use different learning styles for different tasks. That's why people can respond so differently to the same thing.

What my score means.

Visual Learners

If I am a visual learner I want to see a picture, a chart or something written down to learn something. I notice things around me and prefer a reasonably neat, tidy area. I prefer to get directions, information, etc. in writing. I want to know **what** something is.

- ✓ take numerous detailed notes

- ✓ tend to sit in the front
- ✓ are usually neat and clean
- ✓ often close their eyes to visualize or remember something
- ✓ find something to watch if they are bored
- ✓ like to see what they are learning
- ✓ benefit from illustrations and presentations that use color
- ✓ are attracted to written or spoken language rich in imagery
- ✓ prefer stimuli to be isolated from auditory and kinesthetic distraction
- ✓ find passive surroundings ideal

Auditory Learners

If I am an auditory learner, I tend to use my voice and ears to learn something. I remember what I hear and what I say. I may be distracted by sounds but I may also interrupt a quiet moment because I find too much quiet annoying. I want to know **why** something is.

- ✓ sit where they can hear but needn't pay attention to what is happening in front
- ✓ may not coordinate colors or clothes, but can explain why they are wearing what they are wearing and why
- ✓ hum or talk to themselves or others when bored
- ✓ acquire knowledge by reading aloud
- ✓ remember by verbalizing lessons to themselves (if they don't they have difficulty reading maps or diagrams or handling conceptual assignments like mathematics).

Kinesthetic Learners

If I am a tactile-kinesthetic learner, I learn best by doing. I want to move, touch, create or physically interact. I tend to be facially expressive and move around when interacting with others. I want to know **how** something is done.

- ✓ need to be active and take frequent breaks
- ✓ speak with their hands and with gestures
- ✓ remember what was done, but have difficulty recalling what was said or seen
- ✓ find reasons to tinker or move when bored
- ✓ rely on what they can directly experience or perform
- ✓ activities such as cooking, construction, engineering and art help them perceive and learn
- ✓ enjoy field trips and tasks that involve manipulating materials
- ✓ sit near the door or someplace else where they can easily get up and move around
- ✓ are uncomfortable in classrooms where they lack opportunities for hands-on experience

APPENDIX C: SAMPLE TASK SHEET

MENTORING TASK CHECKLIST – RAIL

Level 100
Tools & Material Handing

Taken From: Rail Training Standard Module 103 – Tools & Material Handing

NOTE: All tasks may not be applicable, and tasks do dot need to be performed in the order listed. Use this task sheet as a guide, tailoring as needed to suit mentoring learning objectives. Add other learning objectives as appropriate to your agency's job tasks.

Job Task - Learning Objective	Mentor Performs the Task (Trainee Observes)	Mentor Coaches Trainee Through Task	Trainee Performs Task Without Assistance (Mentor Observes)
103 Tools and Material Handling			
Basic Hand Tools			
Hold a rigid rule correctly when measuring an object	☐	☐	☐
Set lock joint transfer-type calipers	☐	☐	☐
Identify vernier calipers & show how they are used	☐	☐	☐
Take a measurement with a micrometer caliper	☐	☐	☐
Review parts of a combination square	☐	☐	☐
Wrenches and Screwdrivers			
Demonstrate steps that must be followed when driving a screw	☐	☐	☐
Demonstrate uses of open-end, box-end, socket, socket-head, adjustable, torque, and striking-face wrenches	☐	☐	☐
Demonstrate two sizes that are important in identifying a socket wrench	☐	☐	☐
Demonstrate uses of standard, Phillips, offset, and spiral-ratchet screwdrivers	☐	☐	☐
Pipefitting Tools			
Demonstrate uses of a straight pipe wrench, a Stillson wrench, a chain pipe wrench	☐	☐	☐
Demonstrate uses of a pipe wrench	☐	☐	☐
Demonstrate why a machinists' vise should not be used for holding pipe	☐	☐	☐
Demonstrate how to thread pipe	☐	☐	☐
Demonstrate how to clean a pipe tool	☐	☐	☐

Job Task - Learning Objective	Mentor Performs the Task (Trainee Observes)	Mentor Coaches Trainee Through Task	Trainee Performs Task Without Assistance (Mentor Observes)
Demonstrate how to cut and flare tubing	☐	☐	☐
Demonstrate procedures for brazing	☐	☐	☐
Demonstrate the ability to braze a section of pipe	☐	☐	☐
Plumbing Tools			
Demonstrate how to use a mechanical tubing bender	☐	☐	☐
Demonstrate the steps in joining hub-less pipe	☐	☐	☐
Demonstrate why the drain pipe should be completely covered by the force cup	☐	☐	☐
Demonstrate the methods used in selecting line clearing tools	☐	☐	☐
Demonstrate the steps in measuring pipe when using the center-to-center measuring systems	☐	☐	☐
Electrician's Tools			
Demonstrate the use of the all purpose tool	☐	☐	☐
Demonstrate the use of an analog and digital meter	☐	☐	☐
Demonstrate how to use an EMT bender	☐	☐	☐
Demonstrate the use of a knock out punch	☐	☐	☐
Sheet Metalworking Tools			
Demonstrate uses for the different types of snips and punches	☐	☐	☐
Demonstrate six safety practices to follow when working with sheet metal	☐	☐	☐
Demonstrate the different types of sheet metal	☐	☐	☐
Demonstrate the ability to measure the thicknesses of sheet metal	☐	☐	☐
Metalworking Tools			
Demonstrate how to select the proper hacksaw blades for cutting various materials	☐	☐	☐
Demonstrate the difference between single-cut and double-cut files	☐	☐	☐
Demonstrate the types of taps usually found in a tap set	☐	☐	☐
Demonstrate how to cut an external thread on a bolt, screw, or stud	☐	☐	☐
Demonstrate how to remove a reamer from a hole	☐	☐	☐
Hoisting and Pulling Tools			
Demonstrate how to prevent synthetic and	☐	☐	☐

Job Task - Learning Objective	Mentor Performs the Task (Trainee Observes)	Mentor Coaches Trainee Through Task	Trainee Performs Task Without Assistance (Mentor Observes)
fiber rope from unraveling			
Demonstrate how to select the most appropriate sling for use near corrosive chemicals	☐	☐	☐
Demonstrate use of a slide-hammer puller	☐	☐	☐
Demonstrate the different kinds of slings and loads	☐	☐	☐
Basic Power Tools			
Electric Drills			
Demonstrate safety rules to follow when using electric power tools	☐	☐	☐
Demonstrate how to drill a blind hole	☐	☐	☐
Electric Hammers			
Demonstrate the difference in hammering action between a percussion hammer and a rotary hammer	☐	☐	☐
Demonstrate the proper chisel to use for each of the following jobs: brick cleaning; general demolition	☐	☐	☐
Demonstrate the precautions that should be taken to ensure electrical safety when using an electric hammer	☐	☐	☐
Demonstrate two safety items to use when operating an electric hammer in damp or wet areas	☐	☐	☐
Pneumatic Drills and Hammers			
Demonstrate how drill size is determined	☐	☐	☐
Demonstrate the chiseling action of a bull point chisel when it is used to clean masonry seams	☐	☐	☐
Demonstrate how to use a rivet buster	☐	☐	☐
Demonstrate drill speed requirements	☐	☐	☐
Demonstrate various types of chisels used in pneumatic hammers	☐	☐	☐
Screwdrivers, Nutrunners, and Wrenches			
Demonstrate the operating advantages of pneumatic tools	☐	☐	☐
Demonstrate stalling torque	☐	☐	☐
Demonstrate the clutch action of direct drive, positive drive, and adjustable torque drive	☐	☐	☐
Demonstrate how to install a bit in an electric screwdriver	☐	☐	☐
Demonstrate how to install multiple fasteners correctly in a circular pattern	☐	☐	☐

Job Task - Learning Objective	Mentor Performs the Task (Trainee Observes)	Mentor Coaches Trainee Through Task	Trainee Performs Task Without Assistance (Mentor Observes)
Demonstrate safety rules to follow when using power screwdrivers and wrenches	☐	☐	☐
Demonstrate the difference between pneumatic and electric nutrunners	☐	☐	☐
Linear-Motion Saws			
Demonstrate the cutting action of a saber saw	☐	☐	☐
Demonstrate how to draw a saw blade with regular set teeth and one with wavy set teeth	☐	☐	☐
Demonstrate how to plunge cut a rectangular opening	☐	☐	☐
Demonstrate the types of band saw blades described in this Lesson and a few characteristics of each	☐	☐	☐
Circular Saws			
Demonstrate the major parts of a circular saw	☐	☐	☐
Demonstrate the cutting action of a circular saw	☐	☐	☐
Demonstrate the factors that determine feed speed	☐	☐	☐
Identify an arbor	☐	☐	☐
Demonstrate different types of blades	☐	☐	☐
Electric Sanders			
Demonstrate how to install a sanding belt	☐	☐	☐
Demonstrate different types of sanding belts	☐	☐	☐
Demonstrate how to flush the gear chamber of a belt sander	☐	☐	☐
Demonstrate the assembly of a sanding disk	☐	☐	☐
Demonstrate the safety rules to follow when using a disk sander	☐	☐	☐
Grinders and Shears			
Review each symbol in the six-symbol standard marking system for grinding wheels	☐	☐	☐
Demonstrate the correct procedure for mounting a grinding wheel	☐	☐	☐
Demonstrate safety rules to follow when using a grinder	☐	☐	☐
Demonstrate how to maintain grinders	☐	☐	☐
Tool Sharpening			
Demonstrate the use of whetstones	☐	☐	☐

Job Task - Learning Objective	Mentor Performs the Task (Trainee Observes)	Mentor Coaches Trainee Through Task	Trainee Performs Task Without Assistance (Mentor Observes)
Demonstrate use of a bench stone	☐	☐	☐
Demonstrate how to sharpen taps, dies, screwdrivers, and chisels	☐	☐	☐
Moving Machinery Using a Dolly			
Demonstrate the safe procedure of using dollies	☐	☐	☐
Moving Machinery Using Roller Pipes			
Demonstrate the use of wood and steel pipes	☐	☐	☐
Demonstrate the use of shoes and skids with rollers	☐	☐	☐
Assembly of Gantry Crane			
Demonstrate the proper use of and limits of a Gantry Crane	☐	☐	☐
Demonstrate proper assembly using correct steps and procedures	☐	☐	☐
Rigging and Hoisting			
Demonstrate the proper inspection of wire rope and chain	☐	☐	☐
Demonstrate the proper use of the various types of slings and sling hardware	☐	☐	☐
Demonstrate how to calculate the efficiency of reeling system	☐	☐	☐

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Appendix G: Rail Car Maintenance Technician Apprenticeship with the Department of Labor's Office of Apprenticeship

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U.S. Department of Labor

Employment and Training Administration
200 Constitution Avenue, N.W.
Washington, D.C. 20210

JUN 19 2013

Mr. Brian Turner
Director
Transportation Learning Center
8403 Colesville Road, Suite 825
Silver Spring, MD 20910

Dear Mr. Turner:

Enclosed please find the new National Guidelines for Apprenticeship Standards for the Transit Rail Vehicle Maintenance Technician (Existing Title: Car Repairer (Railroad Equipment)), as well as a *Certificate of Certification*. The U.S. Department of Labor, Office of Apprenticeship, certifies that these National Guidelines for Apprenticeship Standards meet the requirements of Title 29, Code of Federal Regulations parts 29 and 30.

These new National Guidelines for Apprenticeship Standards reflect the *Public Transit Industry, National Joint Apprenticeship and Training Committee's* continued commitment to promote the highest standard of excellence in registered apprenticeship.

We appreciate the time and effort put forth in updating these National Guidelines for Apprenticeship Standards, and we value your commitment to the Registered Apprenticeship System.

Sincerely,

JOHN V. LADD
Administrator
Office of Apprenticeship

Enclosure

U.S. Department of Labor

Employment and Training Administration
200 Constitution Avenue, N.W.
Washington, D.C. 20210

JUN 19 2013

Mr. Brian Turner
Director
Transportation Learning Center
8403 Colesville Road, Suite 825
Silver Spring, MD 20910

Dear Mr. Turner:

We appreciate your submittal of the revision of Transit Rail Vehicle Maintenance Technician (Existing Title: Car Repairer (Railroad Equipment)), to the Office of Apprenticeship (OA) for apprenticeability determination for a revision to the title, type of training and the term from time-based to hybrid. *The OA solicited input from industry regar*ding the revision of the occupation of Transit Rail Vehicle Maintenance Technician (Existing Title: Car Repairer (Railroad Equipment)).

We reviewed the responses we received from industry which support the revision of this occupation. As a result, this office has approved the revision to the Transit Rail Vehicle Maintenance Technician (Existing Title: Car Repairer (Railroad Equipment)) occupation.

Sincerely,

Franchella Kendall

FRANCHELLA KENDALL
Chief
Division of Standards and
National Industry Promotion
Office of Apprenticeship

NEW

NATIONAL GUIDELINES FOR APPRENTICESHIP STANDARDS

DEVELOPED BY

THE PUBLIC TRANSIT INDUSTRY NATIONAL JOINT APPRENTICESHIP AND TRAINING COMMITTEE (NJATC)

for the occupation of

TRANSIT RAIL VEHICLE MAINTENANCE TECHNICIAN
(Existing Title: Car Repairer (Railroad Equipment))

O*NET-SOC CODE: 49-3043.00

RAPID CODE: 0642R-HY

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

APPROVED AND CERTIFIED BY THE U.S. DEPARTMENT OF LABOR OFFICE OF APPRENTICESHIP

BY: _____

JOHN V. LADD, ADMINISTRATOR OFFICE OF APPRENTICESHIP

CERTIFICATION DATE: June 12, 2013

CERTIFICATION NUMBER: C-2013-05

FOREWORD

The Transportation Learning Center, on behalf of The Public Transportation National Joint Apprenticeship and Training Committee, recognizes the need for structured training programs to maintain the high level of skill and competence demanded in the Public Transit industry. Registered apprenticeship is the most practical and sound training system available to meet that need, to develop individuals into skilled journeyworkers, and to ensure industry an adequate supply of skilled workers.

Title 29, Code of Federal Regulations (CFR), part 29, outlines the requirements for registration of acceptable apprenticeship programs for Federal purposes, and sets forth labor standards that safeguard the welfare of apprentices. Such registration may be by the U. S. Department of Labor, Office of Apprenticeship, or by a State Apprenticeship Agency recognized by the Office of Apprenticeship as the appropriate body in that State for approval of local apprenticeship programs for Federal purposes. Title 29, CFR part 30 sets forth the requirements for equal employment opportunity in apprenticeship to which all registered apprenticeship programs must adhere.

The purpose of these National Guidelines for Apprenticeship Standards (National Guideline Standards) is to provide policy and guidance to local Sponsors in developing these Standards for Apprenticeship for local approval and registration. These National Guideline Standards developed by the Sponsor are certified by the U. S. Department of Labor, Office of Apprenticeship as substantially conforming to the requirements of Title 29, CFR parts 29 and 30. State Apprenticeship Agencies recognized by the Office of Apprenticeship to register local programs, and/or local laws and regulations, may impose additional requirements that must be addressed in the local apprenticeship standards.

Local Standards of Apprenticeship must be developed and registered by each Sponsor that undertakes to carry out an apprenticeship training program. The local Standards of Apprenticeship will be the Sponsor's written plan outlining all terms and conditions for the recruitment, selection, employment, training, and supervision of apprentices as subscribed by the Sponsor, and must meet all the requirements of the Registration Agency.

The establishment of local apprenticeship programs under these National Guideline Standards will provide the Sponsor with a skilled and versatile work force at each of its locations by providing apprentices the opportunity to become journeyworkers through an organized and properly supervised program of training, practical experience and related instruction.

DEVELOPMENT OF AFFIRMATIVE ACTION PLAN AND SELECTION PROCEDURES

Equal employment opportunity is required of every registered apprenticeship program. Such requirements apply to the recruitment, selection, employment, and training of apprentices throughout their apprenticeship.

Those programs with five or more apprentices, or where there is a likelihood of five or more apprentices, must have a written Affirmative Action Plan and Selection Procedures that are approved by the Registration Agency as part of the Standards of Apprenticeship.

A sample Affirmative Action Plan and Selection Procedures are attached.

Representatives of the Registration Agency are available to assist the local Sponsor in developing its Standards of Apprenticeship, Affirmative Action Plan and Selection Procedures using the sample provided. Once developed, the Standards of Apprenticeship, as well as the Affirmative Action Plan and Selection Procedures, must be submitted to the Registration Agency for approval and registration. Company Affirmative Action Plans and Selection Procedures (hiring process) may be considered in lieu of utilizing the samples provided if they meet all of the requirements of Title 29, CFR part 30.

OFFICIAL ADOPTION OF NATIONAL GUIDELINES FOR APPRENTICESHIP STANDARDS:

The Transportation Learning Center, on behalf of the Public Transportation National Joint Training and Apprenticeship Committee (NJTAC), hereby officially adopts these National Guidelines for Apprenticeship Standards on this 1st Day of May /2013 (Insert Month/Year).

Signature
(SPONSOR)

Brian J. Turner
Printed Name

(SAMPLE)

STANDARD OF APPRENTICESHIP
DEVELOPED BY

(INSERT EMPLOYERS' NAMES OR EMPLOYER GROUP NAME OR ASSOCIATION)

(NAME OF UNION OR LABOR ORGANIZATION)

FOR THE OCCUPATION OF

TRANSIT RAIL VEHICLE MAINTENANCE TECHNICIAN

O*NET-SOC CODE: 49-3043.00

RAPIDS CODE: 0642R-HY

APPROVED BY

(REGISTRATION AGENCY)

These "model" National Guidelines for Apprenticeship Standards are an example of how to develop apprenticeship standards that will comply with Title 29, CFR parts 29 and 30 when tailored to a sponsor's apprenticeship program. These model Standards do not create new legal requirements or change current legal requirements. The legal requirements related to apprenticeship that apply to registered apprenticeship programs are contained in 29 U.S.C. 50 and Title 29, CFR parts 29 and 30. Every effort has been made to ensure that the information in the model Apprenticeship Standards is accurate and up-to-date.

TABLE OF CONTENTS

FOREWORD

These *National Joint Apprenticeship and Training Committee (NJATC)* Apprenticeship Standards have as their objective the training of Transit Rail Vehicle Maintenance Technicians skilled in all phases of rail maintenance. The NJATC and its affiliated Local Joint Apprenticeship and Training Committees (JATC) recognizes that in order to accomplish this, there must be well-developed on-the-job learning combined with related instruction.

This recognition has resulted in the development of these Apprenticeship Standards. They were developed in accordance with the basic standards recommended by the United States Department of Labor, Office of Apprenticeship, as a basis from which JATCs in transit, with guidance from the NJATC, can work to establish an apprenticeship training program that meets the particular needs of the area.

DEFINITIONS

APPRENTICE: Any individual employed by the employer meeting the qualifications described in the Standards of Apprenticeship who has signed an Apprenticeship Agreement with the Local Joint Apprenticeship and Training Committee (JATC) providing for training and related instruction under these Standards, and who is registered with the Registration Agency.

APPRENTICE ELECTRONIC REGISTRATION (AER): Is an electronic tool that allows for instantaneous transmission of apprentice data for more efficient registration of apprentices and provides Program Sponsors with a faster turnaround on their submissions and access to their apprenticeship program data.

APPRENTICESHIP AGREEMENT: The written agreement at the *local* level between the apprentice and the Local Joint Apprenticeship and Training Committee setting forth the responsibilities and obligations of all parties to the Apprenticeship Agreement with respect to the Apprentice's employment and training under these Standards. Each Apprenticeship Agreement must be registered with the Registration Agency.

APPRENTICESHIP COMMITTEE (COMMITTEE): Apprenticeship Committee (Committee) means those persons designated by the sponsor to act as an agent for the sponsor in the administration of the program. A joint committee (as in the Public Transit industry) is composed of an equal number of representatives of the employer(s) and of the employees represented by a bona fide collective bargaining agent(s).

CAREER LATTICE: Career lattice apprenticeship programs include occupational path ways that move an apprentice laterally or upward within an industry. These programs may or may not include an interim credential leading to the Certificate of Completion of Apprenticeship credential. *(if applicable)*

CERTIFICATE OF COMPLETION OF APPRENTICESHIP: The Certificate of Completion of Apprenticeship issued by the Registration Agency to those registered apprentices certified and documented as successfully completing the apprentice training requirements outlined in these Standards of Apprenticeship.

CERTIFICATE OF TRAINING: A Certificate of Training may be issued by the U.S. Department of Labor's Office of Apprenticeship Administrator to those registered apprentices that the JATC has certified in writing to the Registration Agency that the apprentice has successfully met the requirements to receive an interim credential. *(if applicable)*

COLLECTIVE BARGAINING AGREEMENT: The negotiated agreement between the Union and the *transit system* that sets forth the terms and conditions of employment.

COORDINATOR: Means the person designated by the JATC to perform the duties stated in the standards of apprenticeship.

ELECTRONIC MEDIA: Media that utilize electronics or electromechanical energy for the end user (audience) to access the content; and includes, but is not limited to, electronic storage media, transmission media, the Internet, extranet, lease lines, dial-up lines, private networks, and the physical movement of removable/transportable electronic media and/or interactive distance learning.

EMPLOYER: Generally, *an employer means any organization* covered by a collective bargaining agreement who employs an apprentice under these apprenticeship standards.

HYBRID OCCUPATION: The hybrid approach measures the individual apprentice's skill acquisition through a combination of specified minimum number of hours of on-the-job-learning and the successful demonstration of competency as described in a work process schedule. *(if applicable)*

INTERIM CREDENTIAL: Interim Credential means a credential issued by the Registration Agency, upon request of the appropriate sponsor, as certification of competency attainment by an apprentice. *(if applicable)*

JOB CORPS CENTERS: Any of the Federally-funded Job Corps Centers throughout the U.S. and Puerto Rico. Job Corps annually serves approximately 65,000 youth and young adults between 16-24 years of age. Sponsors who wish to hire Job Corps graduates trained in any occupation covered under these Standards, and who meets the minimum qualifications for apprenticeship, may do so via the *Direct Entry* provision described in *Appendix D Selection Procedures*. *(if applicable)*

JOINT APPRENTICESHIP AND TRAINING COMMITTEE: A joint apprenticeship and training committee comprised of an equal number of representatives appointed by the Union and by the Employer in whose name these Standards of Apprenticeship will be registered *with the U.S. Department of Labor, Office of Apprenticeship*. There will be both Local Joint Apprenticeship and Training Committees (JATC) and a National Joint Apprenticeship and Training Committee (NJATC).

JOURNEYWORKER: A worker who has attained a level of skill, abilities and competencies recognized within an industry as having mastered the skills and competencies required for the occupation. (Use of the term may also refer to a mentor, technician, specialist or other skilled worker who has documented sufficient skills and knowledge of an occupation, either through formal apprenticeship or through practical on-the-job experience and formal training.)

O*NET-SOC CODE: The Occupational Information Network (O*NET) codes and titles are based on the new Standard Occupational Classification (SOC) system mandated by the federal Office of Management and Budget for use in collecting statistical information on occupations. The O*NET classification uses an 8-digit O*NET-SOC code. Use of the SOC classification as a basis for the O*NET codes ensures that O*NET information can be readily linked to labor market information such as occupational employment and wage data at the national, State, and local levels.

ON-THE-JOB LEARNING (OJL): Tasks learned on the job in which the apprentice must become proficient before a completion certificate is awarded. The learning must be through structured, supervised work experience.

PROGRAM SPONSOR: The JATC will have full responsibility for operation of the apprenticeship program. The NJATC will be staffed by the Community Transportation Center on an interim basis. The NJATC will consist of an Executive Committee supported by a Technical Committee. Members of the Community Transportation Center's Board of Directors will comprise the NJATC Executive Committee. Members of the NJATC Technical Committee will be composed of members of the National Joint Steering Committee for Transit Apprenticeship. Any reference to the NJATC, in this or any of the accompanying documents, will refer to the Executive and Technical Committees jointly.

PROVISIONAL REGISTRATION: Means the 1-year initial provisional approval of newly registered programs that meet the required standards for program registration, after which program approval may be made permanent, continued as provisional, or rescinded following a review by the Registration Agency, as provided for in the criteria described in §29.3 (g) and (h).

REGISTERED APPRENTICESHIP PARTNERS INFORMATION DATA SYSTEM (RAPIDS): The Federal system which provides for the automated collection, retention, updating, retrieval and summarization of information related to apprentices and apprenticeship programs.

REGISTRATION AGENCY: U.S. Department of Labor's Office of Apprenticeship, or the recognized State Apprenticeship Agency *(insert name as appropriate)*.

RELATED INSTRUCTION: An organized and systematic form of instruction designed to provide the apprentice with knowledge of the theoretical and technical subjects related to his/her occupation.

STANDARDS OF APPRENTICESHIP: This entire document including all appendices and attachments hereto, and any future modifications or additions approved by the Registration Agency.

SUPERVISOR OF APPRENTICE(S): An individual designated by the program sponsor to supervise or have charge and direction of an apprentice.

TRANSFER: A shift of apprenticeship agreement from one program to another or from one employer within a program to another employer within that same program, where there is agreement between the apprentice and the affected apprenticeship committee or program sponsor.

UNION: Means unions representing rail car technicians in the transit industry. This would include but is not limited to, the Amalgamated Transit Union, the Transport Workers Union, the International Brotherhood of Electrical Workers, the International Association of Machinists, and any affiliated local unions party to an appropriate labor agreement between the parties.

YOUTHBUILD U.S.A.: YouthBuild is a youth and community development program that simultaneously addresses core issues facing low-income communities: housing, education, employment, crime prevention, and leadership development. In YouthBuild programs, low-income young people ages 16-24 work toward their GED or high school diploma, learn job skills and serve their communities by building affordable housing, and transform their own lives and roles in society. *(if applicable)*

SECTION I. - PROGRAM ADMINISTRATION *(SAMPLE)*

Structure of the Local and National Joint Apprenticeship and Training Committee

A. Members of the NJATC and JATC will be selected by the groups they represent.

B. Membership of JATCs will be composed of an equal number of management representatives appointed by local management and local union representatives appointed by the Local Union leadership. A minimum of two Union members must be journeyworkers in one of the trades covered under this program. Membership in the NJATC will consist of an equal number of labor and management leaders who are members of the Community Transportation Center Board of Directors. The NJTAC will be supported by a technical committee made up of subject matter experts from labor and management.

C. Technical Assistance - such as that from the U.S. Department of Labor, Office of Apprenticeship, State Apprenticeship Agencies, and vocational schools -- may be requested to advise the NJATC and any JATC.

Administrative Procedures:

A. The NJATC and JATCs will elect Co-Chairpersons (one from Labor and one from Management) and a Secretary, and will determine the time and place of regular meetings which will take place at least every 6 months.

B. The Co-Chairpersons will have the power to vote on all questions affecting apprenticeship. However, the NJATC strongly encourages the use of consensus decision making processes.

C. The Co-Chairpersons of the NJATC or JATC will consist of one person chosen by Labor and one chosen by Management.

Responsibilities of the Local and National Joint Apprenticeship and Training Committees:

JATC responsibilities:

A. Cooperate in the selection of apprentices as outlined in this program.

B. Ensure that apprentices are under written Apprenticeship Agreements and register the local apprenticeship standards and agreements with the appropriate Registration Agency.

C. Determine the physical fitness of qualified applicants to perform the work of the occupation that may require a medical examination prior to their employment as apprentices.

D. Advise apprentices on the need for accident prevention and provide instruction with respect to safety in the workplace.

E. Certify to the local union and management that apprentices have successfully completed their apprenticeship program.

F. Notify the appropriate Registration Agency of all new apprentices to be registered, credit granted, suspensions for any reason, reinstatements, extensions, completions and cancellations with explanation of causes and notice of completions of Apprenticeship Agreements.

G. Supervise all the provisions of the local standards and be responsible, in general, for the successful operation of the standards by performing the duties here listed by cooperating with public and private agencies which can be of assistance by obtaining publicity to develop public support of apprenticeship and by keeping in constant touch with all parties concerned: apprentices, employers and journeyworkers.

H. Provide apprentices with a copy of the written rules and policies and the apprentice will sign an acknowledgment receipt of same. This procedure will be followed whenever revisions or modifications are made to the rules and policies.

JATCs and NJATC Joint Responsibilities:

A. Review and recommend apprenticeship activities in accordance with this program.

B. Establish the minimum standards of education and experience required of apprentices.

C. Meet at least every 6 months to review records and progress of each apprentice in training and recommend improvement or modification in training schedules, schooling and other training activities. Written minutes of the meeting will be kept.

D. Determine the quality and quantity of experience on the job which apprentices should have and to make every effort toward their obtaining it.

E. Hear and resolve all complaints of violation of Apprenticeship Agreements.

F. Arrange tests or evaluations for determining the apprentice's progress in manipulative skills and technical knowledge.

G. Maintain a record of all apprentices, showing their education, experience, and progress in learning the occupation.

SECTION II. - EQUAL OPPORTUNITY PLEDGE - Title 29 CFR 29.5(b)(21) and 30.3(b)

The recruitment, selection, employment, and training of apprentices during their apprenticeship, will be without discrimination because of race, color, religion, national origin, or sex. The JATC 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 (CFR), part 30, as amended (insert state regulations here, if applicable).

SECTION III. - AFFIRMATIVE ACTION PLAN - Title 29 CFR 29.5(b)(21) and 30.4

If the Sponsor employs five or more apprentices, the JATC will adopt an Affirmative Action Plan and Selection Procedures as required under Title 29, CFR part 30. It will be attached as Appendix C.

SECTION IV. - QUALIFICATIONS FOR APPRENTICESHIP – Title 29 CFR 29.5(b)(10) (*EXAMPLES*)

Applicants will meet the following minimum qualifications:

A. Age

The JATC will establish qualifications regarding minimum age limits. *(Applicant must provide evidence of minimum age respecting any applicable State Laws or regulations.)* Apprentices must not be less than 16 years of age.

B. Education

A high school diploma or GED equivalency is required. Applicant must provide an official transcript(s) or equivalent documentation for high school and post high school education and training. All GED records must be submitted if applicable. Opportunities for technical preparation shall be provided by the sponsoring agency to all existing employees failing to meet the above requirements. Students in an approved high school or vocational/technical secondary institution may be accepted as part of the apprenticeship program, provided there is prior

written agreement between the educational institution and the JATC, based on advice and consent of the NJATC.

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

C. Physical

Applicants will be physically capable of performing the essential functions of the apprenticeship program, with or without a reasonable accommodation, and without posing a direct threat to the health and safety of the individual or others.

Applicants may be subject to a physical agility or fitness test, or screened for the current illegal use of drugs or both on acceptance into the program and prior to being employed. The cost of the examination and/or drug screening may be the responsibility of the NJATC or the Employer.

D. Aptitude Test

All applicants must pass each section of a locally determined aptitude test.

SECTION V. - SELECTION OF APPRENTICES – Title 29 CFR 30.5

Selection into the apprenticeship program will be in accordance with the selection procedures made a part of these Standards (Appendix D).

SECTION VI. - APPRENTICESHIP AGREEMENT – Title 29 CFR 29.3(d) and (e) and 29.5(b)(11)

After an applicant for apprenticeship has been selected, but before employment as an apprentice or enrollment in related instruction, the apprentice will be covered by a written apprenticeship agreement (Appendix B) signed by the JATC and the apprentice and approved by and registered with the Registration Agency. Such agreement will contain a statement making the terms and conditions of these standards a part of the agreement as though expressly written therein. A copy of each Apprenticeship Agreement will be furnished to the apprentice, JATC, NJATC, the Registration Agency, the employer and the union, if appropriate.

An additional copy of the Apprenticeship Agreement will be provided to the Veteran's State Approving Agency for those veteran apprentices desiring access to any benefits to which they are entitled.

Prior to signing the Apprenticeship Agreement, each selected applicant will be given an opportunity to read and review these Standards, the JATC's written rules and policies, the Apprenticeship Agreement and the sections of the Collective Bargaining Agreement (CBA) that pertain to apprenticeship.

The Registration Agency will be advised within forty-five (45) days of the execution of each Apprenticeship Agreement and will be given all the information required for registering the apprentice.

SECTION VII. - RATIO OF APPRENTICES TO JOURNEYWORKERS - Title 29 CFR 29.5(b)(7)

A numeric ratio of apprentices to journeyworkers consistent with proper supervision, training, safety, and continuity of employment and applicable provisions in collective bargaining agreements, except where such ratios are expressly prohibited by the collective bargaining agreements. The ratio language must be specific and clearly described as to its application on the job site, workforce, department or plant. The ratio of apprentices to journeyworkers will be **(INSERT NUMBER)** apprentices to **(INSERT NUMBER)** journeyworkers.

SECTION VIII. - TERM OF APPRENTICESHIP – Title 29 CFR 29.5(b)(2)

The term of the occupation will be a minimum of forty-two (42) months with an on-the-job learning (OJL) attainment of 5,400 hours including the required hours of related instruction as stated on the Sample Work Process Schedule and Related Instruction Outlines (Appendix A). The JATC shall establish procedures for awarding training hours to apprentices with demonstrated competencies in a training area.

SECTION IX. - PROBATIONARY PERIOD – Title 29 CFR 29.5(b)(8), (b)(20)

All applicants selected for apprenticeship will serve a probationary period of not less than (a locally determined number of hours of OJL). During the probationary period either the apprentice or the JATC may terminate the Apprenticeship Agreement, without stated cause, by notifying the other party in writing. The probationary period cannot exceed twenty-five (25) percent of the length of the program, or one-year (1), whichever is shorter.

The records for each probationary apprentice will be reviewed prior to the end of the probationary period. Records may consist of periodic reports regarding progression made in both the OJL and related instruction, and any disciplinary action taken during the probationary period. Any probationary apprentice evaluated as satisfactory after a review of the probationary period will be given full credit for the probationary period and continue in the program.

After the probationary period the Apprenticeship Agreement may be canceled at the request of the apprentice, or may be suspended or canceled by the JATC for reasonable cause after documented due notice to the apprentice and a reasonable opportunity for corrective action. In such cases, the JATC will provide written notice to the apprentice, the NJATC and to the Registration Agency of the final action taken.

SECTION X. - HOURS OF WORK

Apprentices will generally work the same hours as journeyworkers, except that no apprentice will be allowed to work overtime if it interferes with attendance in related instruction classes.

Apprentices who do not complete the required hours of OJL during a given segment will have the term of that segment extended until the required number of hours of training are accrued. Any request for an extension of time will be resolved by the JATC on a case by case basis.

SECTION XI. - APPRENTICE WAGE PROGRESSION – Title 29 CFR 29.5(b)(5)

Apprentices will be paid a progressively increasing schedule of wages during their apprenticeship based on the acquisition of increased skill and competence on the job and in related instruction. Before an apprentice is advanced to the next segment of training or to journeyworker status, the JATC will evaluate all progress to determine whether advancement has been earned by satisfactory performance in their OJL and in related instruction courses. In determining whether satisfactory progress has been made, the JATC will be guided by the work experience and related instruction records and reports.

Typically, the progressive wage schedule will be an increasing percentage of the journeyworker wage rate as established in the CBA. The percentages that will be applied to the applicable journeyworker rate are shown on the attached Sample Work Processes and Related Instruction Outline (Appendix A). In no case will the starting wages of apprentices be less than that required by any minimum wage law which may be applicable.

SECTION XII. - CREDIT FOR PREVIOUS EXPERIENCE – Title 29 CFR 29.5(b)(12) and 30.4(c)(8)

The JATC may grant credit towards the term of apprenticeship to new apprentices who demonstrate previous acquisition of skills or knowledge equivalent to that which would be received under these Standards.

Apprentice applicants seeking credit for previous experience gained outside the supervision of the JATC must submit the request at the time of application and furnish such records, affidavits, and other locally determined means to substantiate the claim. Applicants requesting such credit who are selected into the apprenticeship program will start at the beginning wage rate. The request for credit will be evaluated and a determination made by the JATC during the probationary period when actual on-the-job and related instruction performance can be examined. Prior to completion of the probationary period, the amount of credit to be awarded will be determined after review of the apprentice's previous work and training/education record and evaluation of the apprentice's performance and demonstrated skill and knowledge during the probationary period.

An apprentice granted credit will be advanced to the wage rate designated for the period to which such credit accrues. The Registration Agency will be advised of any credit granted and the wage rate to which the apprentice is advanced.

The granting of advanced standing will be uniformly applied to all apprentices.

SECTION XIII. - WORK EXPERIENCE – Title 29 CFR 29.5(b)(3) and 30.8

During the apprenticeship the apprentice will receive such OJL and related instruction in all phases of the occupation necessary to develop the skill and proficiency of a skilled journeyworker. The OJL will be under the direction and guidance of the supervisor of apprentice(s). The NJATC encourages all JATCs to establish a formal mentoring system.

SECTION XIV. - RELATED INSTRUCTION – Title 29 CFR 29.5(b)(4)

During each segment of training each apprentice is required to participate in coursework related to the job as outlined in Appendix A. For each occupation, the recommended term of apprenticeship will include *no less than* 144 hours of related instruction for the bus maintenance technician for each year of the apprenticeship. Apprentices agree to take such courses as the JATC deems advisable. The JATC will secure the instructional aids and equipment it deems necessary to provide quality instruction. In cities, towns or areas having no vocational school or other schools that can furnish related instruction; the apprentice may be required to take an alternate form of instruction that meets the approval of the JATC and Registration Agency. Although the NJATC encourages all programs to pay apprentices for hours spent attending related instruction classes, this is a decision to be made by the JATC.

If applicable, the JATC will inform each apprentice of the availability of college credit through *educational institutions to be determined by the NJATC.*

Any apprentice who is absent from related instruction classes, unless officially excused, will satisfactorily complete all course work missed before being advanced to the next period of training. In cases of failure of an apprentice to fulfill the obligations regarding related instruction (or OJL) without due cause, the JATC will take appropriate disciplinary action and may terminate the Apprenticeship Agreement after due notice to the apprentice and opportunity for corrective action.

To the extent possible, related instruction will be closely correlated with the practical experience and training received on the job. The JATC will monitor and document the apprentice's progress in related instruction classes.

The JATC will secure competent instructors whose knowledge, experience, and ability to teach will be carefully examined and monitored. A formal training system for instructors will be established. If applicable, when possible, the JATC may require the instructors to attend a training institution to be determined by the NJATC.

SECTION XV. - SAFETY AND HEALTH TRAINING – Title 29 CFR 29.5(b)(9)

All apprentices will receive instruction in safe and healthful work practices both on-the-job and in related instruction that are in compliance with the Occupational Safety and Health Standards promulgated by the Secretary of Labor under 29 U.S.C. 651 et seq., as amended, dated December 29, 1970, and subsequent amendments to that law, or State Standards that have been found to be at least as effective as the Federal Standards. (OSHA does not apply to transit agencies in many instances.)

Apprentices will be taught that accident prevention is very largely a matter of education, vigilance, and cooperation and that they should strive at all times to conduct themselves in their work to ensure their own safety and that of their fellow workers.

SECTION XVI. - SUPERVISION OF APPRENTICES – Title 29 CFR 29.5(b)(14)

The employer will be responsible for the training of the apprentice on the job. Apprentices will be under the general supervision of the employer and under the direct supervision of the journeyworker to whom they are assigned. The supervisor of apprentice(s) or equivalent position designated by the employer will, with the advice and assistance of the JATC, be responsible for the apprentice's work assignments and will ensure apprentice is working under the supervision of a skilled journeyworker, evaluation of work performance, and completion and submittal of progress reports to the JATC.

No apprentice will be allowed to work without direct journeyworker supervision.

SECTION XVII. - RECORDS AND EXAMINATIONS – Title 29 CFR 29.5(b)(6)

Each apprentice may be responsible for maintaining a record of his/her work experience/training on the job and in related instruction and for having this record verified by his/her supervisor at the end of each week. The apprentice will authorize an effective release of their completed related instruction records from the local school authorities to the JATC. The record cards and all data, written records of progress evaluations, corrective and final actions pertaining to the apprenticeship, will be maintained by and be the property of the JATC. This record will be included in each apprentice's record file maintained by the JATC *and a copy will be forwarded to the NJATC. A national database of apprentice information will be jointly maintained by the JATC and the NJATC.*

Before each period of advancement, or at any other time when conditions warrant, the JATC will evaluate the apprentice's record or require other *demonstrations of competency* to determine whether he/she has made satisfactory progress. If an apprentice's related instruction or on-the-job progress is found to be unsatisfactory, the JATC may determine whether the apprentice will continue in a probationary status, or require the apprentice to repeat a process or series of processes before advancing to the next wage classification. In such cases, the JATC will initiate a performance improvement plan with the apprentice.

Should it be found that the apprentice does not have the ability or desire to continue the training to become a journeyworker, the JATC will, after the apprentice has been given adequate assistance and opportunity for corrective action, terminate the Apprenticeship Agreement.

SECTION XVIII. - MAINTENANCE OF RECORDS – Title 29 CFR 29.5(b)(23) and 30.8(e

The JATC, *and the NJATC,* will maintain for a period of five (5) years from the date of last action, all records relating to apprentice applications (whether selected or not), the employment and training of apprentices, and any other information relevant to the operation of the program. This includes, but is not limited to, records on the recruitment, application and selection of apprentices, and records on the apprentice's job assignments, promotions, demotions, layoffs, terminations, rate of pay, or other forms of compensation, hours of work and training, evaluations, and other relevant data. The records will permit identification of minority and female (minority and non-minority) participants. These records will be made available on request to the Registration Agency.

SECTION XIX. - CERTIFICATE OF COMPLETION OF APPRENTICESHIP – Title 29 CFR 29.5(b)(15)

Upon satisfactory completion of the requirements of the apprenticeship program as established in these Standards, the JATC will so certify in writing to the Registration Agency and request that a Certificate of Completion of Apprenticeship be awarded to the completing apprentice(s). Such requests will be accompanied by the appropriate documentation for both the OJL and the related instruction as may be required by the Registration Agency. Intermediate certificates may be awarded based on completion of certain designated self-contained modules.

Certificate of Training - A Certificate of Training may be issued by the U.S. Department of Labor's, Office of Apprenticeship Administrator to those registered apprentices that the JATC has certified in writing to the Registration Agency that the apprentice has successfully met the requirements to receive an interim credential. *(if applicable)*

SECTION XX. - NOTICE TO REGISTRATION AGENCY – Title 29 CFR 29.3(d) and (e) and 29.5(b)(19)

The Registration Agency will be notified within forty-five (45) days of all new apprentices to be registered, credit granted, suspensions for any reason, reinstatements, extensions, modifications, completions, cancellations, and terminations of Apprenticeship Agreements and causes.

SECTION XXI. - CANCELLATION AND DEREGISTRATION – Title 29 CFR 29.5(b)(18) and 29.8

These Standards will, upon adoption by the JATC, be submitted to the Registration Agency for approval. Such approval will be acquired before implementation of the program.

The JATC reserves the right to discontinue at any time the apprenticeship program set forth herein. The Registration Agency will be notified promptly in writing of any decision to cancel the program.

Deregistration of these Standards may be initiated by the Registration Agency for failure of the JATC to abide by the provisions herein. Such deregistration will be in accordance with the Registration Agency's regulations and procedures.

Within fifteen (15) days of cancellation of the apprenticeship program (whether voluntary or involuntary), the JATC will notify each apprentice of the cancellation and the effect of same. This notification will conform to the requirements of Title 29, CFR part 29.8.

SECTION XXII. - AMENDMENTS OR MODIFICATIONS – Title 29 CFR 29.5(b)(18)

These Standards may be amended or modified at any time by joint agreement between the Employer and the Amalgamated Transit Union, Transport Workers Union, International Brotherhood of Electrical Workers and other unions representing maintenance workers in the transit industry provided that no amendment or modification adopted will alter any Apprenticeship Agreement in force at the time without the consent of all parties. Such amendment or modification will be submitted to the NJATC and JATC for approval and will then be submitted to the Registration Agency for approval and registration prior to being placed in effect. A copy of each amendment or modification adopted will be furnished to each apprentice to whom the amendment or modification applies.

SECTION XXIII. - ADJUSTING DIFFERENCES/COMPLAINT PROCEDURE - Title 29 CFR 29.5(b)(22), 29.7(k) and 30.11

The *JATC* will have full authority to supervise the enforcement of these Standards. Its decision will be final and binding on the employer, the union, and the apprentice, unless otherwise noted below.

If an applicant or an apprentice believes an issue exists that adversely affects his/her participation in the apprenticeship program or violates the provisions of the Apprenticeship Agreement or Standards, relief may be sought through one or more of the following avenues, based on the nature of the issue.

Title 29 CFR 29.7(k)

For issues regarding wages, hours, working conditions, and other issues covered by the CBA, apprentices may seek resolution through the applicable Grievance and Arbitration procedures contained in the Articles of the CBA.

The JATC will hear and resolve all complaints of violations concerning the Apprenticeship Agreement and the registered Apprenticeship Standards, for which written notification is received within fifteen (15) days of violations. The JATC will make such rulings as it deems necessary in each individual case and within thirty (30) days of receiving the written notification. Either party to the Apprenticeship Agreement may consult with the Registration Agency and/or the *NJATC for* an interpretation of any provision of these Standards over which differences occur. The name and address of the appropriate authority to receive, process and make disposition of complaints is: (JATC should insert applicable information here).

Title 29 CFR 30.11

Any apprentice or applicant for apprenticeship who believes that he/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/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 Registration Agency or, at the apprentice or applicant's election, with the private review body established by the program sponsor (if applicable).

The complaint will be in writing and will be signed by the complainant. It must include the name, address, and telephone number of the person allegedly discriminated against, the program sponsor involved, and a brief description of the circumstances of the failure to apply equal opportunity standards.

The complaint must be filed not later than one hundred eighty (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 body designated by the program sponsor to review such complaints, any referral of such complaint by the complainant to the Registration Agency must occur within the time limitation stated above or thirty (30) days from the final decision of such review body, whichever is later. The time may be extended by the Registration Agency for good cause shown.

Complaints of harassment in the apprenticeship program may be filed and processed under Title 29, CFR part 30, and the procedures as set forth above.

The JATC will provide written notice of their complaint procedure to all applicants for apprenticeship and all apprentices.

SECTION XXIV. - COLLECTIVE BARGAINING AGREEMENT (CBA) - Title 29 CFR 29.11

Nothing in this part or in any apprenticeship agreement will operate to invalidate:

(a) Any apprenticeship provision in any collective bargaining agreement between employers and employees establishing higher apprenticeship standards; or

(b) Any special provision for veterans, minority persons, or women in the standards, apprentice qualifications or operation of the program, or in the apprenticeship agreement, which is not otherwise prohibited by law, Executive Order, or authorized regulation.

SECTION XXV. - TRANSFER OF AN APPRENTICE AND TRAINING OBLIGATION - Title 29 CFR 29.5(13)

The transfer of an apprentice between apprenticeship programs and within an apprenticeship program must be based on agreement between the apprentice and the affected apprenticeship committee or program sponsors, and must comply with the following requirements:

i. The transferring apprentice must be provided a transcript of related instruction and on-the-job learning by the committee or program sponsor;
ii. Transfer must be to the same occupation; and
iii. A new apprenticeship agreement must be executed when the transfer occurs between the program sponsors.

If the Sponsor is unable to fulfill his/her training obligation due to lack of work or failure to conform to these Standards, the Sponsor will make every effort to refer the apprentice with his/her consent to another employer, Registration Agency or One Stop for placement into another registered apprenticeship program. This will provide the apprentice an opportunity for continuous employment and completion of their apprenticeship program. The apprentice must receive credit from the new employer for the training already satisfactorily completed.

SECTION XXVI. - RESPONSIBILITIES OF THE APPRENTICE (*EXAMPLE ONLY*)

Apprentices, having read these Standards formulated by the NJATC and JATC and signed an Apprenticeship Agreement with the JATC, agree to all the terms and conditions contained therein and agree to abide by the JATC's rules and policies, including any amendments, serve such time, perform such manual training, and study such subjects as the JATC may deem necessary to become a skilled Transit Rail Vehicle Maintenance Technician.

In signing the Apprenticeship Agreement, apprentices assume the following responsibilities and obligations under the apprenticeship program:

A. Perform diligently and faithfully the work of the occupation and other pertinent duties assigned by the JATC and the employer in accordance with the provisions of these Standards.

B. Respect the property of the employer and abide by the working rules and regulations of the employer, union and the JATC.

C. Attend and satisfactorily complete the required hours in the OJL and in related instruction in subjects related to the occupation as provided under these Standards.

D. Maintain and make available such records of work experience and training received on the job and in related instruction as may be required by the JATC.

E. Develop and practice safe working habits and work in such a manner as to assure his/her personal safety and that of other workers.

F. Work for the employer to whom the apprentice is assigned for the completion of apprenticeship, unless reassigned to another employer or the Apprenticeship Agreement is terminated by the JATC.

SECTION XXVII. – TECHNICAL ASSISTANCE

The NJATC will provide additional assistance at the request of the JATC. Technical Assistance such as that from the U.S. Department of Labor, Office of Apprenticeship, State Apprenticeship Agencies, and vocational schools--may also be requested to advise the NJATC and JATC.

The NJATC and JATC are encouraged to invite representatives from industry, education, rail car manufacturers, private and/or public agencies to provide consultation and advice for the successful operation of their training program.

SECTION XXVIII - OFFICIAL ADOPTION OF APPRENTICESHIP STANDARDS:

The (Insert Employers Names or Employer Group Name or Association) (Insert Name of Union or Labor Organization) hereby adopts these Standards of Apprenticeship on this ____ Day of (Insert Month/Year).

Signature of Management	**Signature of Labor**
Printed Name	**Printed Name**
Signature of Management	**Signature of Labor**
Printed Name	**Printed Name**

Sponsor(s) may designate the appropriate person(s) to sign the Standards on their behalf.

Appendix A

WORK PROCESS SCHEDULE
TRANSIT RAIL VEHICLE MAINTENANCE TECHNICIAN
(Existing Title: Car Repairer (Railroad Equipment))
O*NET-SOC CODE: 49-3043.00 RAPIDS CODE: 0642R-HY

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

1. TERM OF TRANSIT RAIL VEHICLE MAINTENANCE TECHNICIAN APPRENTICESHIP

The term of the apprenticeship shall be (42 months) with an OJL attainment of (5,400 hours) supplemented by the required hours of related instruction. (This example assumes a certain level of competency in reading. Reading classes will be added by transit agencies that are not able to find candidates with these qualifications within their labor market.)

2. RATIO OF APPRENTICES TO JOURNEYWORKERS

Ratio as covered in the local collective bargaining agreement (CBA).

3. APPRENTICES' WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on a percentage of the current journeyworker wage rate per the *CBA*.

Transit Rail Vehicle Maintenance Technician Apprenticeship Term:

By Percentage of Journey-level Wage: SAMPLE
for a 42 month program and an hourly wage rate of $28.80.
(The hourly rate is a composite representative of the current state of the industry. Local rates will be determined by the CBA.)

Time Period | Percentage of Journey-level | Apprentice

100 Level – Rail Vehicle Apprentice Technician

1st six months	= 60%	= $ 17.28
2nd six months	= 65%	= $ 18.72

200 Level – Rail Vehicle Technician

3rd six months	= 70%	= $ 20.16
4th six months	= 75%	= $ 21.60

300 Level – Rail Vehicle Master Technician

5th six months	= 80%	= $ 23.04
6th six months	= 85%	= $ 24.48
7th six months	= 95%	= $ 27.36

4. SCHEDULE OF WORK EXPERIENCE

National Joint Apprenticeship and Training Committee (NJATC) may modify the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

5. SCHEDULE OF RELATED INSTRUCTION

(All classes include practical application, diagnostics, and troubleshooting where applicable. Safety is a priority and will be integrated into all training.)

Classroom and on-the-job learning elements are described in Appendix A attachment 1.

WORK PROCESS SCHEDULE AND RELATED INSTRUCTION OUTLINE
TRANSIT RAIL VEHICLE MAINTENANCE TECHNICIAN
(Existing Title: Car Repairer (Railroad Equipment))
O*NET-SOC CODE: 49-3043.00 RAPIDS CODE: 0642R-HY

Level 100 – Fundamental skills for transit railcar maintenance (diagnose, adjust, repair, or overhaul mass transit rail cars)

Classroom Hours of Instruction	Subject Area
24	Transit Orientation – History of Transit in the U.S. and local community. How transit is funded. Basic Regulatory agency information, federal and state. Orientation and background on the specific property.
16	Electrical and Job Safety: Demonstrate Knowledge of Job and Electrical Safety Practices
48	Tools and material handling
48	Basic mathematics
64	Introduction to electricity
24	Electrical meters
40	Wiring technologies and equipment
80	DC fundamentals
80	AC fundamentals
24	Basic hydraulic and pneumatic theory and applications
24	Basic mechanical theory and applications
160	AC motors, DC motors and generators
80	Introduction to electrical ladder drawings
80	AC circuit analysis
160	Semiconductor fundamentals
40	Digital fundamentals
992	**TOTAL**

NOTE: The 100 level is classroom training only, no on-the-job learning (OJL).

WORK PROCESS SCHEDULE AND RELATED INSTRUCTION OUTLINE
TRANSIT RAIL VEHICLE MAINTENANCE TECHNICIAN
(Existing Title: Car Repairer (Railroad Equipment))
O*NET-SOC CODE: 49-3043.00 RAPIDS CODE: 0642R-HY

Level 200 - Vehicle theory of operation and standard maintenance of rail vehicles

Hours of Instruction		Subject Area
Classroom	On-the-Job	
8	-	Vehicle theory of operation and overview of major systems – The contents of this class will vary by property according to the equipment and propulsion systems used at that location. May include Light Rail Vehicles, Heavy Rail, Commuter Rail and AC, DC catenary, third rail etc.
16	200	Couplers – Introduction and preventive maintenance
24	200	Trucks and axles – Introduction and preventive maintenance
24	300	Propulsion and dynamic braking – Introduction and preventive maintenance
16	60	Auxiliary inverters and batteries – Introduction and preventive maintenance
24	200	Friction brakes – Introduction and preventive maintenance
40	320	HVAC – Introduction and preventive maintenance
8	120	Current collection and distribution – Introduction and preventive maintenance
16	120	Car body – Introduction and preventive maintenance
24	80	Doors
16	120	Communications systems
24	160	Communications Based Train Control (CBTC, Automatic Train Protection (ATP), Automatic Train Operation (ATO))
24	120	Monitoring, diagnosing and troubleshooting overview
264	**2000**	**TOTAL**

WORK PROCESS SCHEDULE AND RELATED INSTRUCTION OUTLINE
TRANSIT RAIL VEHICLE MAINTENANCE TECHNICIAN
(Existing Title: Car Repairer (Railroad Equipment))
O*NET-SOC CODE: 49-3043.00 RAPIDS CODE: 0642R-HY

Level 300 – Advanced theory of operation and troubleshooting of systems

Hours of Instruction		Subject Area
Classroom	On-the-Job	
24	200	Advanced methods of monitoring, diagnosing and troubleshooting
24	80	Couplers – Advanced theory of operation and troubleshooting
40	320	Trucks & axles– Advanced theory of operation and troubleshooting
40	480	Propulsion and dynamic braking– Advanced theory of operation and troubleshooting
40	480	Auxiliary inverters and batteries– Advanced theory of operation and troubleshooting
20	240	Friction brakes– Advanced theory of operation and troubleshooting
24	200	HVAC– Advanced theory of operation and troubleshooting
16	160	Current collection and distribution– Advanced theory of operation and troubleshooting
16	160	Car body
40	480	Doors– Advanced theory of operation and troubleshooting
36	240	Communications systems– Advanced theory of operation and troubleshooting
24	360	CBTC (ATP-ATO) – Advanced theory of operation and troubleshooting
344	**3400**	**TOTAL**

Total OJL hours (Subject to local CBA) 5,400

*Descriptions are limited to brief summaries and are not meant to be inclusive of the many complex components on today's railcars.

SCHEDULE OF RELATED INSTRUCTION **HOURS**

(Sub-component lists are for illustrative purposes and are not inclusive.) **1,600**

Total hours OJL and Related Instruction are subject to local CBA **7,000**

Safety is a part of all instruction
Several components will have equipment-specific instruction on schematic reading.

NOTE: Each level represents an interim credential with an associated certificate of training.

Appendix B
ETA-671 Apprenticeship Agreement
AER Sponsor Manual

APPRENTICE REGISTRATION-SECTION II OMB No. 1205-0223 Expires: 04/30/2015

Warning: This agreement does not constitute a certification under Title 29, CFR, Part 5 for the employment of the apprentice on Federally financed or assisted construction projects. Current certifications must be obtained from the Office of Apprenticeship (OA) or the recognized State Apprenticeship Agency shown below. (Item 24)

The program sponsor and apprentice agree to the terms of the Apprenticeship Standards incorporated as part of this Agreement. The sponsor will not discriminate in the selection and training of the apprentice in accordance with the Equal Opportunity Standards in Title 29 CFR Part 30, and Executive Order 11246. This agreement may be terminated by either of the parties, citing cause(s), with notification to the registration agency, in compliance with Title 29, CFR, Part 29

PART A: TO BE COMPLETED BY APPRENTICE. NOTE TO SPONSOR: PART A SHOULD ONLY BE FILLED OUT BY APPRENTICE.

1. Name (Last, First, Middle) and Address *Social Security Number

\- -

(No., Street, City, State, Zip Code, Telephone Number)

2. Date of Birth (Mo., Day, Yr.)

3. Sex (Mark one)
☐ Male ☐ Female

Answer Both A and B (Voluntary)
(Definitions on reverse)

4. a. Ethnic Group (Mark one)
☐ Hispanic or Latino
☐ Not Hispanic or Latino

b. Race (Mark one or more)
☐ American Indian or Alaska native
☐ Asian
☐ Black or African American
☐ Native Hawaiian or other Pacific Islander
☐ White

5. Veteran Status (Mark one)
☐ Non-Veteran
☐ Veteran

6. Education Level (Mark one)
☐ 8th grade or less
☐ 9th to 12th grade
☐ GED
☐ High School Graduate or Greater
☐ Post Secondary or Technical Training

7a. Employment Status (Mark one) ☐ New Employee ☐ Existing Employee

7b. Career Linkage or Direct Entry (Mark one) (Instructions on reverse) ☐ None ☐ One-Stop Referral ☐ Trade Adjustment Assistance

☐ Job Corps ☐ YouthBuild ☐ School-to-Registered Apprenticeship ☐ HUD/STEP-UP ☐ Direct Entry:_____

8. Signature of Apprentice Date

9. Signature of Parent/Guardian (if minor) Date

PART B: SPONSOR: EXCEPT FOR ITEMS 6, 7, 8, 10a. -10c, REMAINDER OF ITEMS REPOPULATED FROM PROGRAM REGISTRATION.

1. Sponsor Program No.

Sponsor Name and Address (No. Street, City, County, State, Zip Code)

2a Occupation (The work processes listed in the standards are part of this agreement).

2b Occupation Code:

2b.1. Interim Credentials Only applicable to Part B, 3.b. and 3.c. (Mark one)
☐ Yes ☐ No

3. Occupation Training Approach (Mark one)
3a. ☐ Time-Based
3b. ☐ Competency-Based
3c. ☐ Hybrid

4. Term (Hrs., Mos., Yrs.)

5. Probationary Period (Hrs., Mos., Yrs.)

6. Credit for Previous Experience (Hrs., Mos., Yrs.)

7. Term Remaining (Hrs., Mos., Yrs.)

8. Date Apprenticeship Begins

9a. Related Instruction (Number of Hours Per Year)

9b. Apprentice Wages for Related Instruction
☐ Will Be Paid ☐ Will Not Be Paid

9c. Related Training Instruction Source

10. Wages: (Instructions on reverse)

10a. Pre-Apprenticeship Hourly Wage $ _____ 10b. Apprentice's Entry Hourly Wage $_____ 10c. Journeyworker's Hourly Wage $_____

Check Box	Period 1	2	3	4	5	6	7	8	9	10
10d. Term ☐ Hrs., ☐ Mos., or ☐ Yrs.										
10e. Wage Rate (Mark one) % ☐ or $ ☐										

11. Signature of Sponsor's Representative(s) Date Signed

12. Signature of Sponsor's Representative(s) Date Signed

13. Name and Address of Sponsor Designee to Receive Complaints (If applicable)

PART C: TO BE COMPLETED BY REGISTRATION AGENCY

1. Registration Agency and Address

2. Signature (Registration Agency)

3. Date Registered

4. Apprentice Identification Number (Definition on reverse):

Program Definitions and/or Instructions:
Part A
Item 4.a. Definition - Ethnic Group:
Hispanic or Latino. A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. The term, "Spanish origin," can be used in addition to "Hispanic or Latino."

Item 4.b. Definitions - Race:
American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.
Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
Black or African American. A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."
Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Item 7b. Instructions:
Indicate any career linkage (definitions follow) or direct entry. Enter "None" if no career linkage or direct entry applies.

Career linkage includes participation in programs that provided employment, training and other services to adults, youth and dislocated workers. Funds for these activities are provided by the U.S. Department of Labor/Employment and Training Administration (U.S. DOL/ETA) to states and local communities.

One-Stop Referral. Includes Workforce Investment Act (WIA) and Employment Services (ES) participants referred to the Registered Apprenticeship program and/or apprentices that receive WIA funded services that support their participation in their Registered Apprenticeship program.
Trade Adjustment Assistance. Includes trade-affected workers who have become unemployed as a result of increased imports or shifts in production out of the United States.
Job Corps. Youth ages 16-24 years usually receiving services in a residential setting.
YouthBuild. Program transferred from the U.S. Department of Housing and Urban Development (HUD) to U.S. DOL/ETA in September 2006. It assists youth ages 16-24 to obtain education and skill training and advance toward post-secondary education and career pathways in construction and other high growth, high demand occupations while building affordable housing in their communities.
School-to-Registered Apprenticeship. Program designed to allow high school youth ages 16 - 17 to enter a Registered Apprenticeship program and continue after graduation with full credit given for the high school portion.
HUD/STEP-UP. Developed in conjunction with HUD. The program provides the actual apprenticeship experience and the framework for moving into high-skill Registered Apprenticeship.

Direct Entry. A graduate from an accredited technical training school, Job Corps training program, Youth Build Program, or a participant in a military apprenticeship program, any of which training is specifically related to the occupation and incorporated in the Registered Apprenticeship standards. Also, insert the name of the program.

Part B
Item 2.b.1. Interim Credentials. Based on program standards that utilize the competency-based or hybrid training approach, and, upon request of the program sponsor, the credentials are issued as certificates by the Registration Agency. Interim credentials provide certification of competency attainment by an apprentice.

Item 3. Occupation Training Approach. The program sponsor decides which of the three training methods to use in the program as follows:
3.a. Time-Based Training Approach - apprentice required to complete a specific number of hours of on-the-job learning (OJL) and related training instruction (RTI).
3.b. Competency-Based Training Approach - apprentice required to demonstrate competency in defined subject areas and does not require any specific hours of OJL or RTI; or
3.c. Hybrid-Training Approach - apprentice required to complete a minimum number of OJL and RTI hours and demonstrate competency in the defined subject areas.

Item 4. Term (Hrs., Mos., Yrs.). Based on the program sponsor's training approach. See Part B, Item 4. Available in the terms of the Apprenticeship Standards.

Item 5. Probationary Period (Hrs. Mos., Yrs.) Probation period cannot exceed 25 percent of the length of the program or one year, whichever is shorter.

Item 7. Term Remaining (Hrs., Mos., Yrs.). After Part B, Item 6., Credit for Previous Experience (Hrs., Mos., Yrs.) is determined by the program sponsor. The Term Remaining (Hrs., Mos., Yrs.) in Part B, Item 7., for the apprentice to complete the apprenticeship is based on the training approach indicated above in Part B, Item 3. The term remaining is available in the terms of the Apprenticeship Standards.

Item 10. Wage Instructions:
10a. Pre-Apprentice hourly wage: sponsor enters the individual's hourly wage in the quarter prior to becoming an apprentice.
10b. Apprentice's entry hourly wage (hourly dollar amount paid): sponsor enters this apprentice's entry hourly wage.
10c. Journeyworker's wage: sponsor enters wage per hour.
10d. Term: sponsor enters in each box the apprentice schedule of pay for each advancement period based on the program sponsor's training approach. See Part B, Item 3., and is available in the terms of the Apprenticeship Standards.
10e. Percent or dollar amount: sponsor marks one.

Note: 10c. If the employer is signatory to a collective bargaining agreement, the journeyworker's wage rate in the applicable collective bargaining agreement is identified. Apprenticeship program sponsors not covered by a collective bargaining agreement must identify a minimum journeyworker's hourly wage rate that will be the basis for the progressive wage schedule identified in Item 10e. of this agreement.
10d. The employer agrees to pay the hourly wage rate identified in this section to the apprentice each period of the apprenticeship based on the successful completion of the training approach and related instructions outlined in the Apprenticeship Standards. The period may be expressed in hours, months, or years.
10e. The wage rates are expressed either as a percent or in dollars and cents of the journeyworker's wage depending on the industry.

Example (Time-based approach) - 3 YEAR APPRENTICESHIP PROGRAM

Term	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
hrs., mos., yrs.	1000 hrs.	1000 hrs.	1000 hrs.	1000 hrs.	1000 hrs.	1000 hrs.
%	55	60	65	70	80	90

Example (Time-based approach) - 4 YEAR APPRENTICESHIP PROGRAM

Term	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8
hrs., mos., yrs.	6 mos.	6 mos.	6 mos.	6 mos.	6 mos.	6 mos.	6 mos.	6 mos.
%	50	55	60	65	70	75	80	90

Item 13. Identifies the individual or entity responsible for receiving complaints (Code of Federal Regulations, CFR, Title 29 part 29.7(k)).

Part C.
Item 4. Definition: The Registered Apprenticeship Partners Information Data System (RAPIDS) encrypts the apprentice's social security number and generates a unique identification number to identify the apprentice. It replaces the social security number to protect the apprentice's privacy.

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*The submission of your social security number is requested. The apprentice's social security number will only be used to verify the apprentice's periods of employment and wages for purposes of complying with the Office of Management and Budget related to common measures of the Federal job training and employment programs for measuring performance outcomes and for purposes of the Government Performance and Results Act. The Office of Apprenticeship will use wage records through the Wage Record Interchange System and needs the apprentice's social security number to match this number against the employers' wage records. Also, the apprentice's social security number will be used, if appropriate, for purposes of the Davis Bacon Act of 1931, as amended, U.S. Code Title 40, Sections 276a to 276a-7, and Title 29 CFR 5, to verify and certify to the U.S. Department of Labor, Wage and Hour Division, that you are a registered apprentice to ensure that the employer is complying with the geographic prevailing wage of your occupational classification. Failure to disclose your social security number on this form will not affect your right to be registered as an apprentice. Civil and criminal provisions of the Privacy Act apply to any unlawful disclosure of your social security number, which is prohibited.

The collection and maintenance of the data on ETA-671, Apprentice Registration – Section II Form, is authorized under the National Apprenticeship Act, 29 U.S.C. 50, and CFR 29 Part 29.1. The data is used for apprenticeship program statistical purposes and is maintained, pursuant to the Privacy Act of 1974 (5 U.S.C. 552a.), in a system of records entitled, DOL/ETA-4, Registered Apprenticeship Partners Information Management Data System (RAPIDS) at the U.S. Department of Labor, Office of Apprenticeship,. Data may be disclosed to a State Apprenticeship Agency to determine an assessment of skill needs and program information, and in connection with federal litigation or when required by law.

Persons are not required to respond to this collection of information unless it displays a currently valid OMB control number. Public reporting burden for this collection of information is estimated to average five minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond is required to obtain or retain benefits under 29 USC 50. Send comments regarding this burden or any other aspect of this collection of information including suggestions for reducing this burden to the U.S. Department of Labor, Office of Apprenticeship, 200 Constitution Avenue, N.W., Room N-5311, Washington, D.C. 20210 (Paperwork Reduction Project 1205-0023.)

RAPIDS

Registered Apprenticeship Partners Information Data System

SPONSOR QUICK START GUIDE

The purpose of this RAPIDS Sponsor's Quick Start Guide is to enable the new user to Access the system and perform the basic actions of registering, canceling and completing apprentices. For a more extensive and in depth discussion of the capabilities of the RAPIDS system please consult the complete edition of the RAPIDS manual.

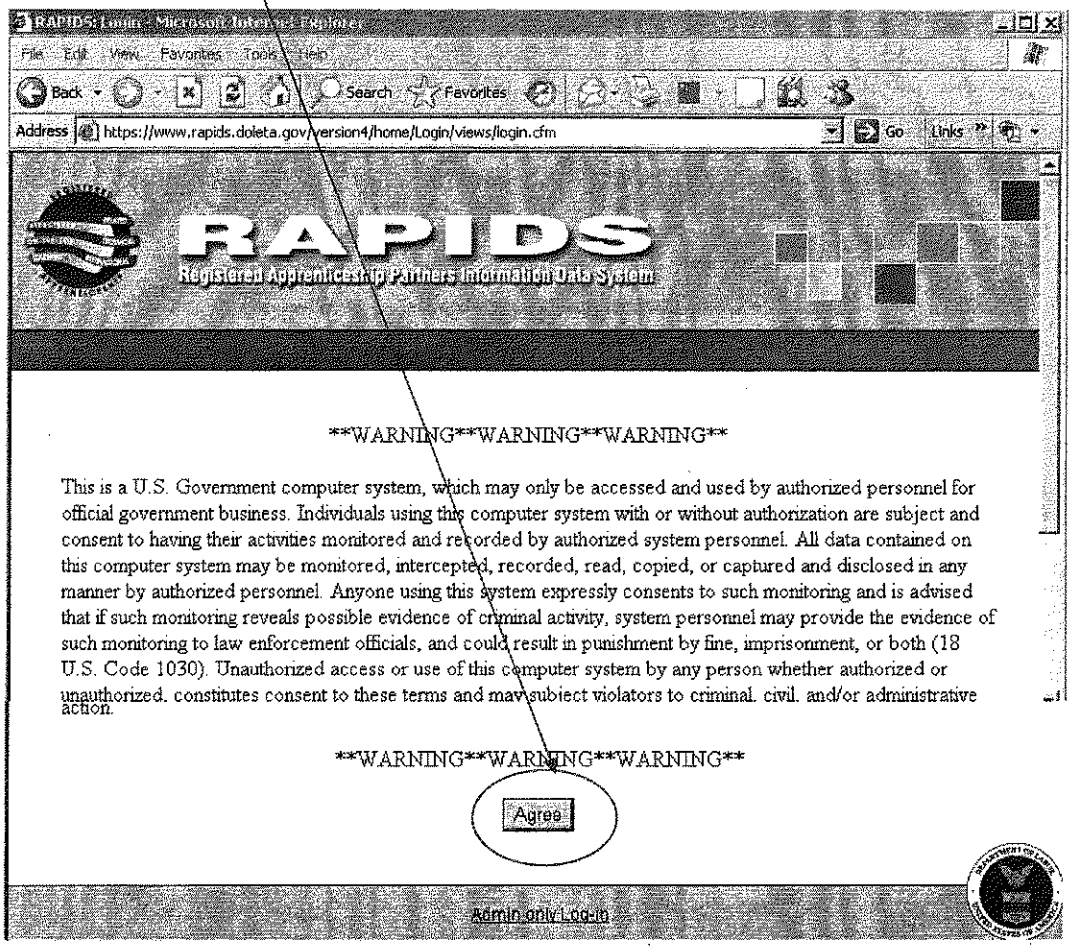
Table of Contents

1.1 Accessing RAPIDS Website

Note: Before beginning the training session, please set up your computer and be ready for the training.

To access RAPIDS:

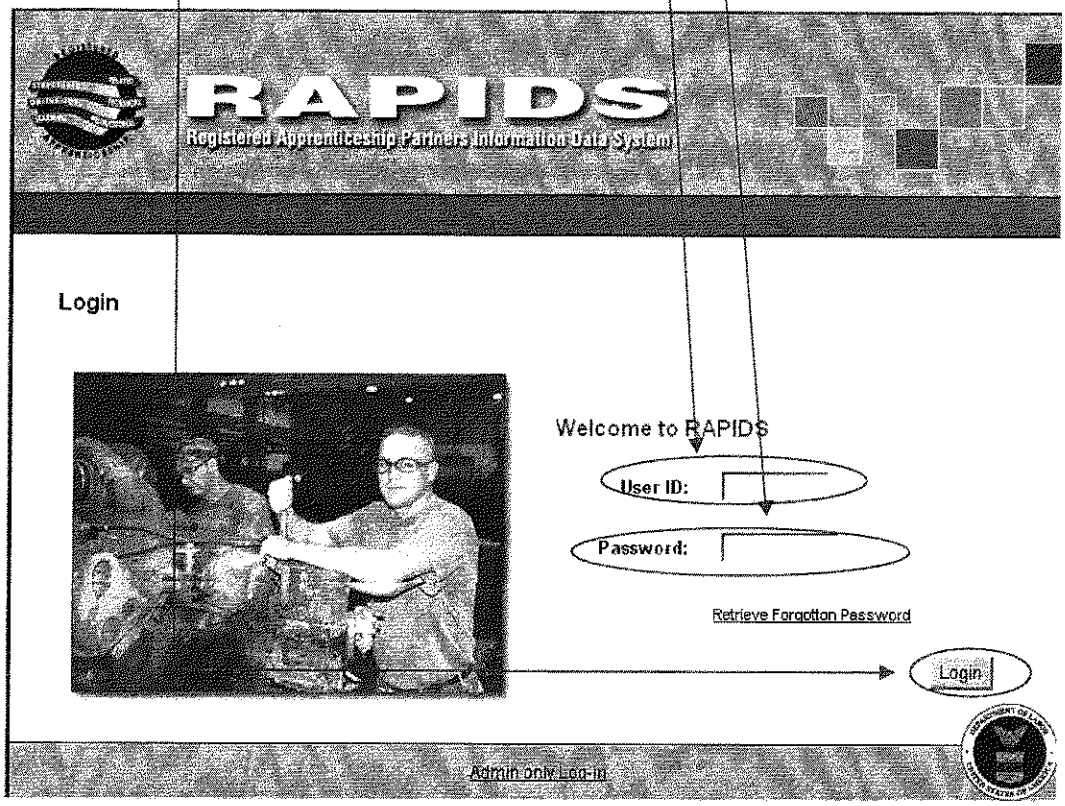
1. At your browser address box (Internet Explorer is the preferred browser), enter the following URL in the IE Address Box: **https://www.rapids.doleta.gov**
2. The "Security Warning Message" screen appears.
3. Click **Agree**.
4. The RAPIDS login screen appears



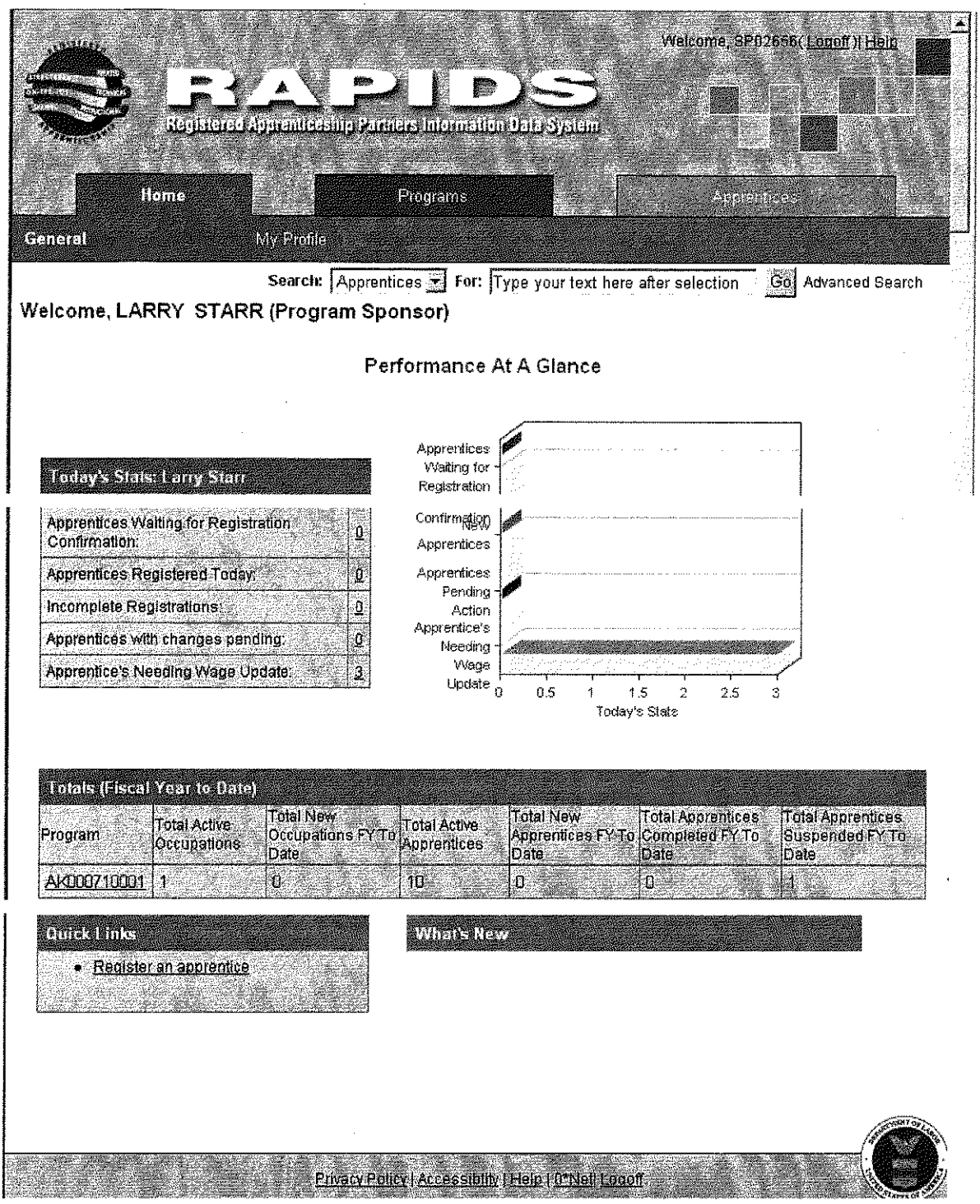
1.2 Log In

These next few steps will show a user how to log in to RAPIDS and prepare to work on the various functions necessary to register apprentices and programs. To log in, follow the steps below:

1. Enter the User ID that was assigned to you in the USER ID box.
2. Enter the password that was assigned to you in the Password box.
3. Click on the **Login** button or press the **Enter** key on your keyboard.

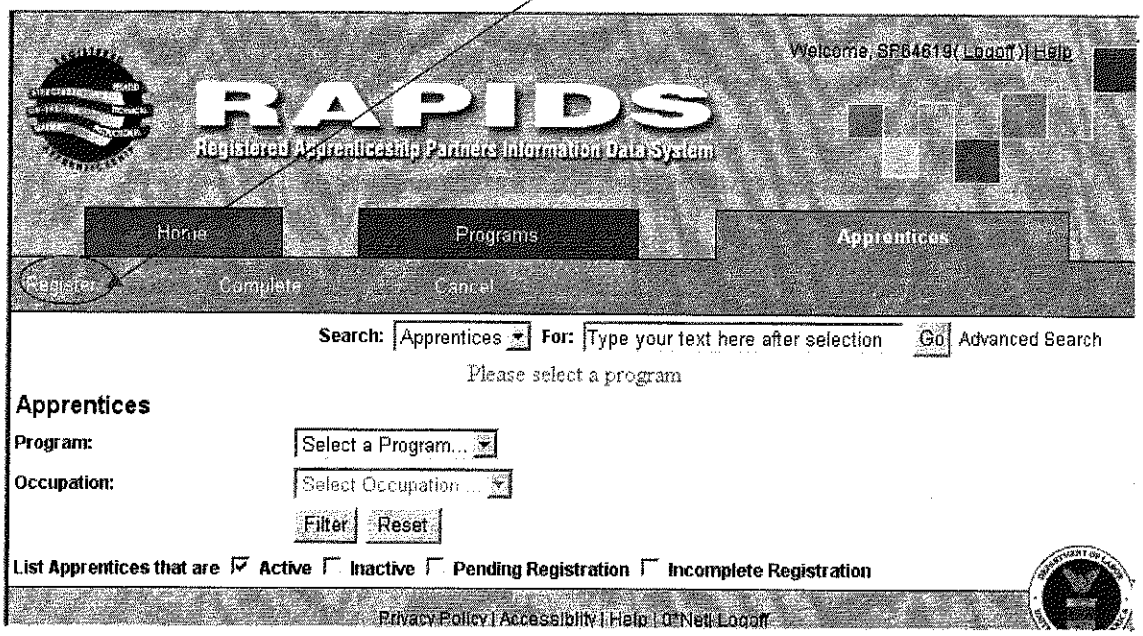


Result: The Home page will display, as shown below:



1.3 Register Apprentice

From the Apprentice Main Page, click the Register tab.



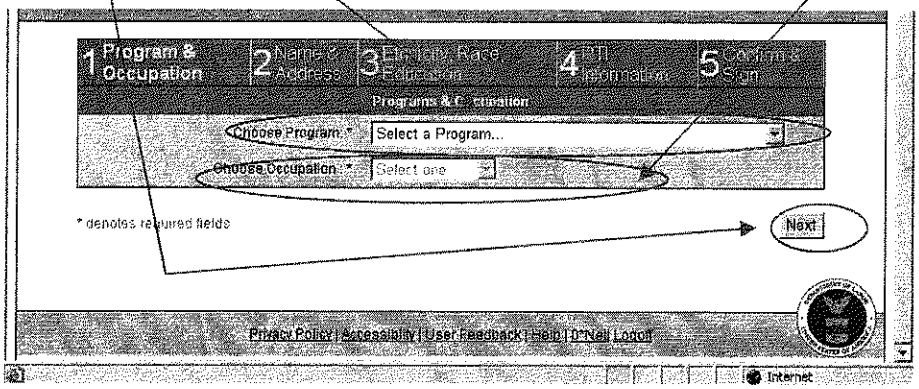
This function allows you to create a new apprentice record. The data elements of an apprentice record are organized into five sub-tabs:

- Program & Occupation
- Name & Address Info
- Ethnicity, Race, Education
- RTI Info
- Confirm & Sign

To create a new apprentice record, follow the steps for each section below:
Note: Entry is required in all fields with an asterisk (*) beside the field name.

On the Program & Occupation Section

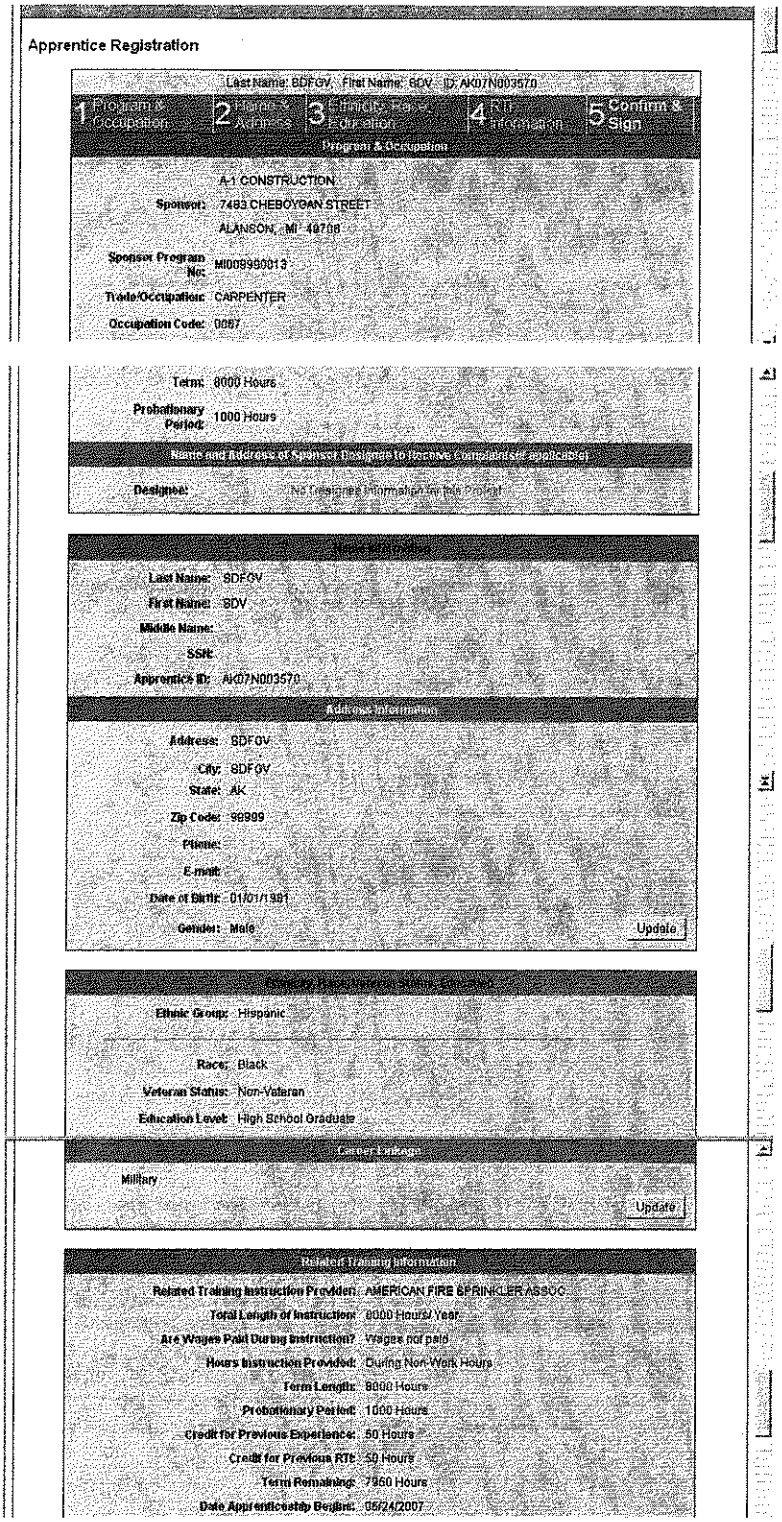
- Select a Program from the drop-down list.
- The system will display the occupation drop-down list. Select the occupation on the drop-down list.
- Click **Next** to proceed to Name & Address section.

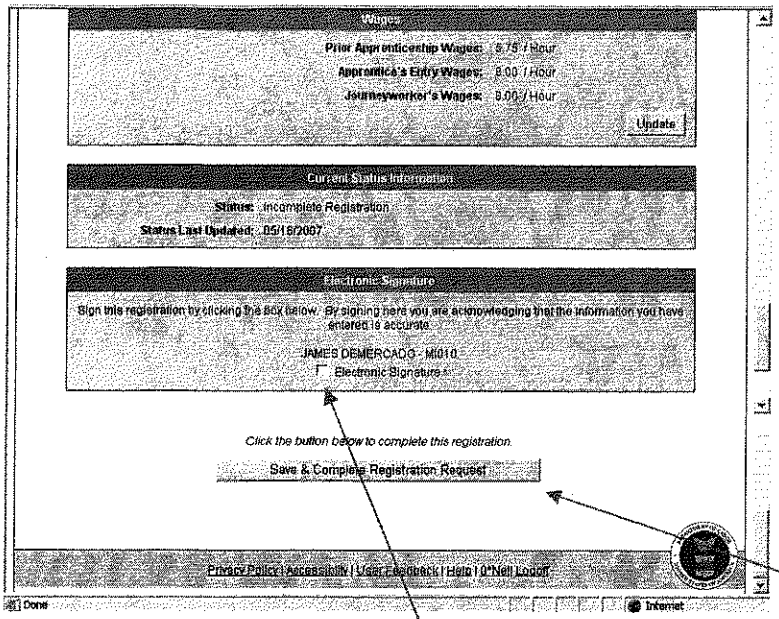


Confirm & Sign Section

Continue entering registration data. In order to complete the process of registering an apprentice, you must confirm by attaching your electronic signature as shown on the next page. When you have completed the last page of data entry, you will be taken to the bottom of a page showing the information you entered, with the Confirm & Sign function at the bottom.

If you wish to change or correct any of the data you entered before confirming, click the **Update** button that corresponds to the page you wish to correct.



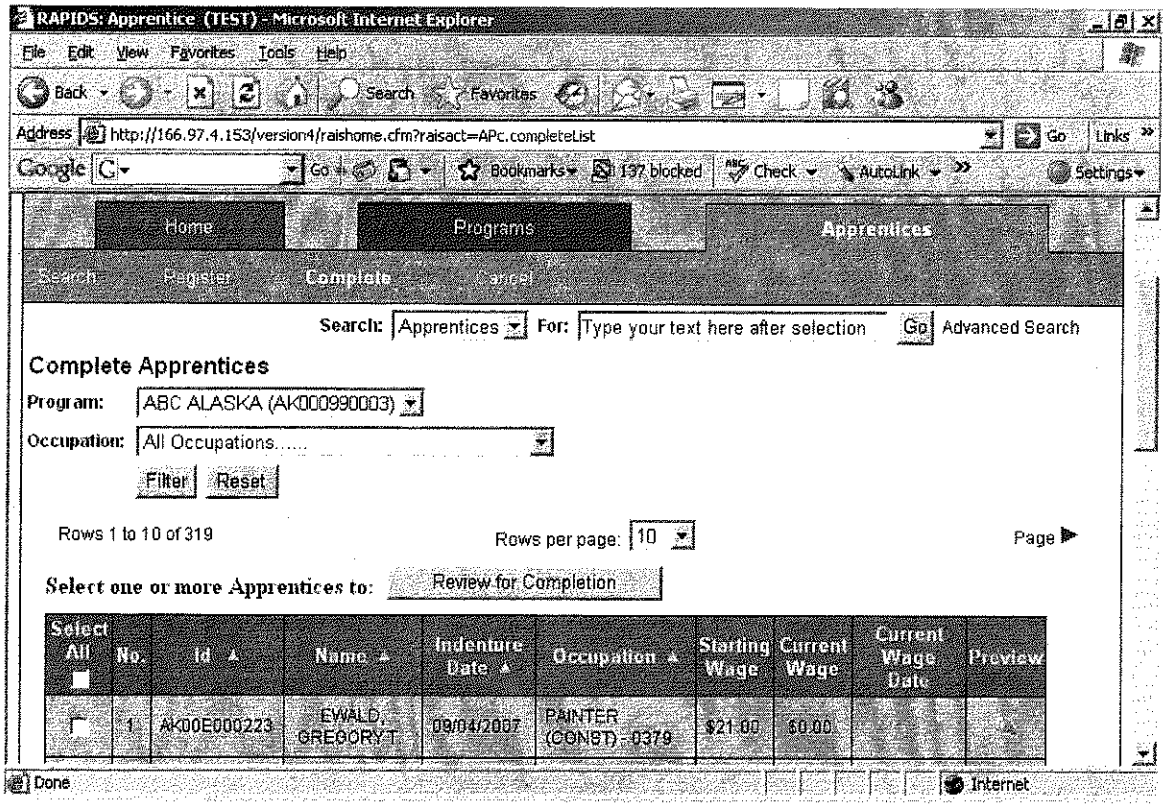


To complete the registration, **check the Electronic Signature box,** and then click the **Save & Complete Registration Request** button. You will be returned to the Apprentice List View page, with the new record added to the list.

Note: After the Apprentice Registration Request is complete, the ATR will review it. If it was approved, then the process is completed. If the ATR declines the Apprentice Registration, the Sponsor can review it on the List View and will have the option to re-submit it.

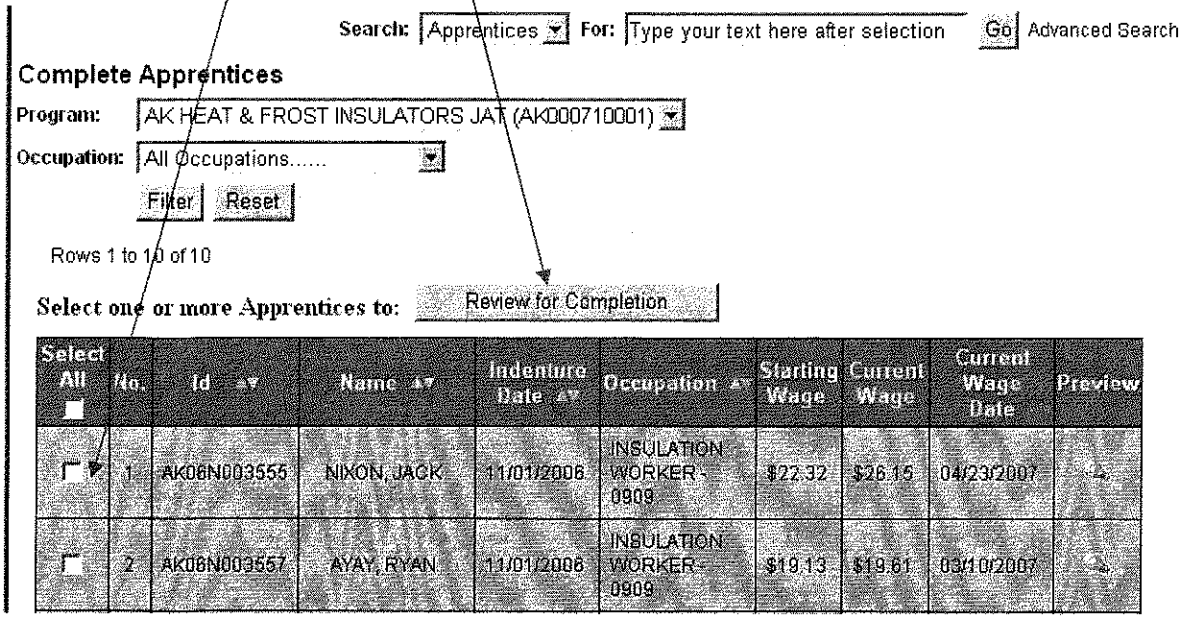
1.4 Complete Apprentice

This function allows you to modify one or more apprentice records to reflect the completion of his or her apprenticeship. To complete an apprenticeship, click the Apprentice tab, then click the Complete sub tab. Select a program and occupation (optional). You will see the table of all active apprentices for which you are responsible, with a preview icon for each one, and a "Select" column on the left containing check-boxes with which to select apprentices for completion.

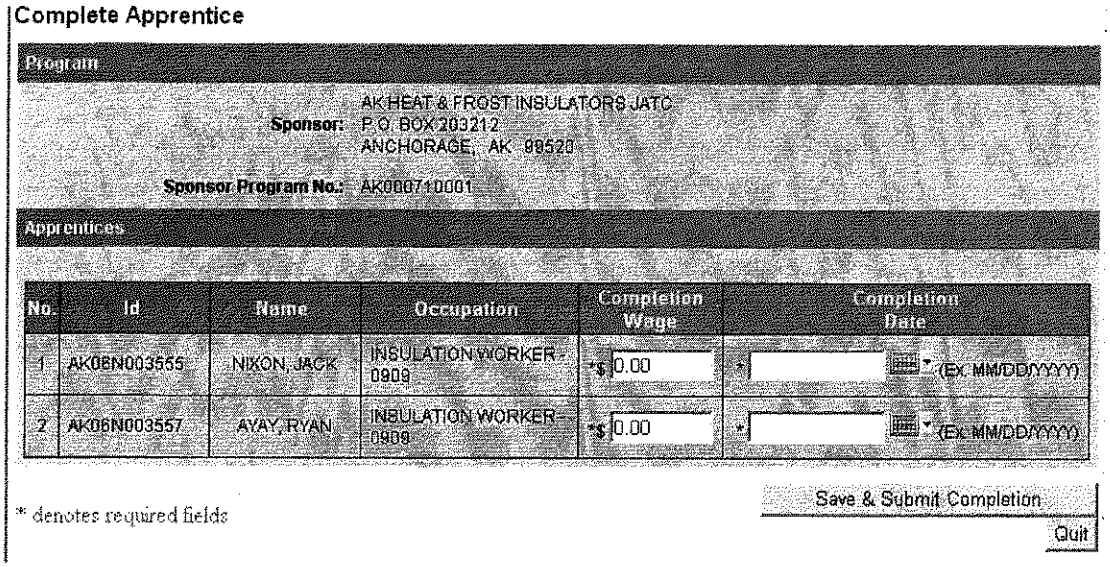


To complete apprentices:

1. Check the box for each apprentice you wish to complete. To complete all of the apprentices in your list, click the Select All box at the top of the column.
2. Click the **Review for Completion** button above the table. You will be shown a table of all of the apprentices you have selected for completion.



Result: System displays the Complete Apprentice form



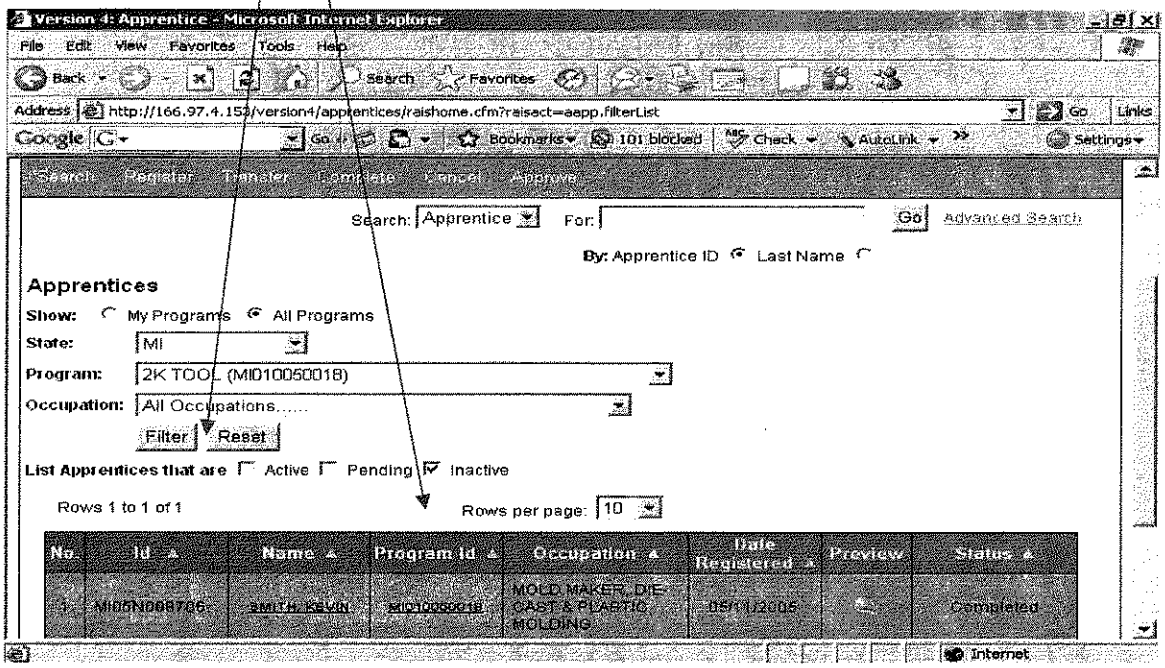
Note: Entry is required in *all* fields with an asterisk (*) beside the field name.

3. Enter the Completion Wage for each apprentice.
4. Enter the Completion Date for each apprentice, in MM/DD/YYYY format; or click the calendar icon to select a date.
5. Click **Save & Submit Completion** to save your request, or **Quit** to cancel the operation.

To verify the Completion Record:

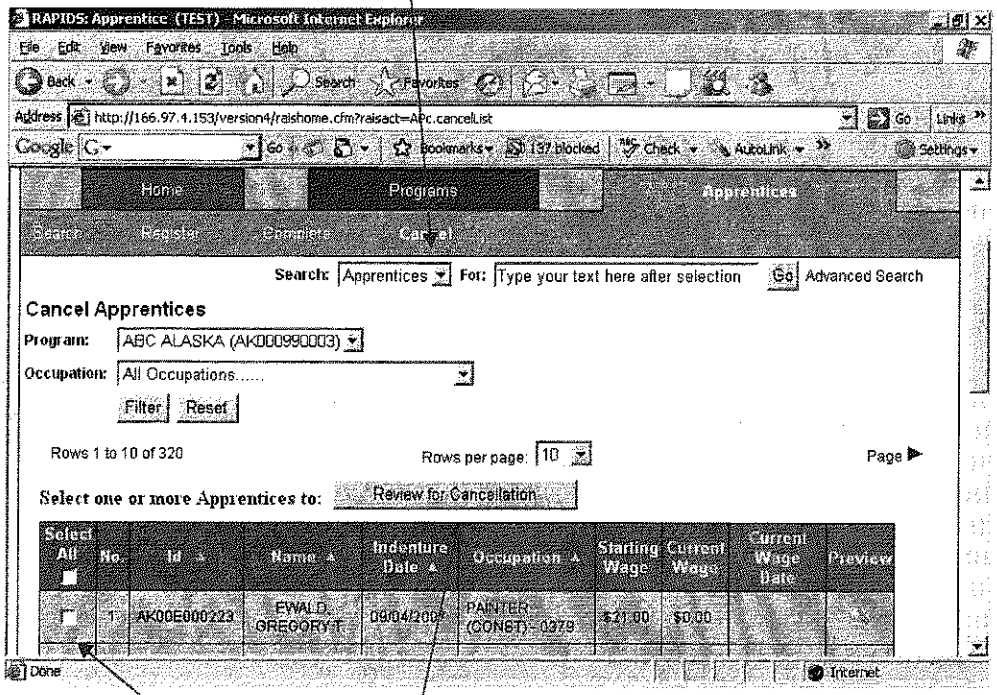
1. Click the Apprentice tab.
2. Select the Program name fro the drop down list.
3. Select the occupation from the drop down list (option)
4. Select the "Inactive" option.

Result: The system will display the completed record(s) on the list



1.5 Cancel Apprentice

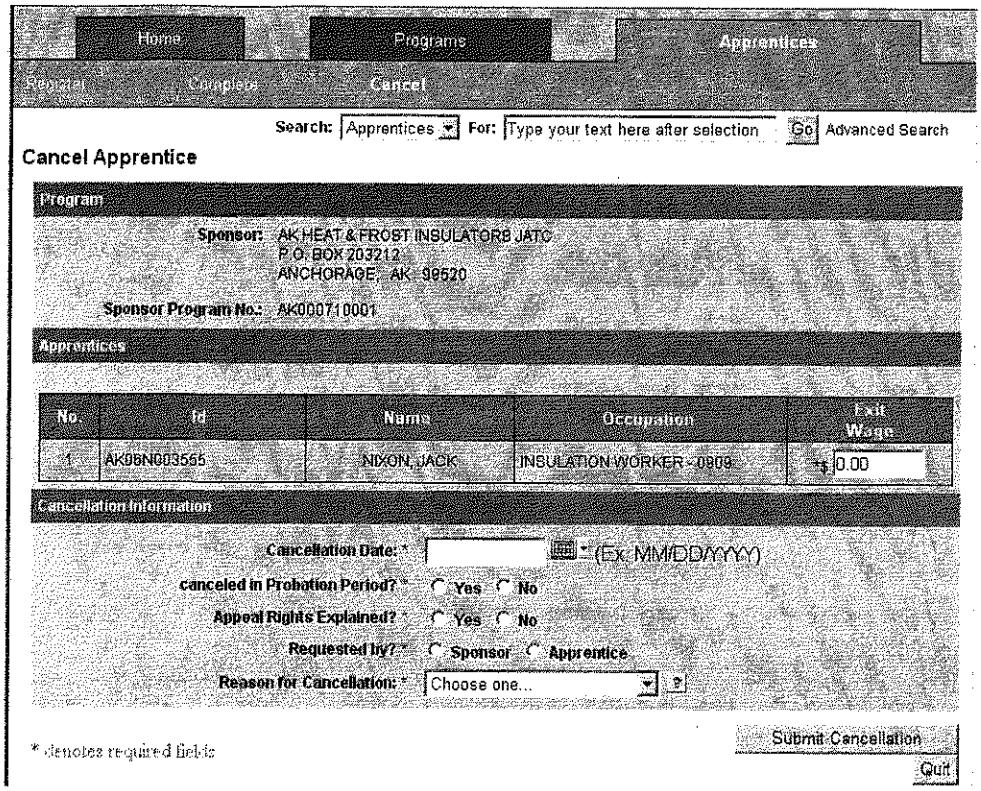
This function allows you to cancel an apprentice's participation in an apprenticeship program. To cancel an apprentice, click the Apprentice tab, then click the **Cancel** sub tab. Select a program and occupation (optional). You will see the list of all active apprentices for which you are responsible, and a "Select" column on the left containing check-boxes with which to select apprentices for cancellation.



To cancel apprentices:

1. Check the box for each apprentice you wish to cancel. To cancel all of the apprentices in your list, click the **Select All** box at the top of the column.
2. Click the **Review for Cancellation** button above the list. You will be shown a list of all of the apprentices you have selected for cancellation, showing the apprentice's information, and the information about his/her program and occupation.

Result: System displays the Cancel Apprentice form



Note: Entry is required in *all* fields with an asterisk (*) beside the field name.

3. Enter the Cancellation Date for each apprentice, in MM/DD/YYYY format; or click the calendar icon to select a date.
4. Check whether the apprentice is being cancelled within his/her Probation Period.
5. Check whether the apprentice's Appeal Rights were explained.
6. Select the Reason for Cancellation from the drop-down list.
7. Click **Submit Cancellation** to complete the request for cancellation, or **Quit** to cancel the operation.

Appendix C

(SAMPLE)
AFFIRMATIVE ACTION PLAN

ADOPTED BY

(INSERT EMPLOYERS' NAMES OR EMPLOYER GROUP NAME OR ASSOCIATION)

(INSERT NAME OF UNION OR LABOR ORGANIZATION)

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

DEVELOPED IN COOPERATION WITH THE
U. S. DEPARTMENT OF LABOR
Office of Apprenticeship

APPROVED BY _____
REGISTRATION AGENCY

DATE APPROVED: _____

SECTION I - INTRODUCTION

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

This AAP is a supplement to the Apprenticeship Standards. Any changes made by the JATC will become part of this written AAP, once approved by the Registration Agency.

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. 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."

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's 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 Affirmative Action Plan Workforce Analysis Worksheet.)

SECTION IV - OUTREACH AND POSITIVE RECRUITMENT

The JATC's AAP includes the following "checked" outreach and positive recruitment efforts that would reasonably be expected to increase minority's and women's participation in apprenticeship by expanding the opportunity of minorities and women to become eligible for apprenticeship selection. Once those efforts have been checked, the JATC will set forth the specific steps they intend to take under each identified effort. The JATC will identify a significant number of activities in order to enable it to meet its obligation under Title 29, CFR part 30.4(c).

A. ☐ An announcement of specific apprenticeship openings must be disseminated thirty (30) days in advance of the earliest date for application at each interval to the following agencies/organizations:

- Registration Agency
- Women's Organizations/Centers
- Local 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 will include the nature of the apprenticeship, requirements for admission to the apprenticeship, availability of apprenticeship opportunities, sources of apprenticeship applications, and the JATC equal opportunity policy. The period for accepting applications as established by the JATC is: _____

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 apprenticeship; where appropriate and feasible, such programs will 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 will 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 will 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 journeyworkers 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 trainees during their apprenticeship will 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 trainees and journeyworkers as recruiters; career counseling; development of reasonable procedures to ensure employment opportunity, including reporting systems, on-site reviews, briefing sessions).

(Identify Action:)

Several transit agencies are working with local technical high schools developing transit-specific study plans for technical occupations. This is currently taking place in New York City, Chicago, Philadelphia, and Washington, DC. It is expected that other cities will follow suit in the future. The Transportation Learning Center is encouraging, supporting, and providing technical assistance to these efforts.

_____

_____

_____

_____

_____

_____

FOR EACH ITEM CHECKED IN SECTION IV, LIST EACH SPECIFIC STEP THAT THE JATC WILL UNDERTAKE TO FULFILL THAT OUTREACH AND RECRUITMENT STEP

_____

_____

_____

(add additional pages as necessary)

SECTION V - ANNUAL REVIEW OF AFFIRMATIVE ACTION PLAN

The JATC will make an annual review of its current Plan and its overall effectiveness and institute any revisions or modifications warranted. The review will 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 effect that 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 activity(ies). All changes to the Plan must be submitted to the Registration Agency for approval. 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 periodically as determined by the Registration Agency and updated where necessary.

SECTION VI - OFFICIAL ADOPTION

The *(Insert Employers Name or Employer Group Name or Association)* *(Insert Union or Labor Organization's Name)* hereby officially adopts this Affirmative Action Plan on this _____ Day of (Insert Month/Year).

Signature of Management	**Signature of Labor**
Printed Name	**Printed Name**
Signature of Management	**Signature of Labor**
Printed Name	**Printed Name**

Sponsor(s) may designate the appropriate person(s) to sign the Standards on their behalf.

AFFIRMATIVE ACTION PLAN
WORKFORCE ANALYSIS WORKSHEET

A. SPONSOR INFORMATION

Program Number:	
Name of Sponsor:	
Address:	
City/State/Zip Code:	
Contact Person:	
Phone Number:	FAX Number:
E-Mail Address:	

B. OCCUPATIONAL INFORMATION

Occupational Title: *	
RAPIDS Code:	O*NET/SOC Code:
Type of selection method used:	
Labor Market Area description:	

C. LABOR MARKET AREA & OCCUPATIONAL PARTICIPATION DATA

C.1 Total Labor Force in Labor Market Area *		
Number of Women:		% of labor force
Number of Minorities:		% of labor force
C.2 Working Age Population in Labor Market Area *		
Number of Women:		% of labor force
Number of Minorities:		% of labor force
C.3 Apprentice Participation in Craft/Occupation in National Apprenticeship System *		
Number of Women:		% of apprentices
Number of Minorities:		% of apprentices
C.4 The General Availability of Minorities and Women with the Present or Potential Capacity for Apprenticeship in Program Sponsor's Labor Market Area. **		
Number of Women:		
Number of Minorities:		

Resources for obtaining labor market information.

* RAPIDS Data available from Registration Agency.

** Program Sponsors may use any reasonable method for determining the general availability of minorities and women with the present or potential capacity for apprenticeship, including relying on the data recorded in Section C.1 for "Total Labor Force", C.2 for "Working Age Population", and C.3 "Apprentice Participation in Particular Craft/Occupation" to propose the entries for "The General Availability of Minorities and Women."

D. SPONSOR'S WORKFORCE DATA

D.1 Total Number of Journey/Craft Workers Employed:		
Number of Women:		% of work force
Number of Minorities:		% of work force
D.2 Total Percentage of Apprentices or of Applicant Pool (depending on selection method used)		
Numerical percentage of Women apprentices or women in applicant pool:		%
Numerical percentage of Minority apprentices or minorities in applicant pool:		%

E. ADDITIONAL RESOURCE DATA FOR CONSIDERATION IN ESTABLISHING GOALS

Industry Source Data	Minority rate of participation	Female rate of participation
E.1 Registered Apprenticeship Partners Information Data System (RAPIDS): *		
E.2 EEOC Occupational Employment Data: *		

* Data available from Registration Agency

F. DETERMINATION OF UTILIZATION

Analysis	Yes	No
Minority Underutilization:		
Female Underutilization:		

G. SPONSOR'S GOALS:

The program sponsor proposes and agrees to make a good faith effort to attain the goal of selecting _____ % minorities and _____ % women during the next EEO Review cycle. These goals will not be used to discriminate against any qualified applicant on the basis of race, color, religion, national origin or sex.

The number of new apprentices to be hired during the next year (or selection period) is estimated to be: _____

H. REGISTRATION AGENCY APPROVAL:

Sponsor

_____
Sponsor's Signature

_____
Typed Name

_____
Title

_____
Date Signed

Registration Agency

_____
Registration Agency Signature

_____
Typed Name

_____
Title

_____
Date Signed

Instructions for preparing and completing this worksheet

The purpose of this workforce analysis worksheet is to establish a benchmark against which the demographic composition of the sponsor's apprenticeship program can be compared. The sponsor must separately determine the availability of minorities and women for each occupational title represented by the program. In determining availability, the sponsor must consider, at the very least, the factors identified at 29 CFR 30.4(e) in order to determine whether barriers to equal employment opportunity may exist with a particular occupational title.

Part A The Program Sponsor information section may be prepared by the sponsor representative or servicing Registration Agency Representative.

Part B Occupational information will be taken from the registered program standards, and may be prepared by the sponsor representative or servicing Registration Agency Representative. A Workforce Analysis Worksheet must be completed for each occupational title identified.

Part C Sponsors must use the most current and discrete statistical data available in determining availability estimates for the labor market area specified by the sponsor in Part B. Census data is one example of an appropriate source of statistical information. Other sources include data from local job service offices and data from colleges or other training institutions. Where possible, the Registration Agency has provided examples of appropriate sources of data.

For purposes of this section, the term "labor force" is defined to include both those individuals who are employed and those who are unemployed but looking for employment. The term "working age population" means persons ages 15 years and over whether or not they are currently in the labor force or looking for employment.

Part D The Program Sponsor must provide current workforce data as described in Part D. If the sponsor utilizes either Selection Method §30.5(b) (1) or (2), the data in D-2 will be reflective of the "pool" from which selections will be made. If the sponsor utilizes the Selection Method under §30.5(b) (3) or (4), the data in D-2 will be reflective of the current apprentices registered in the program.

Part E Additional Resource Data for consideration in establishing reasonable goals will be provided by the Registration Agency. This data will provide a snapshot of the national labor force for the given occupation title.

Part F Utilizing the data found in Parts C, D and E, the Program Sponsor is to determine if minorities and/or women are underutilized and must check the appropriate response.

Part G If the Program Sponsor's analysis determines that minorities and/or women are underutilized, the Sponsor, utilizing the resource data found in Parts C, D and E, will establish goals which are reasonable in consideration of the results which could be expected from its good faith efforts to make its overall affirmative action program successful. The Registration Agency will review and access the proposed goals and if found to be reasonable and attainable, will acknowledge receipt of the Sponsors goals for minorities and/or women.

Proposed goals for minorities and/or women that are lower than the current participation rate under the Program Sponsor will not be approved.

Appendix D

(SAMPLE)

QUALIFICATIONS AND SELECTION PROCEDURES

ADOPTED BY

(INSERT EMPLOYERS' NAMES OR EMPLOYER GROUP NAME OR ASSOCIATION)

(INSERT NAME OF UNION OR LABOR ORGANIZATION)

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

APPROVED BY _____
REGISTRATION AGENCY

DATE APPROVED: _____

The certification of this selection procedure is not a determination that, when implemented, it meets the requirements of the Uniform Guidelines on Employee Selection Procedures (41 CFR, part 60-3) or Title 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 (*EXAMPLES*)

Applicants will meet the following minimum qualifications:

A. Age

The JATC will establish qualifications regarding minimum age limits. *(Applicant must provide evidence of minimum age respecting any applicable State Laws or regulations.)* Apprentices must not be less than 16 years of age.

B. Education

A high school diploma or GED equivalency is required. Applicant must provide an official transcript(s) for high school and post high school education and training. All GED records must be submitted if applicable. Opportunities for technical preparation shall be provided by the sponsoring agency to all existing employees failing to meet the above requirements. Students in an approved high school or vocational/technical secondary institution may be accepted as part of the apprenticeship program, provided there is prior written agreement between the educational institution and the JATC, based on advice and consent of the NJATC.

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

C. Physical

Applicants will be physically capable of performing the essential functions of the apprenticeship program with or without a reasonable accommodation, and without posing a direct threat to the health and safety of the individual or others.

Applicants may be subject to a physical agility or fitness test, or screened for the current illegal use of drugs or both on acceptance into the program and prior to being employed. The cost of the examination and/or drug screening may be the responsibility of the NJATC or the Employer.

D. Aptitude Test

All applicants must pass each section of a locally determined aptitude test.

SECTION II. - APPLICATION PROCEDURES

A. Applicants will be accepted at times determined by JATC. All persons requesting an application will have one made available upon signing the applicant log.

B. All applications will be identical in form and requirements. The application form will 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 Career Ladder Training 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. (Rail Car Maintenance Technician is often a rung up from Helper or Custodian and there are career levels within "Technician" in many cases. Beyond this, employees are often promoted into management positions after occupying several rungs of the career ladder over their work lives. The transit industry offers an opportunity for tremendous career growth and lifelong learning.)

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 high school diploma, GED 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 appeal rights 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 an interview (if applicable).

SECTION III. - SELECTION PROCEDURES

A. The JATC will schedule the interview (if applicable) and evaluation session. All applicants who have met the minimum qualifications and

have submitted the required documents must be notified of the date, time, and place to appear.

B. 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 and required documents, if applicable. The interviewer will record the questions asked and the general nature of the applicant's answers. The interviewer will then prepare a written summary of his or her judgment of the applicant derived from the interview.

C. After completing the interview and evaluation of the applicants, the individual rating scores of the interviewer(s) will be added together and averaged to determine the applicant' s final rating.

D. Applicants will be placed on a "Ranking List" according to their scores at the evaluation session, with the applicant having the highest score being at the top of the list, and all applicants then listed in descending order based on score.

E. As openings for the registration of new apprentices occur, the highest ranked applicant will be notified of selection by telephone. It will be the responsibility of the applicant to keep the JATC informed of his/her current mailing address and telephone number.

F. Selected applicants must respond to the notice of selection within *(a locally determined number of)* 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 applicant's name will be removed from the list. Only one certified notice will be mailed.

G. 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 his/her own written request or following failure to respond to an apprentice opening. Applicants who were not placed during the two (2) year period that they were on the ranking list will be required to reapply.

H. During the two (2)-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

JATCs 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 JATC will award Credit for Previous Experience in accordance with Section XII 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 Transit Rail Car Maintenance Technician Apprenticeship 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 JATC 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 gender. ***(Note: This is a method of direct entry into the apprenticeship program.)***

B. An employee of a non-signatory employer not qualifying as a journeyworker 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 registered 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. ***(Note: This is a method of direct entry into the apprenticeship program, whereby all minimum qualifications are waived.)***

C. 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 journeyworker, will be evaluated in accordance with the procedures for the granting of credit for previous experience and registered 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; and

4. provide reliable documentation to the JATC to show they were an employee performing Transit Rail Car Maintenance Technician work prior to signing the authorization card.

D. Military Veterans who completed military technical training school and participated in a registered Rail Car Maintenance Technician Apprenticeship program while in the military may be given direct entry into the Rail Car Maintenance Technician Apprenticeship program. The JATC will evaluate the military training received for granting appropriate credit on the term of Rail Car Maintenance Technician 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 Rail Car Maintenance Technician 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.)***

SECTION V. - COMPLAINT PROCEDURE

A. Any trainee or applicant for Rail Car Maintenance Technician Apprenticeship who believes that he/she has been discriminated against on the basis of race, color, religion, national origin, or sex, with regard to Rail Car Maintenance Technician Apprenticeship or that the equal opportunity standards with respect to his /her selection have not been followed in the operation of a Rail Car Maintenance Technician Apprenticeship program, may personally or through an authorized representative, file a complaint with the Registration Agency or, at the trainee's or applicant's election, with the private review body established by the JATC (if applicable).

B. The complaint will be in writing and will 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 Registration Agency 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 Registration Agency for good cause shown.

D. Complaints of discrimination in the Rail Car Maintenance Technician Apprenticeship program 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 Rail Car Maintenance Technician Apprenticeship and all trainees.

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 Rail Car Maintenance Technician 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 the regulations at Title 29, CFR part 30, as may be required by the U.S. Department of Labor. The records pertaining to individual applicants, selected or rejected, will be maintained in such manner as to permit the identification of minority and female (minority and non-minority) participants.

Each JATC must retain a statement of its AAP for the prompt achievement of full and equal opportunity in apprenticeship, including all data and analysis made pursuant to the requirements of Title 29, CFR part 30.4. Each JATC also must maintain evidence that its qualification standards have been validated in accordance with the requirements set forth in Title 29, CFR part 30.5(b).

In addition to the above requirements, adequate records will 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 will be maintained for five (5) years from the date of last action and made available upon request to the U.S. Department of Labor or other authorized representative.

SECTION VII. - OFFICIAL ADOPTION OF SELECTION PROCEDURES

The (Insert Employers Names or Employer Group Name or Association) (Insert Name of Union or Labor Organization) hereby officially adopts these Selection Procedures on this _____ Day of (Insert Month/Year).

Signature of Management	**Signature of Labor**
Printed Name	**Printed Name**
Signature of Management	**Signature of Labor**
Printed Name	**Printed Name**

Sponsor(s) may designate the appropriate person(s) to sign the Standards on their behalf.

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Appendix H: Detailed Rail Car Maintenance Technician Progression Flowchart

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Transit Rail Vehicle Technician Qualification System

Rail Vehicle Master Technician Qualifications (300 Level)

Qualified Master Technician in *Couplers*	Qualified Master Technician in *Trucks & Axles*	Qualified Master Technician in *Propulsion & Dynamic Braking*	Qualified Master Technician in *Auxiliary Inverters & Batteries*	Qualified Master Technician in *Friction Brakes*	Qualified Master Technician in *HVAC*	Qualified Master Technician in *Current Collection & Distribution*	Qualified Master Technician in *Doors*	Qualified Master Technician in *Body & Accessories*	Qualified Master Technician in *Communica-tion Systems*	Qualified Master Technician in *CBTC*
PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Couplers (301) Hands-on	Trucks & Axles (302) Hands-on	Propulsion & Dynamic Braking (303) Hands-on	Auxiliary Inverters & Batteries (304) Hands-on	Friction Brakes (305) Hands-on	HVAC (306) Hands-on	Current Collection & Distribution (307) Hands-on	Doors (308) Hands-on	Body & Accessories (309) Hands-on	Communicati on Systems (310) Hands-on	CBTC (311) Hands-on

Track A – Rail Car Maintenance Apprenticeship – Complete recommended 300 Level Classroom and Hands-on Training

Track B – Experienced Mechanics – May complete assessments without going through apprenticeship program

Rail Vehicle Journeyperson Qualification (200 Level)*

* Candidates with all 12 qualifications at 200 Level will earn journeyperson status.

Qualified Technician in *Couplers*	Qualified Technician in *Trucks and Axles*	Qualified Technician in *Friction Brakes*	Qualified Technician in *Auxiliary Inverters & Batteries*	Qualified Technician in *Propulsion & Dynamic Brakes*	Qualified Technician in *HVAC*	Qualified Technician in *Current Collection & Distribution*	Qualified Technician in *Doors*	Qualified Technician in *Body & Accessories*	Qualified Technician in *Communica-tion Systems*	Qualified Technician in *CBTC*
PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Couplers (201) Hands-on	Trucks & Axles (202) Hands-on	Propulsion & Dynamic Braking (203) Hands-on	Auxiliary Inverters & Batteries (204) Hands-on	Friction Brakes (205) Hands-on	HVAC (206) Hands-on	Current Collection & Distribution (207) Hands-on	Doors (208) Hands-on	Body & Accessories (209) Hands-on	Communication Systems (210) Hands-on	CBTC (211) Hands-on
PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Couplers (201) Written	Trucks & Axles (202) Written	Propulsion & Dynamic Braking (203) Written	Auxiliary Inverters & Batteries (204) Written	Friction Brakes (205) Written	HVAC (206) Written	Current Collection & Distribution (207) Written	Doors (208) Written	Body & Accessories (209) Written	Communication Systems (210) Written	CBTC (211) Written

Track A – Rail Car Maintenance Apprenticeship – Complete recommended 200 Level Classroom and Hands-on Training

Track B – Experienced Mechanics – May complete assessments without going through apprenticeship program

Rail Vehicle Apprentice Technician Qualification (100 Level)

PASS

100 Level Written Assessment

Track A – Rail Car Maintenance Apprenticeship – Complete recommended 100 Level Classroom and Hands-on Training

Track B – Experienced Mechanics – May complete assessment without going through apprenticeship program

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Appendix I: Rail Vehicle Technician Apprenticeship: Definitions of Levels of Qualification

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Rail Vehicle Technician Apprenticeship
Definitions of Levels of Qualification

Apprenticeship Eligibility

In order to accomplish any of the following qualification levels, an individual must first be a registered rail vehicle apprentice technician. In order to do this, they must

1.) Be employed by a transit agency that complies with the ***nationally*** recognized Transit Rail Vehicle Maintenance Technician Apprenticeship program
2.) Have themselves committed to the program by completing a written **apprenticeship agreement** at the ***local*** level with the Local Joint Training and Apprenticeship Committee

In order to be an eligible apprenticeship candidate, they must also meet the following requirements:

1.) **Age** – must be at least 16 years of age
2.) **Education** – a high school diploma or GED equivalency is required
3.) **Physical Ability** – must be physically capable of performing the essential functions of the apprentice occupation
4.) **Aptitude** – must pass each section of a locally determined aptitude test

The following requirements are based on the review of various apprenticeship programs and the resulting US Department of Labor registered Rail Vehicle Technician Apprenticeship. . Please see the approved registration documents for more details.

Rail Vehicle Apprentice Technician
100 Level Qualifications

Knowledge Achieved
Fundamental Skills for Transit Railcar Maintenance

Transit orientation	Basic hydraulic & pneumatic theory & applications
Tools and material handling	Basic mechanical theory & applications
Basic mathematics	AC motors, dc motors & generators
Introduction to electricity	Introduction to electrical ladder drawings
Electrical meters	AC circuit analysis
Wiring technologies and equipment	Semiconductor fundamentals
DC fundamentals	Digital fundamentals
AC fundamentals	

Hours of Instruction Required

Recommended Hours with Trainer	Recommended On-the-Job Learning Hours
992	n/a

Assessment Requirements
Modular assessments as determined by locale as well as one (1) cumulative written assessment to be taken at the completion of training on all materials listed above.

Documentation
Rail Vehicle Apprentice Technician Certificate

Example Pay Rates*
1st six month period = 60% of Rail Vehicle Master Technician (Journeyworker) wage
2nd six month period = 65% of Rail Vehicle Master Technician (Journeyworker) wage

*As cited by members of the Joint National Transit Rail Vehicle Training Standards Committee

Rail Vehicle Technician
200 Level Qualifications

Knowledge Achieved
Vehicle theory of operation & standard maintenance of rail vehicles
Vehicle theory of operation and Overview of Major Sub-systems
Monitoring, diagnosing & troubleshooting overview
Introduction & Preventive Maintenance of:

- Couplers
- Trucks & axles
- Propulsion and dynamic braking
- Auxiliary inverters and batteries
- Friction brakes
- HVAC
- Current collection and distribution
- Car body
- Doors
- Communications systems
- CBTC

Hours of Instruction Required

Recommended Hours with Trainer	Recommended On-the-Job Learning Hours
264	2000

Assessment Requirements (final number of assessments to be determined)
Modular assessments as determined by locale as well as the following:

- Four (4) hands-on assessments. Each to be administered directly following applicable on-the-job learning.
- Four (4) written assessments to be taken after passing of the matching hands-on assessment.

Documentation
Rail Vehicle Technician Certificate

Example Pay Rates*
2nd six month period = 65% of Rail Vehicle Master Technician (Journeyworker) wage
3rd six month period = 70% of Rail Vehicle Master Technician (Journeyworker) wage
4th six month period = 75% of Rail Vehicle Master Technician (Journeyworker) wage

*As cited by members of the Joint National Transit Rail Vehicle Training Standards Committee

Rail Vehicle Master Technician
300 Level Qualifications

This qualification level also warrants the title of **Journeyworker** as defined by the US Department of Labor.

Knowledge Achieved
Advanced theory of Monitoring, Diagnosing, Operation & Troubleshooting of Systems

Car body
Couplers
Trucks & axles
Propulsion and dynamic braking
Auxiliary inverters and batteries
Friction brakes
HVAC
Current collection and distribution
Doors
Communications systems
CBTC

Hours of Instruction Required

Recommended Hours with Trainer	Recommended On-the-Job Learning Hours
344	3400

Assessment Requirements (final number of assessments to be determined)
Modular assessments will be administered on a subject by subject basis depending on local needs and the test takers desire. Assessments should directly follow applicable on-the-job learning. The content of 300 level assessments will be similar to 200 level hands-on assessments but passing scores (I thought we agreed to pass the candidate if he gets 70% or higher score in each of the written and practical tests) will be set higher to reflect the higher level of competency.

Documentation
Rail Vehicle Master Technician certificate and Certificate of Completion of Apprenticeship issued by the Registration Agency

Example Pay Rates*

4th six month period = 75% of Rail Vehicle Master Technician (Journey worker) wage
5th six month period = 80% of Rail Vehicle Master Technician (Journey worker) wage
6th six month period = 85% of Rail Vehicle Master Technician (Journey worker) wage
7th six month period = 95% of Rail Vehicle Master Technician (Journey worker) wage
Final progression to 100 percent of the journey worker wage rate will be subject to local negotiations.

*As cited by members of the Joint National Transit Rail Vehicle Training Standards Committee

Appendix J: Written and Hands-On Assessment Process Checklist

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Categories	Materials	Task	Status
Proctoring	Proctor non-disclosure agreement	Local proctors sign, scan and email to TLC	
	Spreadsheet of eligible candidates	Local training coordinators email to TLC	
Written Assessment	Written assessment PowerPoint tutorial	Phone or web orientation meeting from TLC	
	Written assessment forms	TLC prepares either on ClassMarker.com or in hard copy	
	Pre-assessment survey	TLC works with local coordinators to determine if pre-assessment survey (skills gap) is required and prepares survey in SurveyGizmo	
	Written assessment instruction sheets	TLC prepares for each candidate with User ID and PIN to log into online session	
	Written assessment individual feedback report	TLC emails confidential written assessment feedback report to candidates	
	Aggregated agency written assessment feedback reports	TLC emails aggregated results to local coordinators and assists with identification of training gaps and improvement of training programs	
Hands-on Assessment	Hands-on assessment PowerPoint tutorial	Phone or web orientation meeting from TLC	
	Hands-on module selection form	Local training coordinators fill out SurveyMonkey form to select modules and tasks	
	Hands-on evaluation sheets	TLC works with local coordinators to prepare customized hands-on scenarios and evaluation sheets	
	Copy of completed hands-on evaluation sheet	Local proctors provide a copy of the scored evaluation sheet to candidate at the conclusion of hands-on	
	Aggregated agency hands-on feedback reports	TLC emails aggregated results to local coordinators and assists with identification of training gaps and improvement of training programs	

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Appendix K: Qualification Assessment FAQs

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1. What constitutes acceptable training and work experience to be eligible for qualification assessments?
   Answer: Locally determined. CMS will track individual training records. However, the National Program does not stipulate the number of training hours required for technicians to become eligible. Local training programs should generally follow the recommended training hours based on the DOL-approved apprenticeship guidelines.

2. Is the assessment open to the general public?
   Answer: No. Written and hands-on assessments for the National Qualification Program are designed for new technicians in training and existing technicians working in transit rail divisions. In the future, the program may be offered through community colleges or other educational partners in conjunction with their transit rail vehicle maintenance related programs.

3. How frequently are assessments offered?
   Answer: Written and hands-on assessments are offered at the request of local training coordinators, most likely at the conclusion of a training session in the same subject area. Pre-tests may also be arranged by request.

4. Who pays for assessment fees?
   Answer: Locally determined. The Center collects assessment fees from agencies prior to scheduling the assessments.

5. When do assessments expire?
   Answer: The written assessment expires after five years. Once a qualification status is granted based on completion of the required assessment(s), though, it will never expire.

6. What is the test retake window? Who pays for retake?
   Answer: Test retake window and the number of retakes allowed will be determined by local labor and management training committees or structure.

7. Do qualifications ever expire?
   Answer: No. There are no re-qualification requirements. However, agencies are encouraged to provide refresher courses to qualified technicians every three to five years or as needed.

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Appendix L: National Rail Car Hands-On Skills Assessment Tutorial

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Preparing for and Administering Hands-On Assessments

As part of the National Rail Vehicle Qualifications System

Agenda

I. About the Training & Qualification System
II. Pre-Assessment Steps
III. Administering an assessment
IV. Post Assessment Debrief and Next Steps

About the National Rail Vehicle Training & Qualification System

- Made Possible through funding from Transportation Research Board
- Brings respect to transit occupations – like other skilled trades.
- National program implemented across the country by agencies & their unions
- Training first, then assessments – both written & hands on

Choose Labor Management Assessors

- May be from a pre-existing Joint Labor-Management Training Committee

Verify Adequate Training

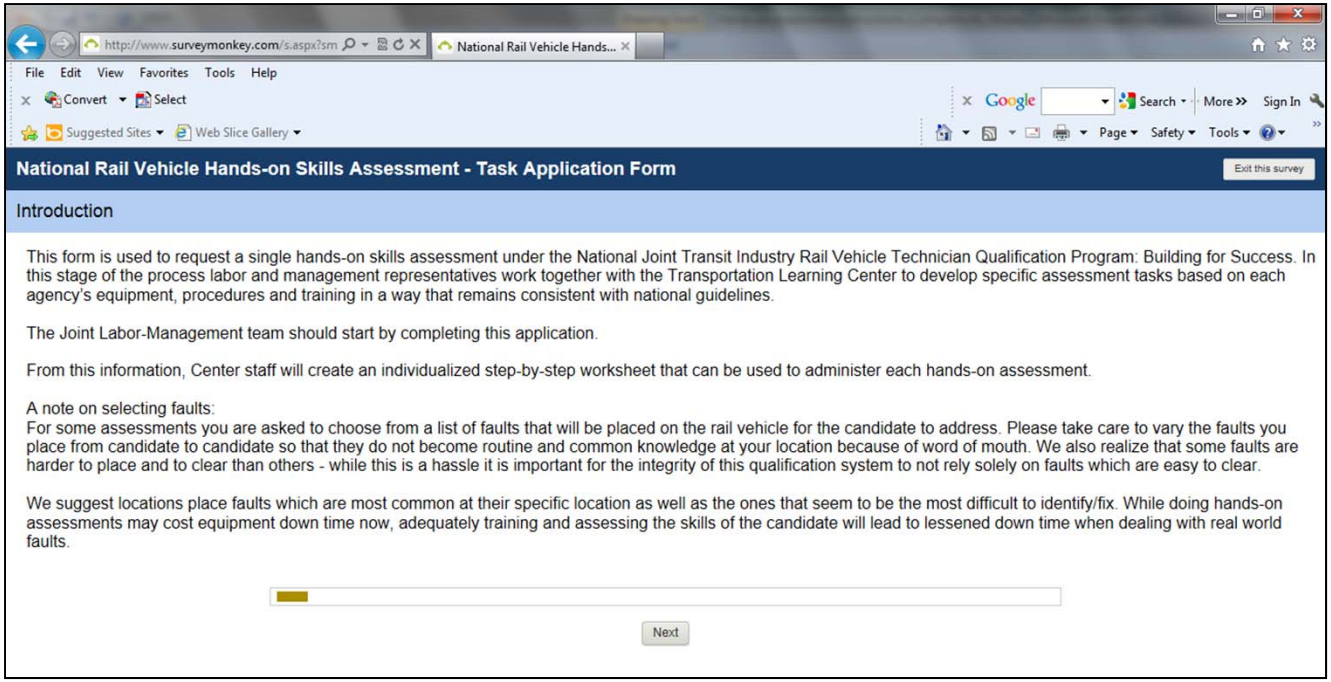
- The Cornerstone of this Project is “Training before Testing”
- Check the candidate’s training record

Hands-on Training of Elevator Technicians at NYCT

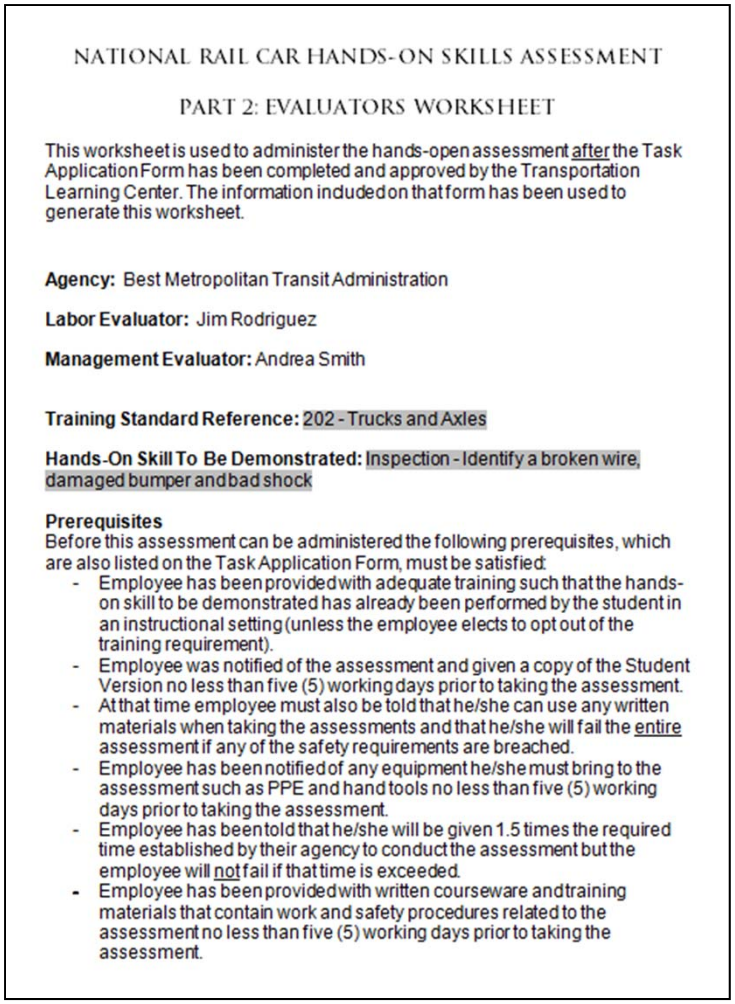
- Candidate will also be asked to verify they received adequate training before the assessment begins

Request Tailored Assessment Form

- Online @ http://go.to/assessment
- Remember to vary faults



Location Receives Tailored Evaluator Worksheet



NATIONAL RAIL CAR HANDS-ON SKILLS ASSESSMENT

PART 2: EVALUATORS WORKSHEET

This worksheet is used to administer the hands-open assessment after the Task Application Form has been completed and approved by the Transportation Learning Center. The information included on that form has been used to generate this worksheet.

Agency: Best Metropolitan Transit Administration

Labor Evaluator: Jim Rodriguez

Management Evaluator: Andrea Smith

Training Standard Reference: 202 - Trucks and Axles

Hands-On Skill To Be Demonstrated: Inspection - Identify a broken wire, damaged bumper and bad shock

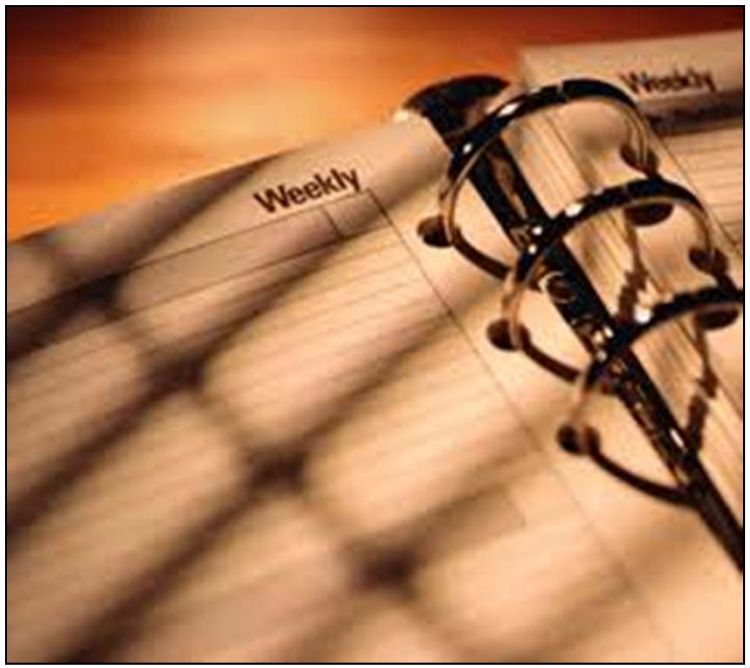
Prerequisites
Before this assessment can be administered the following prerequisites, which are also listed on the Task Application Form, must be satisfied:

- Employee has been provided with adequate training such that the hands-on skill to be demonstrated has already been performed by the student in an instructional setting (unless the employee elects to opt out of the training requirement).
- Employee was notified of the assessment and given a copy of the Student Version no less than five (5) working days prior to taking the assessment.
- At that time employee must also be told that he/she can use any written materials when taking the assessments and that he/she will fail the entire assessment if any of the safety requirements are breached.
- Employee has been notified of any equipment he/she must bring to the assessment such as PPE and hand tools no less than five (5) working days prior to taking the assessment.
- Employee has been told that he/she will be given 1.5 times the required time established by their agency to conduct the assessment but the employee will not fail if that time is exceeded.
- Employee has been provided with written courseware and training materials that contain work and safety procedures related to the assessment no less than five (5) working days prior to taking the assessment.

- Receive in 4-5 business days
- Contains all instructions – (which we will review later)
- Will also receive generic candidate version of this form
- L-M team should review
- If adjustments need to be made, contact the Transportation Learning Center

Schedule Assessment

- If necessary, make lab arrangements or for equipment to be out of service
- Set date and time



Notify and Prepare the candidate

- Within no less than 5 business days of assessment:
  - Notify candidates of assessment and the date
  - Give them candidate version of **generic assessment example**
  - Notify them of their freedom to use all **written materials** as resources during the assessment
  - Notify them that a breach of any **safety requirement**s will result in an automatic failure

Notify and Prepare the candidate

- Within no less than 5 business days of assessment:
  - Notify candidates of any **tools** and **PPE** they must bring to the assessment
  - Tell them they'll be given 1.5 times the required **time** to conduct the assessment – Taking too long does not necessarily mean failure.

Set Faults

- Set fault(s) listed on page two of the evaluator worksheet before the assessment
- Make sure the candidates do not see the faults being placed

Orientation Meeting

- Same day as assessment, directly before hand
- Includes candidate, Labor Rep & Mgmt Rep

Time Begins with the reading of the first task.

Any safety breach results in a failure

Ask for any final questions from the candidate.

The Assessment

- Follow all guidelines on the evaluator worksheet:
  - Read tasks to be performed
  - Record the start time
  - Watch candidate perform tasks
  - Determine if tasks are performed correctly
  - Note any relevant comments
  - Record time at the end

Administering an Assessment

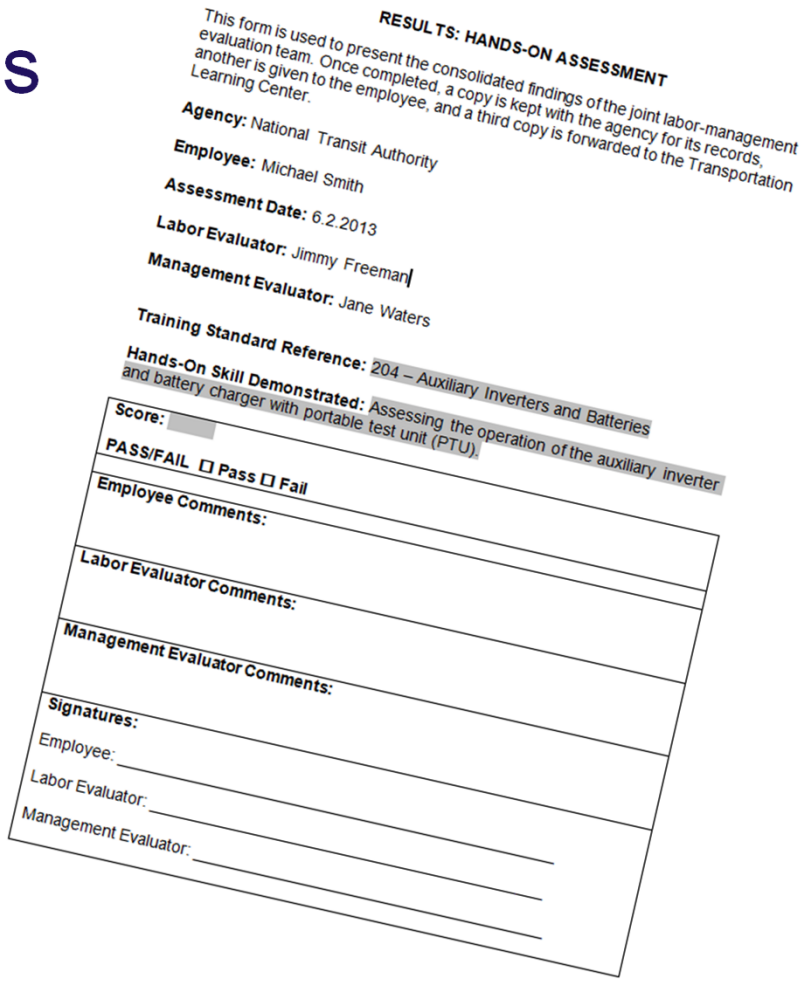
TASKS	ACCEPTABLE PERFORMANCE	WAS THE TASK PERFORMED PROPERLY ?	POINTS AWARED	EVALUATOR COMMENTS
Task 1: Perform all necessary safety procedures and select and wear necessary PPE before beginning anything else. *No time will start until you state you are satisfied that safety has been addressed.* Continue to follow all applicable safety procedure as you perform the following tasks:	- Proper PPE (safety glasses) - Verify proper securing of the vehicle (lockout/tag out, etc). Follow all locally required procedures	❑ YES ❑ NO	Points Available: This item is a **pass/fail** requirement Points Awarded:	
Task 2: Perform a truck assembly inspection according to local procedures, and verbalize what you are doing. Identify what you are looking at and how you are determining if a component is in good working condition. Explain, but do not perform, where and how you would be lubricating and cleaning.	Candidate completes all inspection tasks based on local requirements, and verbalizes what he is looking at and what criteria and parameters he/she is following. (This should include a check of the radius rods/dog bone/torsion rod: 1) bushing condition, 2) Mounting hardware, and 3) Safety wire/torque stripe/cotter pins if applicable	❑ YES ✓ NO	Points Available: 25 Points Awarded: 0	
Task 3: There are at least three defects on the truck assembly. Identify these defects during the inspection and tell the evaluators what they are.	Identify defect #1: Broken wire or cable on ground brush or wheel shunt or other components	❑ YES ❑ NO	Points Available: 15 Points Awarded:	

Labor-Management Consensus

- Labor & Management Reps discuss their findings
- Determine if candidate has passed the assessment
- Complete Result Sheet

Debrief

- Labor-Management Reps meet with candidate and review results sheet
- If failure occurs, discuss re-assessment options



RESULTS: HANDS-ON ASSESSMENT

This form is used to present the consolidated findings of the joint labor-management evaluation team. Once completed, a copy is kept with the agency for its records, another is given to the employee, and a third copy is forwarded to the Transportation Learning Center.

Agency: National Transit Authority

Employee: Michael Smith

Assessment Date: 6.2.2013

Labor Evaluator: Jimmy Freeman

Management Evaluator: Jane Waters

Training Standard Reference: 204 – Auxiliary Inverters and Batteries

Hands-On Skill Demonstrated: Assessing the operation of the auxiliary inverter and battery charger with portable test unit (PTU).

Score:

PASS/FAIL ☐ Pass ☐ Fail

Employee Comments:

Labor Evaluator Comments:

Management Evaluator Comments:

Signatures:

Employee: _____

Labor Evaluator: _____

Management Evaluator: _____

Next Steps

- Send copies of the completed form to the Transportation Learning Center
- Arrange for candidate to take the next step in the qualifications system

For any questions:

Contact the Transportation Learning Center

TRANSPORTATION LEARNING CENTER

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Appendix M: Hands-On Assessment--Task Application Form

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NATIONAL RAIL CAR HANDS-ON SKILLS ASSESSMENT

PART 1: TASK APPLICATION FORM

This form is used to request a single hands-on skills assessment under the National Joint Transit Industry Rail Vehicle Technician Qualification Program: Building for Success. In this stage labor and management representatives work together with the Transportation Learning Center to develop specific assessment tasks based on each agency's equipment, procedures and training in a way that remains consistent with national guidelines.

Start by completing as much of the application as possible and then contact the Center for assistance. Once the application has been finalized, the Center will produce a step-by-step worksheet that can be used to administer each hands-on assessment.

Agency Name:
Labor Representative Contact Information:
Name: Telephone: Email:
Management Representative Contact Information:
Name: Telephone: Email:

STEP 1: SELECT HANDS-ON SKILL

Topic: Select from Question Bank
204 – Auxiliary Inverters and Batteries
Hands-On Testing Scenario:
Select from Question Bank based on selection made above
Assessing the operation of the auxiliary inverter and battery charger with portable test unit (PTU).

STEP 2: IDENTIFY TASKS

Table A lists the generic tasks, acceptable performance criteria (steps needed to successfully complete each task), and point structure identified by the Rail Vehicle Training Committee for the hands-on skill assessment selected in Step 1. Each agency, however, has equipment, training requirements and work procedures that may differ. Because of this you must review the generic material contained in Table A and create your own Table B, modifying the tasks, acceptable performance criteria, and point structure as needed to suit your specific conditions. Also feel free to rearrange the tasks in an order that best suits your needs. Feel free to contact the Transportation Learning Center for assistance in completing Table B. If the generic tasks, acceptable performance criteria and point structure are acceptable as is, you can skip the Table 2 exercise.

Table A: Generic Tasks, Acceptable Performance Criteria, and Points Allocation

Automatically inserted from Question Bank based on selections made in Step 1

Task	Acceptable Performance Criteria	Points
#1: Perform all tasks safely (*Note: This must remain as Task #1*)	Candidate must: • Have on proper PPE (safety glasses) • Verify proper securing of the vehicle (lockout/tagout, etc.) • Follow all locally required procedures	If at any time the candidate fails to follow documented safety procedures, he/she automatically fails the entire assessment. (*Note: This requirement must remain as is)*
#2 Check inverter container/compartment for leaks or damage. Explain what you are looking for and identify any defects you find.	Check inverter container/compartment for leaks or damage.	5
#3 Check cables, connections, and hardware for physical damage, security and mounting. Explain what you are looking for and identify any defects you find.	Check cables, connections, and hardware for physical damage, security and mounting.	5
#4 Check inverter/LVPS cooling systems for proper operation. Explain what you are looking for and identify any defects you find.	Check inverter/LVPS cooling systems for proper operation.	10
#5 Establish communication with auxiliary inverter with PTU. Explain what you are looking for and identify any defects you find.	Establish communication with auxiliary inverter with PTU. This must include proper hook up, and launch of the diagnostic program to the home screen.	30
#6 Candidate downloads codes with PTU and explains interpretation of codes. If there are no live codes, candidate evaluates the codes included in the screen shots and explains what they mean and what needs to be done in response.	Candidate downloads codes with PTU and explains interpretation of codes. If there are no live codes, candidate evaluates the codes included in the screen shots and explains what they mean and what needs to be done in response.	10
#7 Candidate performs voltage checks under charging, no-load and load; and not charging, no-load and load and explains what would be done if readings are not what are expected for proper performance.	Candidate performs voltage checks under charging, no-load and load; and not charging, no-load and load and explains what would be done if readings are not what are expected for proper performance.	20

#8 Verify voltage levels on three phase power supply and low voltage (DC) power supply with DVOM or PTU.	Verify voltage levels on three phase power supply and low voltage (DC) power supply with DVOM or PTU.	20
		Point Total: 100 (*Note: All points combined must total 100)*
Maximum Time Allowed: 60 minutes. Based on 1.5 times the required time established by the agency. *Clock starts after candidate is satisfied vehicle is secured and safety requirements are met.* (Note: candidate will not fail if time is exceeded)		

Table B: Agency-Specific Tasks, Acceptable Performance Criteria, and Points Allocation

Modify the tasks, acceptable performance criteria and point structure contained in Table A as needed into this table to reflect your particular equipment, training and work procedures. Also feel free to reorder the tasks as needed. For example, if Task #5 identified in Table A should be performed earlier in the sequence at your agency, you can cut that task from Table A and make it an earlier task in Table B.

Task	**Acceptable Performance Criteria**	**Points**
#1: Perform all tasks safely (*Note: This must remain as Task #1*)		If at any time the candidate fails to follow documented safety procedures, he/she automatically fails the entire assessment.
#2		
#3		
#4		
#5		
#6		
#7		
#8		
		Point Total: 100
Maximum Time Allowed: Based on 1.5 times the required time established by the agency. (See Table A for recommended time). *Clock starts after candidate is satisfied vehicle is secured and safety requirements are met.*		
(Note: candidate will not fail if time is exceeded)		

STEP 3: PREPARATION OF TEST AREA

Generic test preparation items (i.e., things that need to be done in advance of the conducting the assessment) established for this hands-on assessment by the rail vehicle training committee consists of:

Automatically inserted from Question Bank based on selections made above

Provide the PTU and all interface and connection options. Simulate an inverter failure by disabling the low voltage power supply. If there are no live codes, evaluators select screen shots showing a set

of codes for the candidate to identify and interpret as if they were on the car. For systems without codes, create saved charts and diagrams within the program that represent various conditions.

Modify the generic test preparation items and add any new conditions as needed to suit your agency's equipment, training requirements and work procedures. Provide a complete list of all test preparation items below. If the items are the same as those identified by the training committee, simply cut and past them into the box below or edit as appropriate.

STEP 4: IDENTIFY TOOLS, EQUIPMENT AND MATERIALS TO BE PROVIDED TO CANDIDATE

Generic tools, equipment and materials to be provided to the candidate established for this hands-on assessment by the rail vehicle training committee consist of:

Automatically inserted from Question Bank based on selections made

PTU or laptop and necessary connections

Modify this generic list of tools, equipment and materials and add any new ones as needed to suit your agency's requirements. If the list of all tools, equipment and materials is identical to those required by your agency simply cut and paste them into the box below or edit as appropriate.

STEP 5: IDENTIFY TOOLS, EQUIPMENT AND MATERIALS TO BE PROVIDED BY CANDIDATE

Generic tools, equipment and materials to be provided by the candidate established for this hands-on assessment by the rail vehicle training committee consist of:

Automatically inserted from Question Bank based on selections made

PPE and Lockout Tag-out equipment

Modify this generic list of tools, equipment and materials the candidate will be required to bring with him/her to the assessment to suit your agency's requirements. This could include common hand tools, digital volt-ohm meter (DVOM) or any other tool or piece of equipment normally available to the candidate as part of his/her employment. Also list the specific personal protective equipment (PPE) required such as safety glasses, gloves, etc.

STEP 6: SATISFY PREREQUISITES

Prior to conducting a hands-on assessment, the following conditions must be met.

- Representatives from both labor and management participate in developing and administering the assessment.
- The assessment must be based on training provided to candidates where the hands-on skill to be demonstrated has already been performed by the candidate in an instructional setting (unless the candidate elects to opt out of the training requirement).
- Candidates must be notified of assessments and given a copy of the Candidate Version no less than five (5) working days prior to taking the assessment.
- Candidates must be provided with written courseware and training materials that contain work and safety procedures related to the assessment no less than five (5) working days prior to taking the assessment. At that time candidates must also be told they can use any written materials when taking the assessments, and that they will fail the entire assessment if any of the safety requirements are breached.
- Candidates must be notified of any equipment they must bring to the assessment such as PPE and hand tools no less than five (5) working days prior to taking the assessment.

Appendix N: Hands-On Assessment--Evaluators' Worksheet

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NATIONAL RAIL CAR HANDS-ON SKILLS ASSESSMENT

PART 2: EVALUATORS WORKSHEET

This worksheet is used to administer the hands-open assessment after the Task Application Form has been completed and approved by the Transportation Learning Center. The information included on that form has been used to generate this worksheet.

Agency: Inserted from application form
Labor Evaluator: Inserted from application form
Management Evaluator: Inserted from application form
Topic: Inserted from application form
204 – Auxiliary Inverters and Batteries
Hands-On Testing Scenario: Inserted from application form
Assessing the operation of the auxiliary inverter and battery charger with portable test unit (PTU).

Prerequisites

Before this assessment can be administered the following prerequisites must be satisfied:

- Candidate (test taker) has been provided with adequate training such that the hands-on skill to be demonstrated has already been performed by the student in an instructional setting (unless the candidate elects to opt out of the training requirement).
- Candidate has notified of the assessment and given a copy of the Candidate Version no less than five (5) working days prior to taking the assessment.
- Candidate has been provided with written courseware and training materials that contain work and safety procedures related to the assessment no less than five (5) working days prior to taking the assessment. At that time candidate must also be told that he/she can use any written materials when taking the assessments and that he/she will fail the entire assessment if any of the safety requirements are breached.
- Candidates has been notified of any equipment he/she must bring to the assessment such as PPE and hand tools no less than five (5) working days prior to taking the assessment.
- Candidate has been told that he/she will be given 1.5 times the required time established by their agency to conduct the assessment but the candidate will not fail if that time is exceeded.

Step 1: Preparation of Test Area

Before conducting the assessment, the vehicle (or lab) must be prepared with the conditions listed below. Make sure candidate(s) do not see this being done.

Insert from Step 3 of the Application Form; use conditions as modified from the generic offering.

Step 2: General Information

Insert information as requested below.

Candidate	Date
Name of candidate taking assessment	Date assessment is being administered

Step 3: Pre-Assessment Orientation Meeting

Labor and management evaluators jointly conduct an orientation meeting with the candidate immediately before the assessment. If the assessment is to be given to more than one candidate it makes sense to include all of them in this meeting even though the assessments will be given to one candidate at a time. Those waiting to be assessed could go back to their jobs and be called back at a specific time if the location permits. All of the following items must be reviewed during the orientation meeting:

- Confirm the hands-on skill to be demonstrated:
  Insert from above
- Reveal the amount of time allowed for the assessment
  (To be established by labor-management evaluators based on 1.5 times the normal time needed for this task). Inform the candidate that he/she will not fail if time is exceeded.
- Provide candidate with written safety procedures that must be followed during the assessment. Ask candidate if he/she would like to review those procedures. Inform candidate that he/she can refer to the procedures at any time during the assessment. Confirm that the candidate understands all safety procedures.
- Review prerequisites with candidate and have he/she sign that all prerequisites have been met before conducting the assessment. Check off each box as prerequisites are read.

  ☐ Candidate has been provided with adequate training such that the hands-on skill to be demonstrated has already been performed by the student in an instructional setting unless the candidate elects to opt out of the training requirement. (check here if student opts out of the training requirement ☐

  ☐ Candidate has notified of the assessment and given a copy of the Candidate Version no less than five (5) working days prior to taking the assessment.

  ☐ Candidate has been provided with written courseware and training materials that contain work and safety procedures related to the assessment no less than five (5) working days prior to taking the assessment.

  ☐ Candidate has been told that he/she will fail the entire assessment if any of the safety requirements are breached.

  ☐ Candidate has been told that he/she can use any written materials when taking the assessments.

  ☐ Candidate has been notified of any equipment that he/she must bring to the assessment such as PPE and hand tools no less than five (5) working days prior to taking the assessment.

  Insert from Step 5 of the Application Form; use tools etc. as modified from the generic offering

  ☐ Candidate has been told that he/she will be given 1.5 times the required time established by their agency to conduct the assessment but the candidate will not fail if that time is exceeded.

  Have the candidate review the checked-off prerequisites and have him/her sign below if satisfied that all prerequisites have been met.

  Candidate signature: _____
- Provide candidate with tools and materials needed to conduct the assessment as listed below:
  Insert from Step 4 of the Application Form; use tools etc. as modified from the generic offering
- Reveal to the candidate that:
  - A series of tasks will be read off during the assessment and the candidate is required to perform the tasks in a manner acceptable to the evaluation team. Once the candidate has indicated that he/she has completed a particular task, the next task will be read off.
  - Points will be awarded for each task segment; a score of 85% is required to pass.

  - Candidates can ask questions during the assessment but the evaluation team will only clarify information that has already been provided.
- Ask candidate if he/she has any questions, and answer those questions.

Step 4: Hands-On Assessment

Labor and management evaluators will jointly conduct the assessment. If one is not available the assessment is postponed until both are available.

a. Preliminary Instructions:

Instructions to evaluation team:

- Evaluators decide in advance who will read of the hands-on tasks to the candidate (one approach is to have each evaluator take a turn).
- Each evaluator brings a copy of this worksheet to the assessment and separately evaluates the candidate.
- After the evaluation team understands its responsibilities the candidate is taken to the equipment (rail car, lab, etc.) where the assessment is to be conducted. Other candidates waiting to take the assessments must not be included in this area.
- Just prior to beginning the assessment remind candidates of the following:
- The assessment will begin with the reading of the first task. Subsequent tasks will only begin when the candidate indicates that he/she has completed the previous one.
- The assessment will be timed, but exceeding the limit will not cause the candidate to fail. Instruct the candidate to relax and take all the time needed to correctly perform each task.
- Any safety breach will cause the candidate to fail the entire assessment.
- Ask for any final questions.

b. Conduct Assessment:

- Each task is read to the candidate as it appears below in Column 1
- While carrying out the assessment each evaluator separately determines if the acceptable performance was met (Column 2) and checks "Yes" or "No" in Column 3. *Note: each evaluator will use a separate sheet to score the candidate (see below).*
- If acceptable performance was satisfied for a given task and "Yes" was checked in Column 3, then full points are awarded in Column 4. Otherwise, no points are awarded
- Continue with each task until assessment is over and record time.

ASSESSMENT EVALUATION SHEET

Note: each evaluator (labor and management) will use a separate sheet to score the candidate.

TASKS	ACCEPTABLE PERFORMANCE	WAS THE TASK PROPERLY CARRIED OUT?	POINTS AWARED	EVALUATOR COMMENTS
Task 1: Insert from Step 2, Table B of the Application Form (task as modified from the generic offering)		☐YES ☐NO	Points Available Insert from Step 2, Table B of the Application Form Points Awarded	
Task 2: Insert from Step 2, Table B of the Application Form (task as modified from the generic offering)		☐YES ☐NO Evaluator Comments:	Points Available Insert from Step 2, Table B of the Application Form Points Awarded	
Task 3: Insert from Step 2, Table B of the Application Form (task as modified from the generic offering)		☐YES ☐NO Evaluator Comments:	Points Available Insert from Step 2, Table B of the Application Form Points Awarded	
Task 4: Insert from Step 2, Table B of the Application Form (task as modified from the generic		☐YES ☐NO Evaluator Comments:	Points Available Insert from Step 2, Table B of the Application Form Points	

offering)			Awarded	
			TOTAL Points: Note: 85 needed to pass. Any safety breach results in a failed assessment.	

Step 5: Post Assessment Activities

After the assessment has concluded , the joint evaluation team meets to discuss their findings and complete the assessment result sheet (attached). As soon as the labor/management team has reached a consensus, the team shares the pass/fail grade with the candidate. The candidate can arrange a time after this initial meeting to go through the assessment in more depth to determine area that need improvement.

Center staff will upload forms into the Credential Manager within 5 business days. Records are to include 1) the labor assessment form, 2) the management assessment form, and 3) the consolidated form with the official grade on it.

If the employ fails the assessment he/she can re-take the assessment again a minimum of 30 days later. Longer time periods may be decided locally along with the decision on how many times an candidate can re-take the assessment.

RESULTS: HANDS-ON ASSESSMENT

This form is used to present the consolidated findings of the joint labor-management evaluation team. Once completed, a copy is kept with the agency for its records, another is given to the candidate, and a third copy is forwarded to the Transportation Learning Center.

Agency: Inserted from application form
Candidate:
Assessment Date:
Labor Evaluator: Inserted from application form
Management Evaluator: Inserted from application form
Training Standard Reference: Inserted from application form
204 – Auxiliary Inverters and Batteries
Hands-On Skill Demonstrated: Inserted from application form
Assessing the operation of the auxiliary inverter and battery charger with portable test unit (PTU).

Score: PASS/FAIL ☐ Pass ☐ Fail
Labor Evaluator Comments Areas Needing Improvement:
Management Evaluator Comments Areas Needing Improvement:
Candidate Comments:
Signatures: Candidate: _____ Labor Evaluator: _____ Management Evaluator: _____

Appendix O: Hands-On Assessment--Candidate Version

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NATIONAL RAIL CAR HANDS-ON SKILLS ASSESSMENT

SAMPLE CANDIDATE VERSION

The hands-on skills assessment is part of a National Joint Transit Industry Rail Vehicle Technician Qualification Program: Building for Success. The program was developed by expert management and labor representatives to design and implement a new joint system that promotes training and apprenticeship for Rail Technicians, and also establishes a process for qualifying the skills of those technicians.

As a candidate of the rail vehicle maintenance technician training program (person taking the hands-on assessment) you will be required to illustrate your ability to perform certain tasks related to your job. In order to fully prepare for and become familiar with such assessments you are being provided with two items:

1. **List of Potential Assessment Tasks** - You will not be asked to perform all of these tasks, but those tasks which your authority has selected and prepared you for in advance through thorough training.
2. An example **Evaluator Worksheet** – This is a mock-up example of a sample check-list worksheet that would be used by your labor-management evaluators during your hands-on assessments. *Please note that this only an example; actual tasks will be based on those developed by the joint Rail Car Training Committee and your property.*

1. LIST OF POTENTIAL ASSESSMENT TASKS

MODULE/CATEGORY	**POTENTIAL ASSESSMENT TASKS** (this lists the currently developed scenarios, more will be included in final version)
201 - Couplers	Inspecting couplers Adjustment and running repairs of couplers
202 – Trucks & Axles	Inspect frame and suspension components Adjust leveling valves Perform measurements and replacements
203 – AC Propulsion	Inspect and diagnose AC driven trains Inspect and diagnose DC, solid state driven trains DC camshaft inspection and diagnostics (note – scenarios will correlate with propulsion system of the local equipment)
204 – Auxiliary Inverters and Batteries	Checking battery conditions Assessing operation of auxiliary inverter and battery charger with PTU (portable test unit)
205 – Friction Brakes	Inspect friction brakes Diagnose and fix brake faults Replace brake pads
206 – HVAC	Diagnose and fix HVAC faults Inspect HVAC for leaks HVAC System general inspection Adjust components to fix/improve HVAC performance

207 – Current Collection & Distribution	Inspection of pantograph and related components Inspecting third rail and shoe and related components Diagnose and repair/reset a high speed circuit breaker (note – scenarios will correlate with current collection system of the local equipment)
208 – Car Body	Interior inspection Exterior inspection Articulation inspection
209 – Doors	Use a PTU to diagnose and fix door faults Adjust doors components / limit switches Test sensitive edges
210 – Communication Systems	Testing operations of communication system
211 – CBTC	Testing wayside-to-train communication Use PTU to assess and fix automatic train protection (ATP) operation (note – scenarios will correlate with specific CBTC systems in place on local equipment)

2. EXAMPLE EVALUATOR WORKSHEET

Agency: Name
Labor Evaluator: Name
Management Evaluator: Name
Topic: (Example) 204 – Auxiliary Inverters and Batteries
Hands-On Testing Scenario: (Example)
Measure specific gravity of the electrolyte.

Prerequisites

Before this assessment can be administered the following prerequisites must be satisfied:

- Candidate (person taking the assessment) has been provided with adequate training such that the hands-on skill to be demonstrated has already been performed by the student in an instructional setting (unless the candidate elects to opt out of the training requirement).
- Candidate has been notified of the assessment and given a copy of the Candidate Version no less than five (5) working days prior to taking the assessment.
- Candidate has been provided with written courseware and training materials that contain work and safety procedures related to the assessment no less than five (5) working days prior to taking the assessment. At that time candidate must also be told that he/she can use any written materials when taking the assessments, and that he/she will fail the entire assessment if any of the safety requirements are breached.
- Candidates has been notified of any equipment he/she must bring to the assessment such as PPE and hand tools no less than five (5) working days prior to taking the assessment.
- Candidate has been told that he/she will be given 1.5 times the required time established by their agency to conduct the assessment but the candidate will not fail if that time is exceeded.

Step 1: Preparation of Test Area

Before conducting the assessment, the vehicle (or lab) must be prepared with the conditions listed below.

A lead/acid battery still connected to the train. (Other faults are established for the candidate to discover).

Step 2: General Information

Insert information as requested below.

Candidate	**Date**
Name of candidate taking assessment Name	Date assessment is being administered Date

Step 3: Pre-Assessment Orientation Meeting

Labor and management evaluators jointly conduct an orientation meeting with the candidate immediately before the assessment. If the assessment is to be given to more than one candidate it makes sense to include all of them in this meeting even though the assessments will be given to one candidate at a time. Those waiting to be assessed could go back to their jobs and be called back at a specific time if the location permits. All of the following items must be reviewed during the orientation meeting:

- Confirm the hands-on skill to be demonstrated:
  Measure specific gravity of the electrolyte
- Reveal the amount of time allowed for the assessment based on 1.5 times the normal time needed for this task. Inform the candidate that he/she will not fail if time is exceeded.
  25 minutes
- Provide candidate with written safety procedures that must be followed during the assessment. Ask candidate if he/she would like to review those procedures. Inform candidate that he/she can refer to these procedures at any time during the assessment. Confirm that the candidate understands all safety procedures.
- Review prerequisites with candidate and have he/she sign that all prerequisites have been met before conducting the assessment. Check off each box as prerequisites are read.

  ☐ Candidate has been provided with adequate training such that the hands-on skill to be demonstrated has already been performed by the student in an instructional setting unless the candidate elects to opt out of the training requirement. (check here if student opts out of the training requirement ☐

  ☐ Candidate has notified of the assessment and given a copy of the Candidate Version no less than five (5) working days prior to taking the assessment.

  ☐ Candidate has been provided with written courseware and training materials that contain work and safety procedures related to the assessment no less than five (5) working days prior to taking the assessment.

  ☐ Candidate has been told that he/she will fail the entire assessment if any of the safety requirements are breached.

  ☐ Candidate has been told that he/she can use any written materials when taking the assessments.

  ☐ Candidate has been notified of any equipment that he/she must bring to the assessment such as PPE and hand tools no less than five (5) working days prior to taking the assessment.

Insulated hand tools

☐ Candidate has been told that he/she will be given 1.5 times the required time established by their agency to conduct the assessment but the candidate will not fail if that time is exceeded.

Have the candidate review the checked-off prerequisites and have him/her sign below if satisfied that all prerequisites have been met.

Candidate signature: _____

- Provide candidate with tools and materials needed to conduct the assessment as listed below:
  Hydrometer, digital VOM
- Reveal to the candidate that:
  - A series of tasks will be read off during the assessment and the candidate is required to perform the tasks in a manner acceptable to the evaluation team. Once the candidate has indicated that he/she has completed a particular task, the next task will be read off.
  - Points will be awarded for each task segment; a score of 70% is required to pass.
  - Candidates can ask questions during the assessment but the evaluation team will only clarify information that has already been provided.
- Ask candidate if he/she has any questions, and answer those questions.

Step 4: Hands-On Assessment

Labor and management evaluators will jointly conduct the assessment. If one is not available the assessment is postponed until both are available.

a. Preliminary Instructions:

Instructions to evaluation team:

- Evaluators decide in advance who will read of the hands-on tasks to the candidate (one approach is to have each take a turn).
- Each evaluator brings a copy of this worksheet to the assessment and separately evaluates the candidate.

After the evaluation team understands its responsibilities the candidate is taken to the equipment where the assessment is to be conducted. Other candidates waiting to take the assessments must not be included in this area.

Just prior to beginning the assessment remind candidates of the following:

- The assessment will begin with the reading of the first task. Subsequent tasks will only begin when the candidate indicates that he/she has completed the previous one.
- The assessment will be timed, but exceeding the limit will not cause the candidate to fail. Instruct the candidate to relax and take all the time needed to correctly perform each task.
- Any safety breach will cause the candidate to fail the entire assessment.
- Ask for any final questions.

b. Conduct Assessment:

- Each task is read to the candidate as it appears below in Column 1
- While carrying out the assessment each evaluator separately determines if the acceptable performance was met (Column 2) and checks "Yes" or "No" in Column 3. *Note: each evaluator will use a separate sheet to score the candidate.*
- If acceptable performance was satisfied for a given task and "Yes" was checked in Column 3, full points are awarded in Column 4. Otherwise, no points are awarded
- Continue with each task until assessment is over and record the time.

ASSESSMENT EVALUATION SHEET

Note: This is just an example to give candidates an idea of how the hands-on assessments are structured. The actual tasks listed here will **NOT** be used.

TASKS	**ACCEPTABLE PERFORMANCE** Note: Except for safety, the Candidate will not be given the acceptable performance criteria in advance	**WAS THE TASK PROPERLY CARRIED OUT?** Note: Each labor and management evaluator answers individually.	**POINTS AWARED** Note: Point structure will be established by evaluators based on national guidance and will not be revealed until after the assessment is completed	**EVALUATOR COMMENTS** Note: Evaluators may individually record any comments they have.
Task 1 – Safety. Candidate must review procedure/ safety sheet, and select and put on appropriate Personal Protective Equipment (PPE) as identified in the procedure/ safety sheet.	All safety requirements found on the procedure/safety sheet must be followed. If any safety procedures are not followed the candidate automatically fails the assessment.	☐YES ☐NO	Points Available: Points Awarded	
Task 2 – Isolate rail vehicle from main power.	Vehicle is successfully disconnected and employee verified power isolation. (Note: Indicators may vary from location to location).	☐YES ☐NO Evaluator Comments:	Points Available: Points Awarded	
Task 3 – Electrically isolate battery from vehicle (if not already isolated)	Operate circuit breaker and/or battery disconnect. (Note: Disconnecting from terminal is acceptable but not	☐YES ☐NO Evaluator Comments:	Points Available: Points Awarded	

	necessary, as per local procedure.)			
Task 4 – Tool Selection. Select proper and necessary tools.	Necessary tools: hydrometer, insulated hand tools, digital VOM	☐YES ☐NO Evaluator Comments:	Points Available: Points Awarded	
Task 5 -Check specific gravity of battery.	Open cap of battery, use hydrometer to sample electrolyte, check and record specific gravity reading, return electrolyte to battery cell, recap battery.	☐YES ☐NO Evaluator Comments:	Points Available: Points Awarded	
Task 6 - Cleanup	Remove any excess/spilled electrolyte, clean and return tools	☐YES ☐NO Evaluator Comments:	Points Available: Points Awarded	
Task 7 -Return battery to operational readiness.	Reset all circuit breakers and switches to normal positions.	☐YES ☐NO Evaluator Comments:	Points Available: Points Awarded	
			TOTAL Points: Note: 70 needed to pass. Any	

			safety breach results in a failed assessment.	

Step 5: Post Assessment Activities

After the assessment has concluded, the joint evaluation team will meet to discuss their findings and complete an assessment result sheet. As soon as the labor/management team has reached a consensus, the team will share and discuss assessment results with the candidate. The candidate can arrange a time after this initial meeting to go through the assessment more in depth to determine areas that need improvement.

If the candidate fails the assessment he/she can re-take the assessment again a minimum of 30 days later. Longer time periods may be decided locally along with the decision on how many times a candidate can re-take the assessment.

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Appendix P: Sample Written Assessment Tutorials

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Preparing for and Administering Pilot Written Assessments - Tutorial

As part of the National Rail Vehicle Qualifications System

Overview – Pilots

- Pilot location will administer:
  - ***One 200 level written assessment*** in Friction Brakes
    - The written assessment requires a total of 1.5 hours per candidate & includes:
      - Pre-assessment questionnaire: candidate training and work experience, as well as skills self-assessment – 30 mins
      - Written assessment: 20 standard + 10 pilot non-scored questions – 60 minutes
  - ***One 200 level hands-on assessment*** following the written assessment
    - May be scheduled right after the written assessment or as separate events

Roles

- Local training coordinator – Proctor
  - Sign proctor non-disclosure agreement
  - Abide by rules and procedures laid out in this tutorial

- TLC - Administrator
  - Prepare Internet-based (IBT) or Paper-and-Pencil (P/P) assessment forms, as well as pre-assessment questionnaire
  - Oversee proctoring & monitors testing security and confidentiality
  - Maintain assessment assignment lists
  - Maintain confidential assessment results
  - Share aggregated results with local coordinators

Proctor Responsibilities

- Review and follow prescribed procedures for specific assessment administration
- Inventory written assessment materials
- Ensure assessment room and environment has adequate seating/computers for participants
- Verify that all workstations to be used have been properly configured
- Verify if any accommodations will be needed during administration for special needs candidates
- Inform participants of testing procedures and instructions
- Verify that notepaper and pencils will be available to the students during the assessment session as allowed by TLC and are returned to the proctor at the end of the session

Proctor Responsibilities

- Distribute assessment materials to all candidates (for paper & pencil only)
- Communicate the assessment instructions to candidates
- For computer-based assessments provide each candidate with instruction sheets with their individual user ID and password
- Be present at all times during the written assessment administration and monitor all candidates during the written assessment session by moving around the room to observe the work stations to assure that candidates are working independently
- Be aware of candidates who may be experiencing problems with equipment, connectivity or any other technical difficulty
- Protect the candidates from disturbances and distractions

Proctor Responsibilities

- Refrain from answering any questions relative to the meaning or intent of assessment items
- Collect testing materials for any candidate who wishes to leave the room, as per TLC guidelines
- Collect pre-assessment questionnaires, written assessments and answer sheets in envelopes, or verify electronic tests have been completed properly
- Instruct candidates to close web browser after results are displayed
- Refrain from viewing candidate written assessment results on screen
- Report any irregularities or suspected breach of security to TLC
- Notify TLC in the event of technical or other administrative difficulties
- Be aware of the time elapsed for a written assessment administration.

Request

- Proctor
  - Emails TLC with module of written assessment requested, delivery timeframe, and candidate names
- Administrator
  - Confirms assessment date and time
  - (IBT) Prepares written assessment assignment list
  - (IBT) Each candidate will be issued a unique Access ID
  - (IBT) Emails Assessment Link, Access ID and Passwords to proctor
  - (P/P) Mails package with pre-assessment questionnaires and written assessment forms

Prepare – General

- Verify equipment and/or testing room
- Notify candidates of date/time/location of assessment and permitted/not permitted items
  - Permitted: Notepaper and pen or pencil provided by the Proctor and returned at the end of the session
  - Not permitted: calculators (unless for 100 level assessment), cameras, and any materials associated with the subject of the written assessment being taken
  - Cell phones must be turned off and stowed away during the session
  - Hats, coats, and bags must be stowed away if brought into the test room

Prepare – Paper & Pencil

- Verify that the classroom used for delivering the assessment meets the standard. Specifically:
  - The test room must be quiet and free from distractions such as printers, copiers, conversations, and general facility traffic.
  - The proctor must be able to see the candidates and to move freely through the classroom while the assessment is in progress.
  - The test room must contain no materials (reference texts, posters, and so on) that are related to the subject matter of the assessment.
  - The test room and equipment must be dedicated to written assessment for the scheduled duration of testing and no other purpose.
- Verify receipt of assessment package within two business days of the delivery date

Prepare - IBT

- In addition the classroom requirements in previous slide, verify that the computer(s) to be used has the appropriate configurations. You need:
  - Computer running on major operating systems, including Windows, Macintosh, Linux, and Chrome OS/Chromebook
  - Uninterrupted Internet connection (high-speed preferred)
  - Any major web browser including:
    - Google Chrome
    - Firefox 3.6+
    - Internet Explorer 6+
    - Safari 5.0+
    - Opera
  - No software installation required
  - For additional info: (http://www.classmarker.com/online-testing/accessibility/)

Delivery – Paper & Pencil

- Proctor
  - Checks candidate photo ID (employee badge, driver's license, or passport)
  - Provide candidates with notepaper and pencil and collect them at the end of the assessment
  - Hands out pre-assessment questionnaire with envelope
  - Collects pre-assessment questionnaire and hands out written assessment and second envelope
  - Collects written assessment and mail all sealed envelops to Administrator

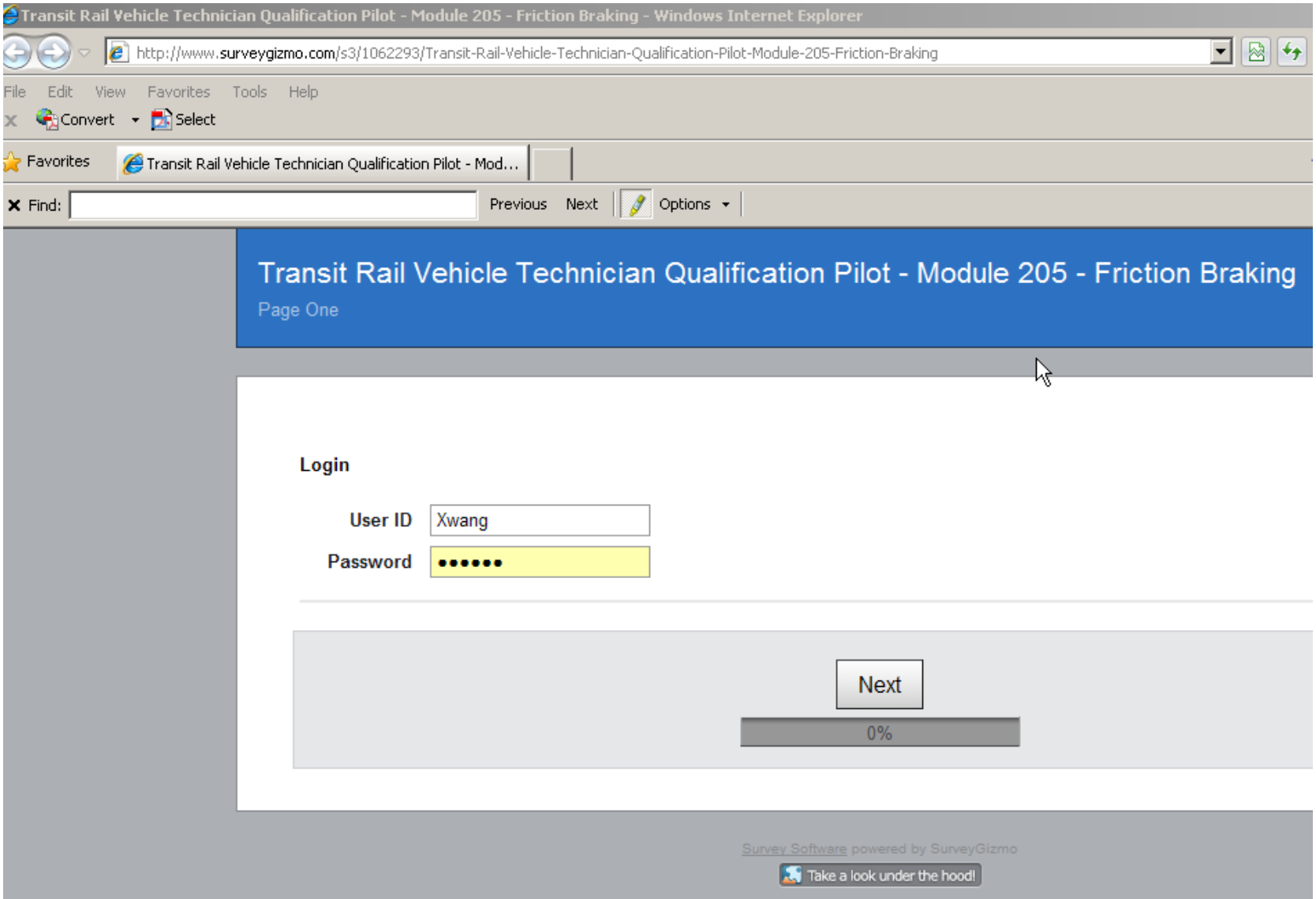
- Candidate
  - Completes and submits pre-assessment questionnaire on training and work experience, as well as self-assessment of skills
  - Submits questionnaire in sealed envelope to proctor
  - Completes written assessment
  - Submits written assessment in sealed envelope to proctor
  - Score and pass/fail status will be mailed to candidate within two weeks

Delivery - IBT

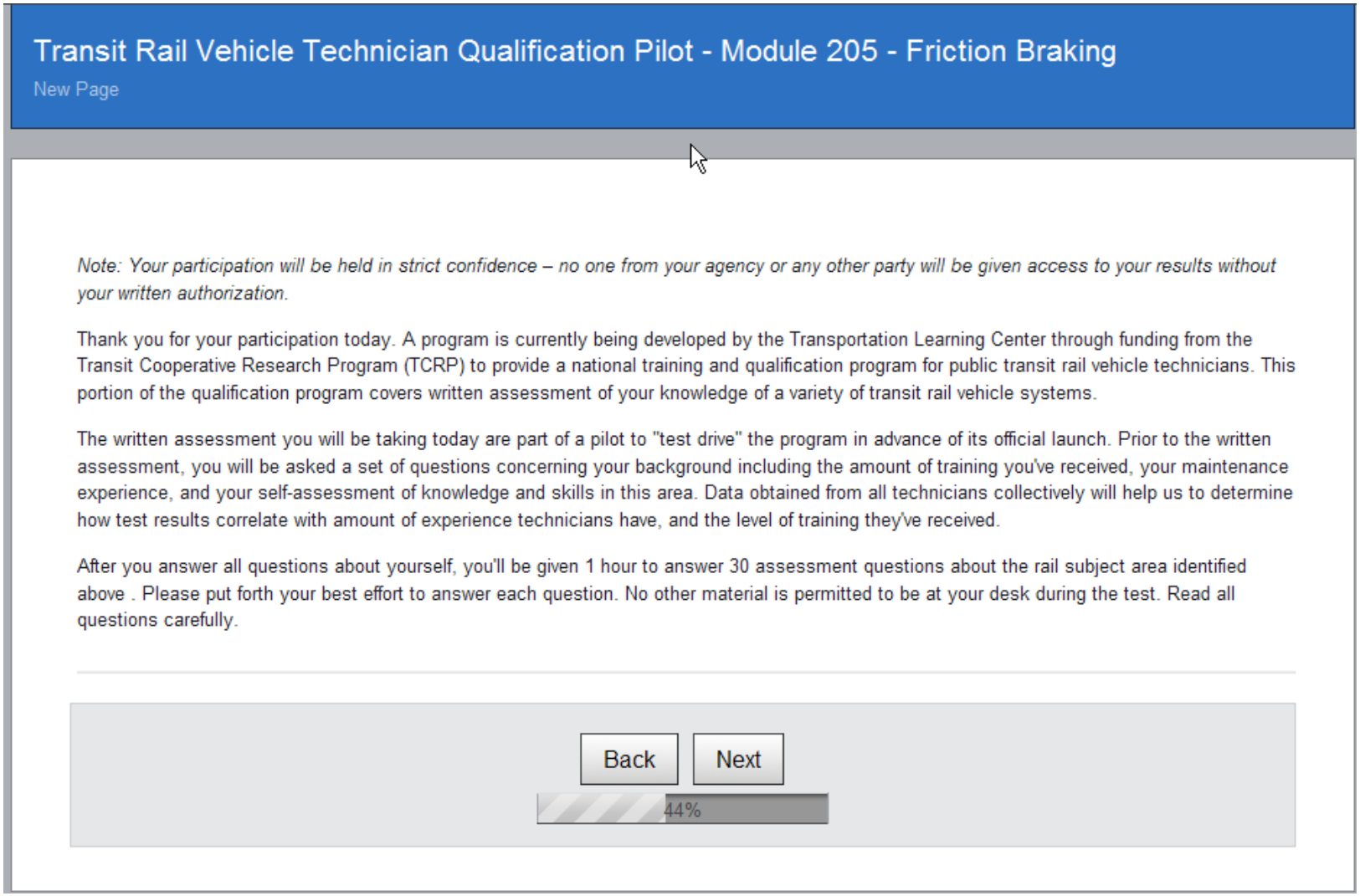
- Proctor
  - Checks candidate valid photo ID (employee badge, driver's license, or passport
  - Provides candidates with instruction sheets that match their names.
  - Provide candidates with notepaper and pencil and collect them at the end of the assessment

- Candidate
  - Enter web link (for SurveyGizmo.com) as provided on the instruction sheet and logs in using assigned User ID and Password
  - Answer brief survey questions on training and work experience, as well as self-assessment of skills
  - Review answers at the end of the survey and clicks submit and redirect to ClassMarker.com for written assessment
  - Log in again using the same User ID and Password (this is needed for added security of assessment questions)
  - Answer each question (20 scored questions + 10 non-scored pilot questions, all randomized) and may review and change answers to any previous questions
  - Click submit and confirms at the end of assessment
  - Score and pass/fail status is instantly displayed

Delivery - IBT (Survey Login)



Delivery - IBT (Survey)



Delivery - IBT (Survey)

Transit Rail Vehicle Technician Qualification Pilot - Module 205 - Friction Braking

I. General Information

The questions below will help us gather much needed data – time will NOT begin until you have completed answering these first set of questions about yourself, experience and prior training, as well your self-assessment of knowledge and skills in this subject area. Again, all responses will be kept strictly confidential.

1. Gender

- ○ Male
- ○ Female

2. What is your race? (check one):

- ○ American Indian or Alaskan Native
- ○ Hispanic Latino
- ○ Asian
- ○ Native Hawaiian or Other Pacific Islander
- ○ Black or African American
- ○ White
- ○ Other (please specify) *

3. What is your age? (check appropriate range)

- ○ 18-29
- ○ 30-34
- ○ 35-39
- ○ 40-44
- ○ 45-49
- ○ 50-54
- ○ 55-59
- ○ 60-64
- ○ 65+

Delivery - IBT (Survey)

Transit Rail Vehicle Technician Qualification Pilot - Module 205 - Friction Braking

I. General Information (Continued)

6. How many years have you been employed in Rail Vehicle Maintenance?

7. How many total years of Maintenance Experience do you have? (include all maintenance experience - automotive, rail, bus airline, building, etc.)

8. Approximately how many hours of classroom or lab training have you received on Friction Braking in the past five years?

*Note: Only include those training hours pertaining to rail vehicles. Examples may include apprenticeship program, training offered by your agency or Labor Union, etc.

9. Approximately how many hours of On-the-Job (OJT) training have you received on Friction Braking in the past five years?

Note: Only include those training hours pertaining to rail vehicles

Delivery - IBT (Survey)

Transit Rail Vehicle Technician Qualification Pilot - Module 205 - Friction Braking

II. Skills Level Self-Assessment

The next set of questions pertains to how you evaluate your own skills in this particular subject area. Please rate your skills on the following scale:

0 - I am unaware of meaning task

1 - I am aware of but unable to perform this task

2 - I am able to perform this task with assistance

3 - I am able to perform the task competently on own

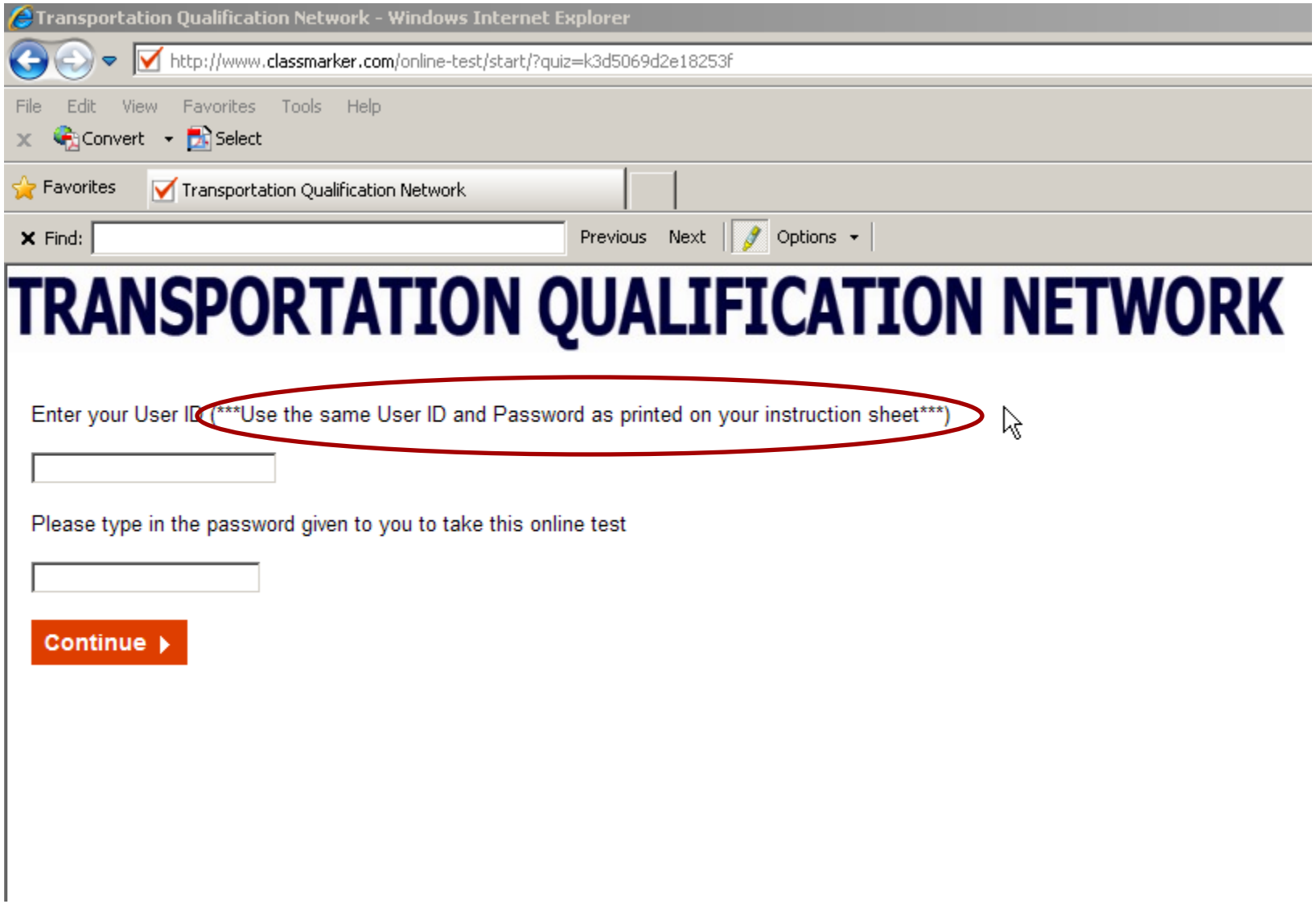
4 - I am able to instruct others in task

Hydraulic Braking

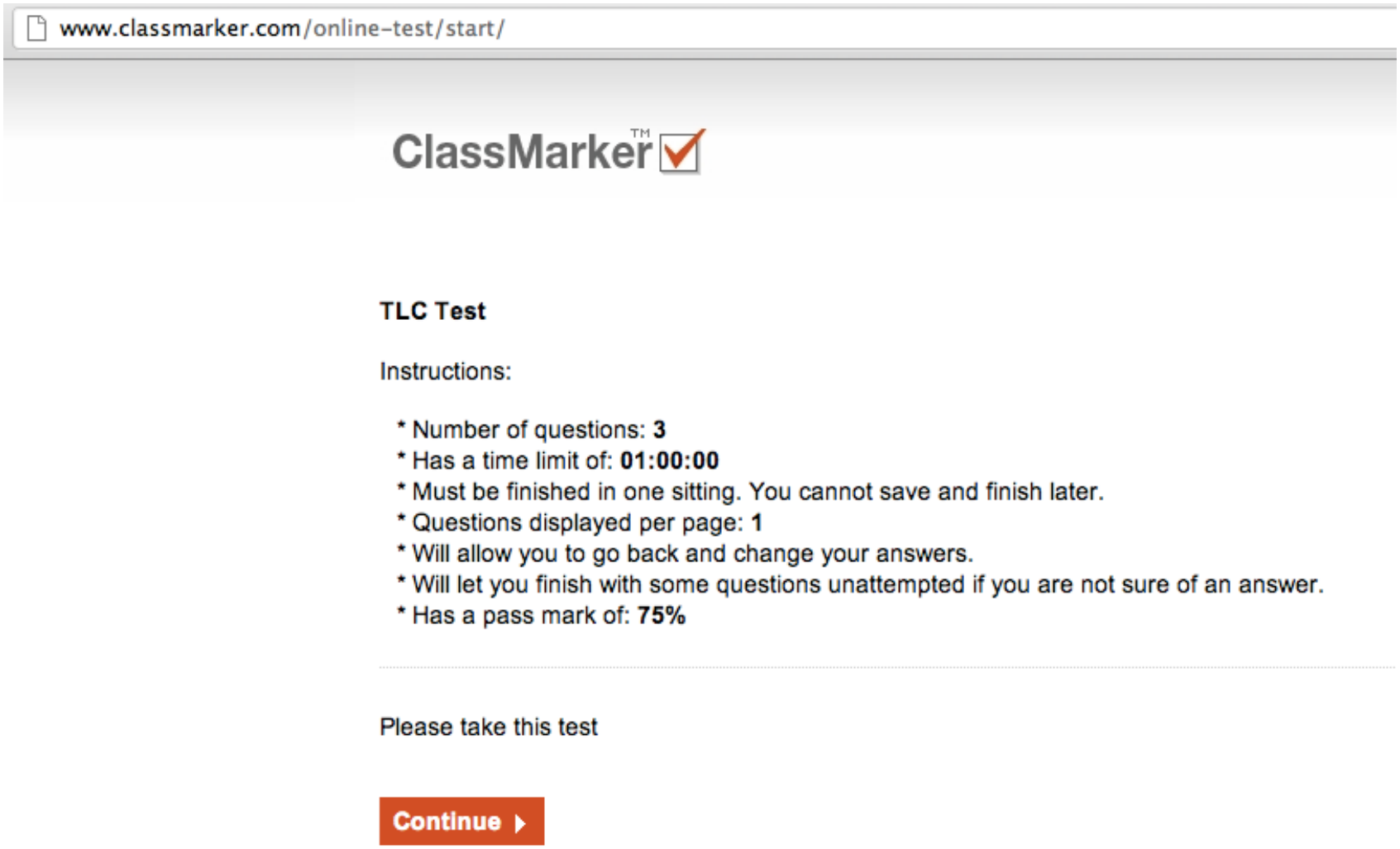
	Rating				
	0	1	2	3	4
Inspecting and maintaining Hydraulic Braking	○	○	○	○	○
Inspecting and maintaining Flush Cart	○	○	○	○	○
Troubleshooting Hydraulic Braking	○	○	○	○	○
Troubleshooting Flush Cart	○	○	○	○	○

Back Next

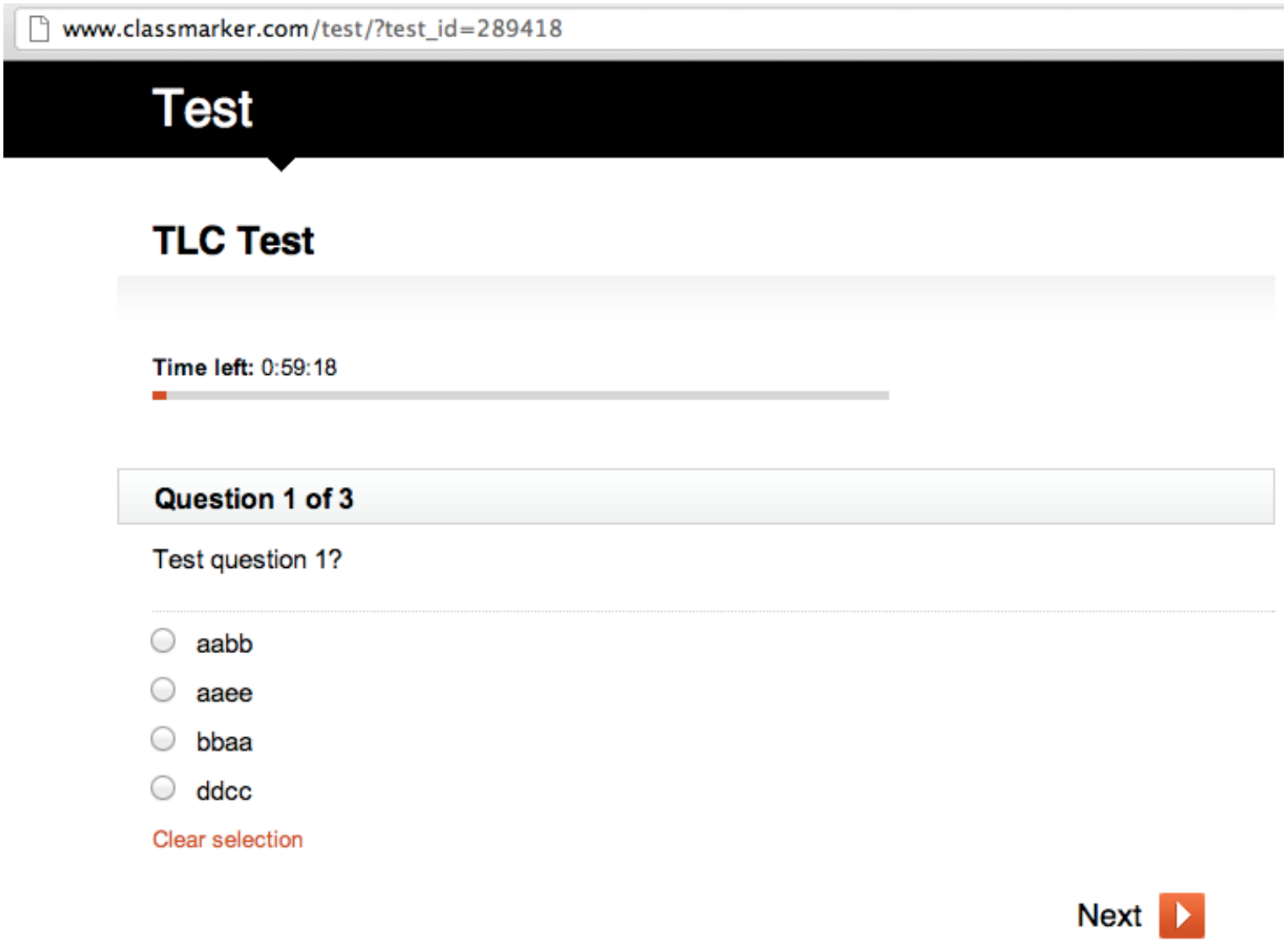
Delivery - IBT (Assessment Login)



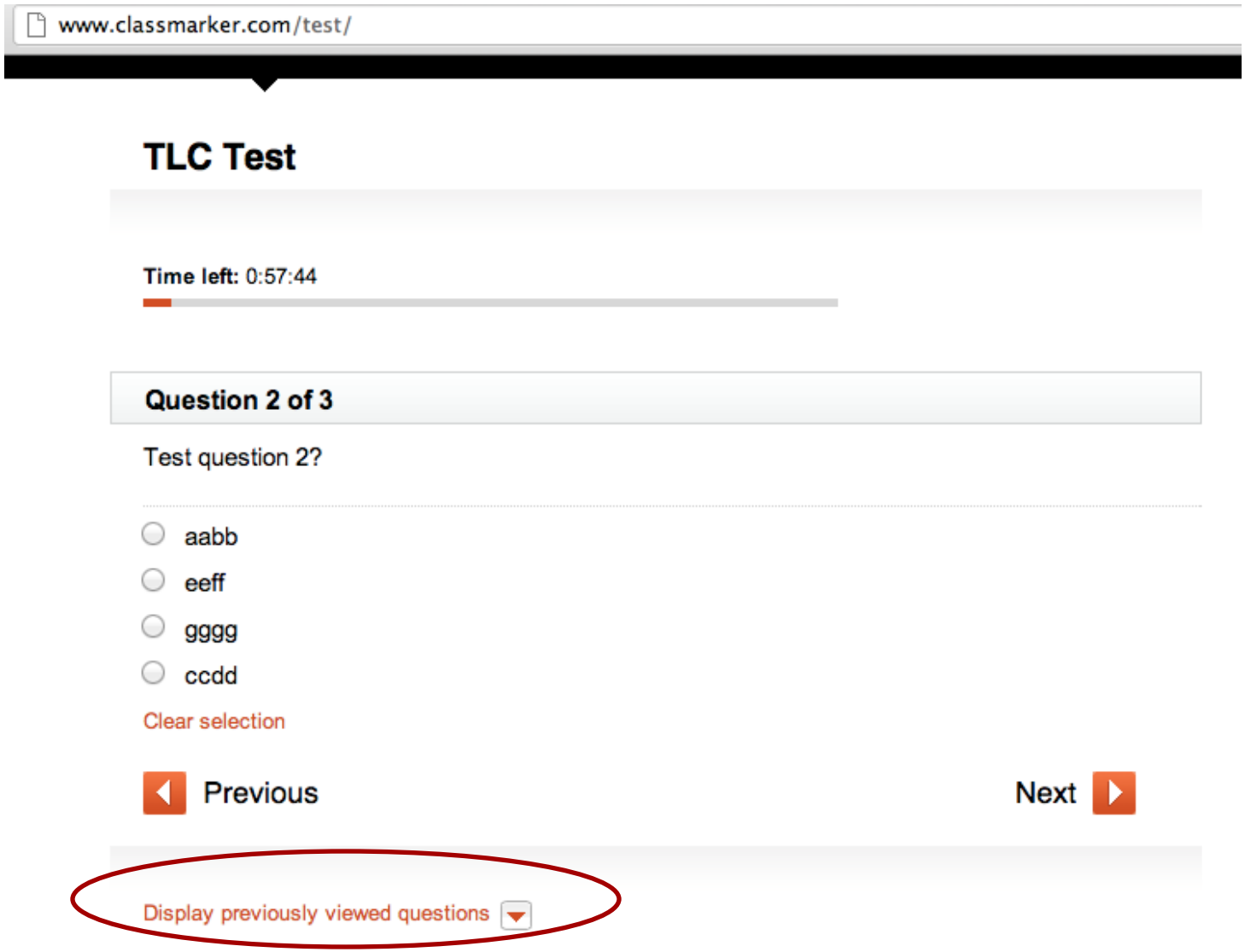
Delivery - IBT (Instructions)



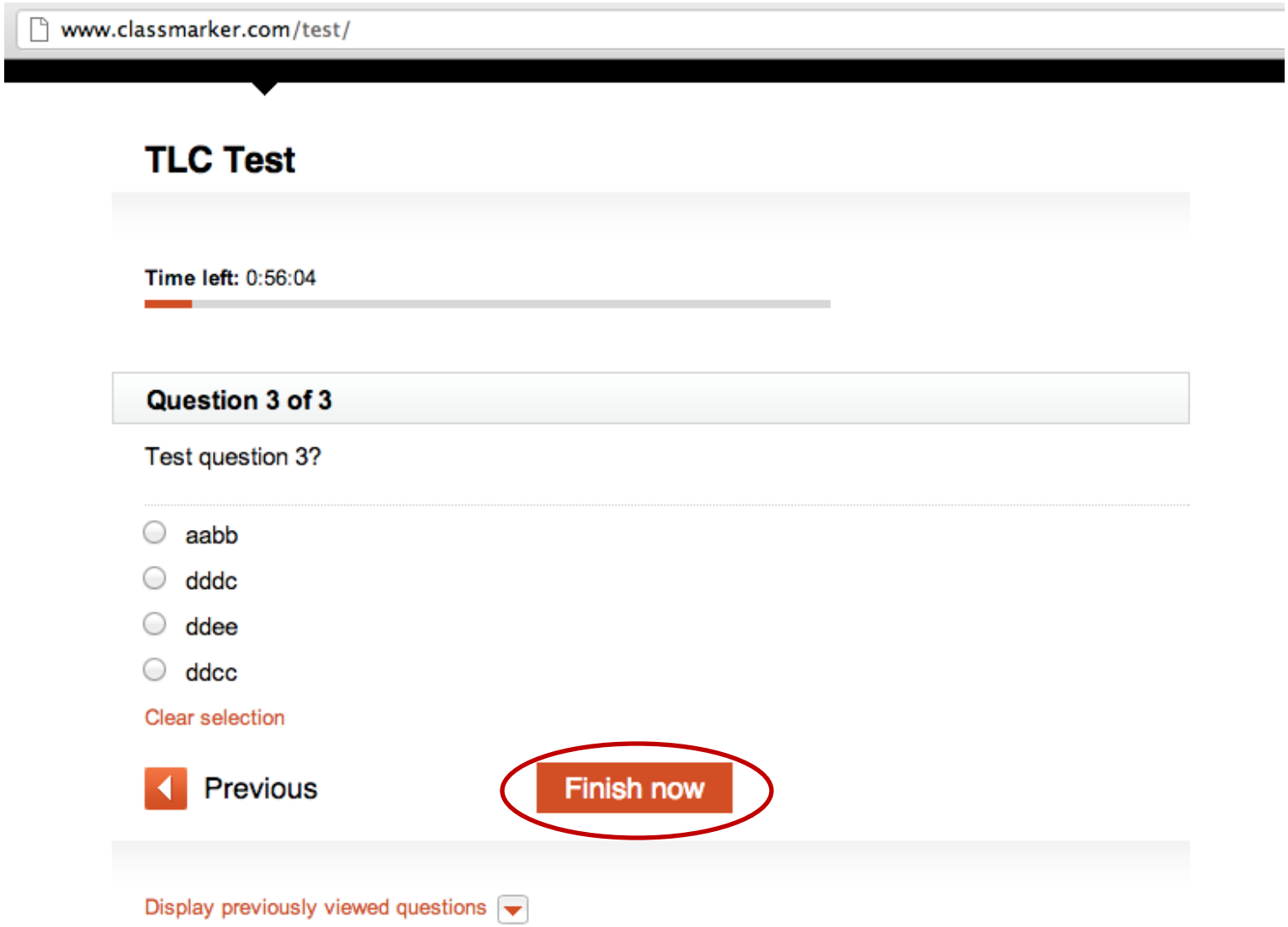
Delivery – IBT (Questions)



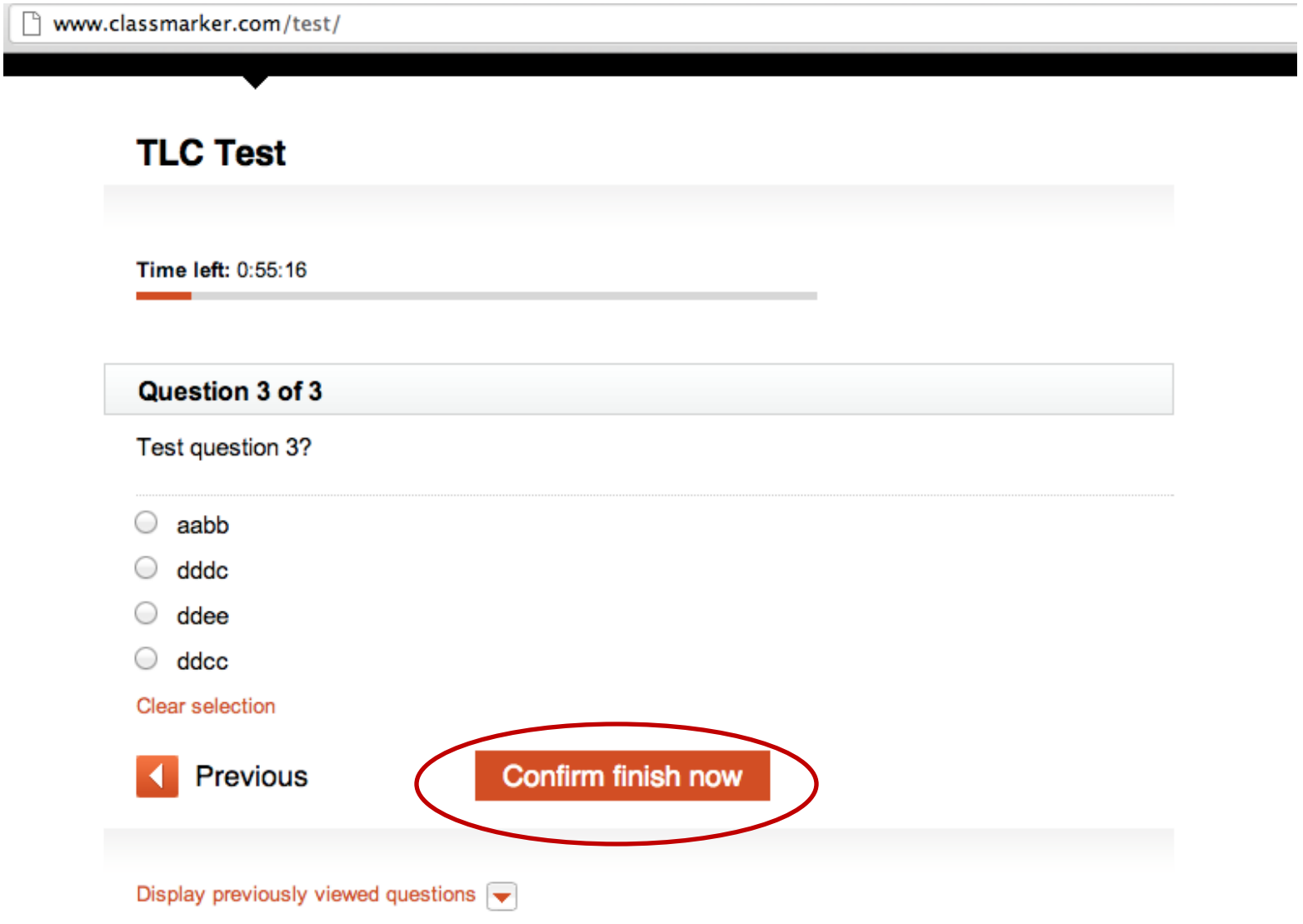
Delivery – IBT (Display Previous Qs)



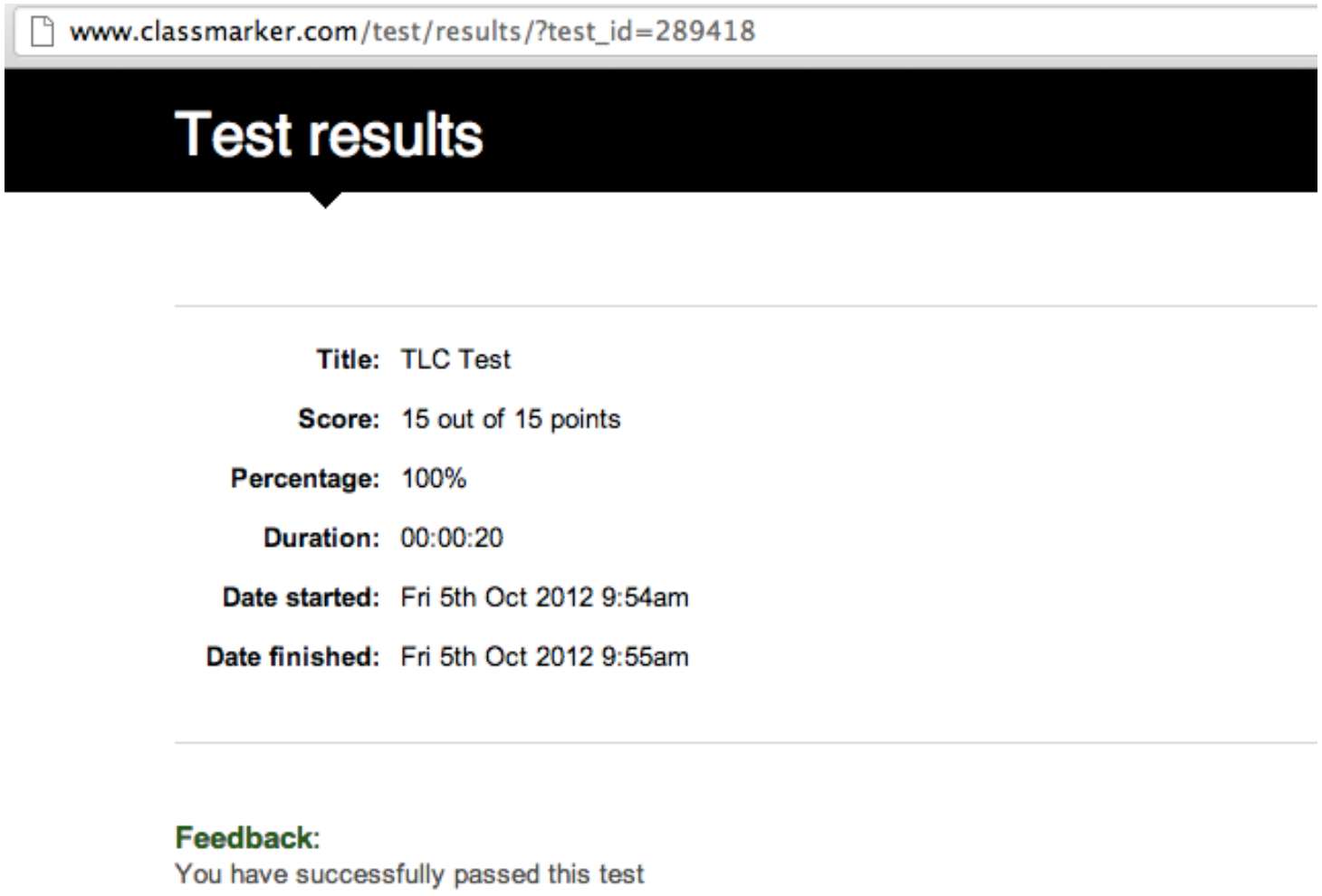
Delivery – IBT (Finish Now)



Delivery – IBT (Confirm)



Delivery – IBT (Results)



Results – Paper & Pencil

- Proctor
  - No individual scoring is available to proctor
  - Aggregated skills level self-assessment results - shared within *four* weeks
  - Aggregated total scores and scores by learning areas - shared within *four* weeks (if more than 5 candidates at the agency have taken the module, cumulatively)

- Candidate
  - Score and pass/fail status will be mailed to candidate within *two* weeks
  - May provide email address for results to be emailed within *two* weeks
  - May request detailed feedback report (scores by learning areas) from Administrator
  - May provide feedback to Administrator on test question validity or other program design issues
  - Passing score may be used for official qualification later

Results - IBT

- Proctor
  - No individual scoring is available to proctor
  - Aggregated skills level self-assessment results - shared within *four* weeks
  - Aggregated total scores and scores by learning areas - shared within *four* weeks (if more than 5 candidates at the agency have taken the module, cumulatively)

- Candidate
  - Score and pass/fail status is instantly displayed on screen
  - May provide email address for results to be emailed within two business days
  - May request detailed feedback report (scores by learning areas) from Administrator
  - May provide feedback to Administrator on test question validity or other program design issues
  - Passing score may be used for official qualification later

Contact

For preparation of written assessment delivery, technical difficulties during a written assessment session, candidate dispute of assessment results, or to report irregularities or suspected breach of testing security, please contact:

Xinge Wang

Transportation Learning Center

Phone: 301-565-4715

Email: xwang@transportcenter.org

For questions or comments regarding the written assessment contents, please contact

Brian Lester

EDSI, Inc.

Phone: 610-876-4855

Email: blester@edsisolutions.com