

Curriculum Standards and Guidelines for Entry-Level Commercial Motor Vehicle Driver Courses



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PREFACE

The Professional Truck Driver Institute (PTDI) is a 501(c)(3) organization established for the purposes of developing uniform skill, curriculum, and course standards for entry-level commercial motor vehicle (CMV) driver training, and certifying training courses that, at a minimum, meet those standards. This publication is made available in the interest of CMV safety and the advancement of CMV driver training.

The skill standards and accompanying curriculum standards, initially developed in 1999, are the product of the collective wisdom of more than 250 motor carrier safety personnel, drivers, and educators teaching in the field of CMV operation, driver training, curriculum and safety. The curriculum standards represent the essential elements that a CMV driver training course should contain. In October 2009 PTDI convened a task force of stakeholders from these same groups within the truck driving industry to begin a review of the three sets of standards in order to determine any updates needed as a result of changes in the industry, technology or legislation. The project was completed in May 2011.

The curriculum standards also incorporate the curricular recommendations of the U. S. Department of Transportation's Federal Highway Administration's (former) Office of Motor Carriers "Model Curriculum." They represent the minimum curriculum judged by the Professional Truck Driver Institute, Inc. (PTDI) to be necessary in order to provide training in how to operate a CMV.

The standards and requirements for course certification have been adopted as the official policy of PTDI and serve as the criteria by which PTDI evaluates the training course(s) and curriculum of organizations seeking certification. The standards must be substantively met before PTDI approves of and issues its certification to a driver training course.

PTDI STATEMENT OF REPRESENTATION AND DISCLAIMER

The contents of this publication do not represent official policy of any governmental or quasi-governmental agency. PTDI expressly disclaims any and all liability for the content, use, and application of these skill, curriculum, and course certification standards, and makes no representation or warranty as to the fitness of any individual who has been trained in accordance with the standards or procedures detailed herein.

A school's compliance with PTDI's standards is purely voluntary. PTDI's certification of a course is evidence of a school's compliance with PTDI's curriculum and certification standards. PTDI certifies training courses, not schools. PTDI does not accredit schools or courses. PTDI is not a trade association and, therefore, has no members. Graduates of a PTDI-certified course are not themselves certified for having attended such a course.

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Provisions of the "Curriculum Standards and Guidelines for Entry-Level Commercial Motor Vehicle Driver Courses" were in effect as of September 10, 1999. Substantive revisions or additions to this publication (formerly called "Curriculum Standard Guidelines for Entry-Level Tractor-Trailer Driver Courses") which have been made since that date are clearly identified. Updates for flow, consistency, clarification and relevancy may not be indicated. Also, see "Notes."

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INTRODUCTION

Formal training is the most reliable way to learn the many special skills required for entry-level commercial motor vehicle driving. The more skills learned in supervised training, the fewer that must be mastered on the job. Formal, supervised training is available from private truck driver training schools, public institutions, and in-house motor carrier training programs. Because of their important role in truck safety, these training organizations are guided by minimum standards against which the quality of their training courses can be measured. It is with these standards in mind that the Professional Truck Driver Institute (PTDI) offers the “Curriculum Standards and Guidelines for Entry-Level Commercial Motor Vehicle Driver Courses.”

The curriculum standards are based on the skills, knowledge, tasks, and duties of entry-level commercial motor vehicle operators, as explained and rated by experienced drivers. They also incorporate the curricular recommendations of the Proposed Minimum Standards for Training Tractor-Trailer Drivers, issued by the U.S. Department of Transportation's Federal Highway Administration's (former) Office of Motor Carriers (formerly Bureau of Motor Carrier Safety) in 1985. The USDOT recommended curriculum was adapted by the PTDI to meet the minimum criteria and requirements of the PTDI course certification program.

Note that the curriculum standards are intended to teach “entry level drivers” the basic skills needed to safely operate a commercial motor vehicle. They do not address every skill, knowledge, task, duty or ability suggested by drivers as necessary for entry-level drivers to possess and use. Schools appropriately teach many of the skills and knowledge, and those are included in these curriculum standards. Some items listed as skill standards should not be taught by schools due to liability issues, excessive costs, or the desire by employers to teach these duties to their own specifications.

NOTES

These Curriculum Standards and Guidelines are one of three sets of standards – “Skill Standards for Entry-Level Commercial Motor Vehicle Drivers,” “Curriculum Standards and Guidelines for Entry-Level Commercial Motor Vehicle Driver Courses” and “Certification Standards and Requirements for Entry-Level Commercial Motor Vehicle Driver Courses.”

The terms “Commercial Motor Vehicle” and “CMV” are used throughout this document to reflect the broad category of vehicles that require a commercial driver’s license to operate.

The term “highway” as used in these standards includes public streets, roads, roadways and highways.

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BASIC CURRICULUM

The curriculum standards outline the **minimum** curriculum content necessary for mastering the skills for the entry-level commercial motor vehicle driver; that is, the minimum training requires continued on-the-job training with a trucking firm upon completion of this course in a teaching institution.

An "**entry-level**" **driver** is an individual who has the knowledge and skill to operate a commercial vehicle safely, but, without supervision, lacks the experience to perform as a solo driver. Longer programs that include additional instruction and an externship will prepare the student to be a solo driver. A "**solo**" **driver** is an individual who has the knowledge, skills, and experience to operate a commercial vehicle safely from the point of origin to the ultimate destination without supervision. This individual can, within regulation, achieve the outcome of moving freight efficiently.

This perspective mirrors the DOT model curriculum which indicates that the (former BMCS) standards are minimum standards. Therefore, this curriculum is to be considered a basic or "**core type**" **curriculum**. Graduates of this curriculum cannot be considered fully-trained, "ready-to-solo" - type drivers. This can only be accomplished when the curriculum is considerably expanded and enriched to provide both additional driving time and material pertinent to the particular driving job for which the student is being trained. Students graduating from this basic curriculum will still need additional road experience and vocational-type training (such as loading tankers, load securement, etc.) under the guidance and supervision of an experienced, professional driver before being considered fully qualified to operate in interstate or foreign commerce (as required by Regulation 391 of the Federal Motor Carrier Safety Regulations.)

The curriculum **combines competency- (proficiency-) based training and a minimum of hours-based training** necessary to achieve industry standards. Lessons involve classroom/lab instruction and practical application behind the wheel on the range and on the highway.

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MINIMUM TRAINING HOURS

Instructional time may be calculated as either **60- or 50-minute hours**. There are 8880 minutes required in a 60-minute hour course and 8900 minutes in a 50-minute hour course. **In this document training hours are expressed as 60-minute hours, followed by 50-minute hours shown in parentheses; e.g. 148 (178).**

The **minimum total hours of instruction** is 148 hours (178 hours in 50-minute hours), with a minimum of a combination of 104 (125) hours of classroom and lab instructional time and with at least 44 (53) of those hours being behind-the-wheel time while the student is actually driving the vehicle. **Observation and break times** are in addition to the 148 (178) hours. In other words, the minimum required per-student hours of instruction is 148 (178) hours. In order to determine the programmatic hours of any particular course, one would need to use the ratio of students per vehicle that the course employs in order to multiply the number of behind-the-wheel hours to calculate total course time. For example, if the student to vehicle ratio (SVR) is 3:1, the total hours must be 236 in 60-minute hours or 284 (50-minute hours):

In 60-minute hours:

44 hours BTW per student x 3 students = 132 hours + 104 classroom/lab = 236 hours

In 50-minute hours:

53 hours BTW per student x 3 students = 159 hours + 125 classroom/lab = 284 hours

There are **required hours for each of the five units of instruction** within the curriculum. See Exhibit 2: “Minimum Hours for Training.” The hours relate both to classroom and laboratory hours as well as to behind-the-wheel hours. The training institution has the prerogative of arranging and allocating those hours within each unit to best suit the needs of the students and carriers that the specific training institution serves. *On a case-by-case basis, up to 15 percent of the required classroom/lab training hours may be adjusted among the units of instruction at the discretion of the training institution. However, the 44 hours behind the wheel may not be reduced.*

Of the 44 (53) hours of individual **behind-the-wheel instructional time**, at least 12 (14) hours must be spent on the on the highway for individual CMV trainees. The remaining 32 (39) hours may be used on the range, highway or in any combination of range and highway BTW time.

The 44 (53) hours of **behind-the-wheel time** means actual driving time where the student has direct control of the vehicle; observation and break times are in addition to the 44 (53) hours.

A minimum of one hour of **behind-the-wheel time per student** is expected to occur **at night**. The standard recognizes that some locations may be precluded from meeting this standard due to geographic considerations.

A minimum of six hours of **behind-the-wheel time per student** on the highway with a **trailer loaded** with at least 15,000 pounds is expected.

It is the training institution’s discretion as to how time will be allocated between the functions of **classroom and laboratory time**.

See Exhibit 1, “Programmatic Course Options in Hours.” See Standard 5.2 (Instructional Time) in “Certification Standards and Requirements for Entry-Level Commercial Motor Vehicle Driver Courses.”

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RATIOS

The maximum number of **students per vehicle (SVR)** is 4 to 1. However, the recommended number of students per vehicle is 3 to 1.

The maximum number of **vehicles per instructor on the driving range** is three.

The maximum number of **trainees per instructor on the driving range** is 12.

The maximum number of **vehicles per instructor on the highway** is one.

The **classroom ratio of students to instructors** is expected to average not more than 30 trainees per class over a one-year period, never to exceed 36 trainees to one instructor in any class.

See Standard 5.3 (Student/Instructor/Vehicle Ratio) in "Certification Standards and Requirements for Entry-Level Commercial Motor Vehicle Driver Courses."

DISCRETIONARY CLASSROOM HOURS

Of the required 104 (125) hours for the five classroom/lab units (see Exhibit 2: "Minimum Hours for Training"), 15 (17) **hours are discretionary** that the individual training institution may allocate as it wishes across its various instructional units, either by expanding the five PTDI curriculum units or by adding topics such as additional DOT regulations, First Aid/CPR, CDL written preparation, a defensive driving course, or information about the job search. However, these hours may not substitute for driving hours. Each institution is responsible for providing discretionary hour information and explanation in its record keeping to PTDI.

DEFENSIVE DRIVING COURSE

Formal **Defensive Driving** content may be used as part of the material associated with units on Hazard Perception, Visual Search and Space Management.

TIME EXEMPTIONS

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Some time exemptions may be authorized where:

- Attainment of instructional objectives for each unit can be demonstrated through objective measures on an individual basis.
- Students already have achieved partial fulfillment of objectives through verifiable experience prior to entering the training curriculum.
- Students are being trained by or for a specific company whose operations make attainment of certain objectives unnecessary.

A variance request is required. See "Variance Option" on page 10.

TIME WAIVER REQUIREMENTS FOR INDEPENDENT STUDY OPTION

Up to 34 (41) hours of classroom/lab instructional hours may be waived through the use of suitable quality, independent study materials for any unit of instruction that requires two or more hours of instructional time. Visual, auditory, simulator, computer-assisted materials, and problem solving activities are encouraged for independent study.

This is subject to a minimum of 70 (84) hours of actual classroom/lab instruction.

To qualify for this waiver, the applicant organization must accomplish the following:

1. Complete and submit the accompanying form on page 8 (“Proposed Substitution of Independent Study for Classroom Hours”) for each unit of instruction for which a waiver is requested.
2. Provide sufficient documentation that the independent study materials, when combined with classroom instruction, are capable of enabling students to attain all of the specific objectives of the unit.

Independent study materials, like all other instructional materials, are considered suitable when they meet these qualifications:

- Comprehensive - The materials and lessons are sufficiently comprehensive in that they help to enable students to meet unit objectives.
- Current and Accurate - The instructional materials are up-to-date and accurate.
- Qualified Authorship - Authors are identified and recognition is given to their qualifications in the field. For example, if standard textbooks or videos are used, titles, authors, publishers, and copyright dates are listed.
- Reading Levels - Reading level is keyed to the reading competence of the average student.

Carefully review Certification Standard 9.1 (Independent Study) for all components that must be addressed to qualify for the time waiver. This is found in the “Certification Standards and Requirements for Entry-Level Commercial Motor Vehicle Driver Courses.”

Note: Independent study and homework are not synonymous. Homework merely reinforces materials covered in class.

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**PROPOSED SUBSTITUTION OF INDEPENDENT STUDY OPTION
FOR CLASSROOM/LAB HOURS**

(TIME WAIVER)

Please complete a separate time waiver form for each unit for which you are requesting a waiver. See “Time Waiver Requirements for Independent Study Option” on page 7 for instructions.

Unit for which it is proposed that independent study be substituted:

- Unit 1 – Basic Operation _____
- Unit 2 – Safe Operating Practices for Basic Operation _____
- Unit 3 – Advanced Operating Practices _____
- Unit 4 – Vehicle Systems and Reporting Malfunctions _____
- Unit 5 – Non-Vehicle Activities _____
- Other – _____

Classroom hours required for that unit (Refer to Exhibit 2 on page 16 of “Curriculum Standards and Guidelines for Entry-Level Commercial Motor Vehicle Driver Courses”): _____

Total number of hours being submitted for a time waiver for this unit: _____

Performance objectives for this unit (Refer to Curriculum Standards pages 18-45):

Knowledge objectives for this unit:

Independent Study Material:

Title _____ Author _____

Chapter No. _____ Title _____

or
Other material

Estimated time to study this material or to complete the project _____

Procedure used to determine whether the student did in fact achieve the objectives _____

Evaluation instruments and other documentation to be used _____

Training day and time test will be given _____

DISTANCE LEARNING OPTION

Added 5/20/11

Distance learning is an educational or instructional activity that is delivered electronically to students at a distance. This could include interactive instructional models such as audio or video computer conferencing or Internet/Web-based instruction. The use of home-based learning using only a workbook as a study guide is not acceptable. The core curriculum in distance learning must be comparable to the curriculum in the on-campus program. The course being offered electronically must be the equivalent of all hours of credit as required for classroom/lab time in the PTDI Certification Standard 5.2 (Instructional Time.) All hours of credit will be applied to classroom/lab time.

Each student must take a proctored exam at a certified location offered by the school. Courses begin and end within a specified or controlled time frame and require that the assignments and tests be submitted by specific due dates.

See Certification Standard 9.2 (Distance Learning Option) in "Certification Standards and Requirements for Entry-Level Commercial Motor Vehicle Driver Courses" for the full provisions of this option.

EXTERNSHIP OPTION

There also is an **externship option** that allows a training program to defer up to 14 (17) of the 44 (53) behind-the-wheel training hours of any individual to a trucking firm, where that time would actually be completed under the close supervision of a driver-trainer attached to the firm. Of the total 44 (53) behind-the-wheel (BTW) hours, 30 (36) hours must be conducted during the school/residence part of the program.

In **externship** designs, **time equivalents** indicate that three (3) hours of externship in-the-truck instruction equals one (1) hour of PTDI-certifiable course in-truck instruction conducted at the school. Therefore, if 14 (17) hours are moved from residence at the school to a carrier, the 14 (17) must be multiplied by three (3). Forty-two (42) (51) hours in externship at a carrier equals 14 (17) PTDI-certifiable hours.

At a minimum, an **externship option** should contain the following elements:

- Weekly student evaluations
- Objectives that specify and direct training
- Skilled and experienced driver-trainers to teach and monitor learning
- Quality training materials
- A curriculum that describes the elements of training that the CMV trainee will experience
- Performance assessments of critical skills
- A system of feedback and record keeping for the CMV trainee, for both the trainee and the cooperating school
- Clearly articulated program policies on issues such as attendance, pay, insurance, and liability
- A formal agreement between the carrier and the training institution

In such a situation, the hours and activities involved in the externship would be closely monitored and included in the total training time provided to the student.

See Certification Standard 9.3 (Externship Option) in "Certification Standards and Requirements for Entry-Level Commercial Motor Vehicle Driver Courses."

EXTENDED EXTERNSHIP

An externship of 140-240 hours of instruction can provide the additional training and experience necessary for an entry-level driver to progress to a solo driver.

Externships are useful innovations for longer courses of instruction.

VARIANCE OPTION

Added 5/20/11

The variance option allows a school to apply for a variance of a specific standard that cannot be met in a conventional manner. The school may propose an alternative method of compliance other than described in the PTDI Certification Standards. Such request must address a specific standard and will not be given in blanket form for a group of standards. Hours may not be reduced, but the manner in which the school delivers the hours could vary. This option gives flexibility to many standards without diluting the standards or the process. Final determination of a request will rest with the Certification Commission and is not subject to appeal. Requests for variance are to be made prior to the team visit in order to avoid unnecessary delay in the process or misunderstanding during the on-site visit at the school.

See Certification Standard 9.4 (Variance Option) and Appendix E (Request for Variance) in "Certification Standards and Requirements for Entry-Level Commercial Motor Vehicle Driver Courses."

DEFINITIONS OF TERMS

Behind-The-Wheel (BTW)

Behind-the-wheel time is supervised time when the student has actual control of the vehicle during the driving lesson that is being conducted on the range or on the highway.

Breaks

Training schedules should contain reasonable breaks for both the student and the instructors. A fifteen-minute break in the morning, a half-hour to one-hour lunch period and at least a fifteen-minute break in the afternoon would correspond with the normal workday and is considered reasonable. Breaks are not PTDI-certifiable time.

Certification

The process of initially confirming that the minimum standards of the PTDI have been met or exceeded.

Classroom Instruction

Instruction that occurs in a non-vehicle, non-laboratory environment and is accompanied by instructional aids that facilitate large numbers of students at one time. Note: Students are under direct supervision of an instructor who is not otherwise engaged. Note: Classroom time is calculated with lab time for PTDI purposes.

Computer-Based Training (CBT)

The use of computers as a key component of the educational environment. Computer-based training is self-paced learning activities accessible via a computer or handheld device typically delivered via CD-ROM. (See also Web-Based Training and Distance Learning.)

Commercial Motor Vehicle (CMV) (requiring a commercial driver's license (CDL))

In accordance with *FMCSR 383.5* – A motor vehicle or combination of motor vehicles used in commerce to transport passengers or property if the motor vehicle—

- (a) Has a gross combination weight rating of 26,001 pounds or more inclusive of a towed unit(s) with a gross vehicle weight rating of more than 10,000 pounds, or
- (b) Has a gross vehicle weight rating of 26,001 pounds or
- (c) Is designed to transport 16 or more passengers, including the driver, or
- (d) Is of any size and is used in the transportation of *hazardous materials* as defined in this section.

Course

All the operations – including administration, qualified instructors, facilities and equipment – designed to provide qualified students with a course of instruction in the safe and responsible operation of commercial motor vehicles. Each course is evaluated and certified separately.

Course of Instruction

The curriculum – instructional intent, content, methods, and materials.

Direct Contact Instructional Hours

An hour of scheduled instruction given to students; i.e., classroom, lab, behind-the-wheel time, observation time, and independent study, if used. (Note: observation time is not PTDI-certifiable time but is counted for purposes of determining the 10-hour maximum average length of day.)

Distance Learning

Distance learning is an educational or instructional activity that is delivered electronically to students. This could include interactive instructional models such as audio or video computer conferencing, or Internet/Web-based instruction. The use of home-based learning using only a workbook as a study guide is not acceptable. (See also Computer-Based Training and Web-Based Training.)

Discretionary Hours

The 15 (17) hours in addition to the hours prescribed for the five PTDI curriculum units to complete the 104 (125) required classroom/lab hours. These hours may consist of additional hours in those five PTDI curriculum units or additional topics such as additional DOT regulations, First Aid/CPR, CDL written preparation, a defensive driving course, or information about the job search. However, these hours may not substitute for driving hours.

Externship

The option that allows a training course to defer up to 14 (17) of the 44 (53) behind-the-wheel training hours of any individual student to a trucking firm, where that time is completed under close supervision of a driver-trainer attached to the firm. Three (3) BTW hours with the carrier equals one (1) hour BTW time conducted at the school; i.e., 3 hours with the carrier translates to 1 hour of PTDI-certifiable time.

Highway

As used in these standards includes public streets, roads, roadways and highways.

Highway Instruction (BTW)

Instruction that normally occurs on public streets and highways. During the highway instruction the vehicle travels over a pre-planned route, or in a designated area, that is known to provide the highway and traffic conditions needed to satisfy the instructional objectives of the lesson being taught. Note: Students are under direct supervision of an instructor who is not otherwise engaged in non-instructional activities.

Independent Study

An alternative method of guiding student learning. It must meet the same objectives with regard to content, time on task and mastery of materials. It is not the same as homework, which merely reinforces materials covered in class. Visual, auditory, simulator, computer-assisted materials and problem-solving activities are appropriate independent study.

Instructional Hours

The hours in which actual training occurs. Training hours are expressed in the PTDI standards in two ways and in the following order – 60 minute hours (i.e., 60 minutes of actual instruction) and 50 minute hours (shown in parentheses) in which only 50 minutes of actual instruction takes place within the hour.

Laboratory Instruction

Instruction occurring outside a classroom that does not involve actual operation of the vehicle and its components. Examples of laboratory instruction include pre-trip inspections, diagnosing/reporting malfunctions and handling cargo. Note: Students are under direct supervision of an instructor who is not otherwise engaged. Instruction that takes place on the range that is not BTW is considered lab time. Note: Lab time is calculated with classroom time for PTDI purposes.

Length of Day

The total length of instructional day including direct contact instructional hours and independent study, if used, and not including breaks.

Night Driving

Behind-the-wheel time from sunset to sunrise.

Observation Time

Time spent observing while other students perform range and highway BTW activities. Observation time may be included in the total program hours but is not included in requirements for individual student time. It is not included in the hours requirement for PTDI course certification.

Organization

Any entity that provides a course of training and testing of commercial motor vehicle drivers. It includes for-hire and private motor carriers; colleges, universities, and vocational schools; career schools; business organizations devoted to training or testing; government agencies; labor and trade associations; and organizations who jointly sponsor a course.

Range Instruction (BTW)

Instruction that normally occurs in a protected area or “driving range” where students may make use of commercial motor vehicles without hazard from other highway users. Note: Students are considered to be under direct supervision of an instructor who is not otherwise engaged in non-instructional activities. Range instruction means BTW time. Instruction that occurs on the range that is not BTW is considered lab time.

Ratio

The proportional relationship of students to vehicle, vehicles to instructor, or students to instructor.

Recertification

The PTDI process of officially reconfirming that the minimum standards of the PTDI have been met or exceeded.

Simulation

A driving simulator is a hardware or software replication of a commercial motor vehicle. A driver training device is an applications tool (utilizing a simulator) that is designed to provide sufficient fidelity in replicating the behavior of a commercial motor vehicle combined with instructional content, driver measurement and student performance comparative reporting.

Student:Vehicle Ratio (SVR) - Range

The number of students normally assigned to a CMV during range (BTW) training activities.

Student:Vehicle Ratio (SVR) – Highway

The number of students normally in the cab of a CMV, along with the instructor, during the highway training portion of your program.

Time exemptions

Verifiable exceptions to meeting the full PTDI time requirements.

Time Waiver

The form and documentation required in order to request that independent study be substituted for a portion of the required minimum hours of classroom/lab.

Variance

The option that allows flexibility for a school to meet a specific standard that cannot be met in a conventional manner, without compromising the standard.

Web-Based Training (WBT)

An approach to distance learning where computer-based training (CBT) is transformed and distributed through the World Wide Web, the Internet or intranets. Educational content tends to be live allowing self-directed or self-paced learning. The WBT system capable of evaluating progress and performance through a learning management system independent of the computer platform. (See also Computer-Based Training & Distance Learning.)

CONTENT

The curriculum is outlined by units of instruction for preparing entry-level commercial motor vehicle (CMV) drivers. Five broad sections of curriculum are suggested, each with a focus on its own particular information.

The outline provided is for presentation purposes only. The school's actual course of study does not necessarily have to be organized or taught according to the suggested sequence of units, but must include suggested content and hours of instruction.

Unit 1 focuses on **Basic Operation** and incorporates both classroom and range or highway behind-the-wheel training. These materials introduce CMV trainees to the vehicle and provide an opportunity to understand how to control the vehicle when in motion. Among the many practical skills learned in this section are backing and shifting.

Unit 2 focuses on **Safe Operating Practices for Basic Operation**. It includes units on the visual search, vehicle communication, speed management, and space management. It includes some classroom instruction and a good bit of behind-the-wheel training.

Unit 3 focuses on **Advanced Operating Practices** and includes subjects on hazard perception, night operation, extreme driving conditions, emergency maneuvers, and passive railroad crossing. This section focuses on helping trainees identify and act proactively and reactively to deal with hazards.

Unit 4 focuses on **Vehicle Systems and Reporting Malfunctions** and enables the trainee to understand the basic workings of the vehicle and how to cope with difficult situations that may occur on the road.

Unit 5 focuses on **Non-Vehicle Activities**. It is a particularly important section and contains many classroom hours. Among the many topics covered in this section are materials on managing life on the road, handling environmental hazards and regulations, and documenting a driver's hours of service.

Exhibit 1: Programmatic Course Options in Hours can be used as a basis for planning the total time for programs taking into account ratios

Exhibit 2: Minimum Hours for Training, in contrast, shows the hours associated with each unit, broken down by classroom/lab and behind-the-wheel. Note that this exhibit contains only the minimum time requirements for training.

Exhibit 3: Curriculum Unit Standards with Related Skill Standards shows what skill in the skill standards corresponds to the curriculum standards.

ORGANIZATION OF THE STANDARDS

Each curriculum unit is presented as a standard. Within that unit, there usually is a statement of purpose that indicates why the unit is important. In addition, there is a statement of the performance criteria for the standard that expresses what the student must do and how well he/she must do it. Further, there are two sets of objectives – one set dealing with the **skill objectives** that a CMV trainee should master; the second relating to **knowledge objectives** that the student should learn.

Exhibit 1: Programmatic Course Options in Hours*

	Classroom and Lab	BTW Range and Highway		Totals	
		<u>1:1 Ratio</u>	<u>3:1 Ratio</u>	<u>1:1 Ratio</u>	<u>3:1 Ratio</u>
Required Minimum Hours of Training	104 (125)	44 (53)	132 (159)	148 (178)	236 (284)

*Hours in 60 minute and (50 minute) increments

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If the organization has the capacity for a longer course of study, an **externship** would be a good innovation to consider.

An **externship** of 140-240 hours of instruction (on duty time) can provide the additional training and experience needed for an entry-level driver to progress to a solo driver. For example, a school with a resident program of 257 (309) hours of instruction may incorporate an externship of 160 hours as part of their formal course. The entire program length would extend to 417 (469) total instructional hours. If the externship were 240 hours, the program length would be a total of 497 (549) hours of instruction.

Exhibit 2: Minimum Hours for Training

<u>Unit</u>	<u>Classroom and Lab</u> [^]	<u>BTW Range and Highway</u> [*]
1 Basic Operation		
1.1 Orientation #	18 (22)	24 (29)
1.2 Control Systems #		
1.3 Vehicle Inspections		
1.4 Basic Control		
1.5 Shifting		
1.6 Backing and Docking		
1.7 Coupling and Uncoupling		
2 Safe Operating Practices for Basic Operation	8 (10)	17 (20)
2.1 Visual Search		
2.2 Vehicle Communication		
2.3 Speed Management		
2.4 Space Management		
3 Advanced Operating Practices	14 (17)	3 (4)
3.1 Night Operation		
3.2 Extreme Driving Conditions		
3.3 Hazard Perception		
3.4 Emergency Maneuvers/Skid Avoidance		
3.5 Skid Control and Recovery		
3.6 Passive (Unmarked or Uncontrolled) Railroad Crossings		
4 Vehicle Systems and Reporting Malfunctions[#]		
4.1 Identification and Maintenance	6 (7)	0 (0)
4.2 Diagnosing and Reporting Malfunctions		
5 Non-Vehicle Activities [#]		
5.1 Handling and Documenting Cargo		
5.2 Environmental Issues	43 (52)	0 (0)
5.3 Hours of Service Requirements		
5.4 Accident Procedures		
5.5 Managing Life on the Road/Personal Resources		
5.6 Trip Planning		
5.7 Interpersonal Communication Skills		
Discretionary Hours^{+ #}	<u>15 (17)</u>	<u>0</u>
Total	<u>104 (125)</u> +	<u>44 (53)</u>
Total Hours Classroom/Lab + BTW Range/Highway	148 (178)	

* Total of range and highway BTW must equal at least 44 (53) hours per student.

• Hours are expressed as 60 and (50) minute hours.

+ Discretionary hours are discussed on page 6 of this document.

Units are non-driving subjects; therefore, driving time is not awarded.

^ 15% of required classroom/lab hours may be adjusted among units. See page 5.

Exhibit 3: Curriculum Unit Standards with Related Skill Standards

Added 05/20/11

Curriculum Unit Standards	Related Skill Standards*
UNIT 1 - BASIC OPERATION	
1.1 Orientation	N/A
1.2 Control Systems	Skill 1 Read and Interpret Control Systems
1.3 Vehicle Inspections	Skill 2 Perform Vehicle Inspections
1.4 Basic Control	Skill 3 Exercise Basic Control
1.5 Shifting	Skill 4 Execute Shifting
1.6 Backing and Docking	Skill 5 Back and Dock CMV
1.7 Coupling and Uncoupling	Skill 6 Couple Trailer; Skill 7 Uncouple Trailer
UNIT 2 - SAFE OPERATING PRACTICES FOR BASIC OPERATION	
2.1 Visual Search	Skill 8 Perform Visual Search
2.2 Vehicle Communication	Skill 19 Use Effective Communications
2.3 Speed Management	Skill 9 Manage and Adjust Vehicle Speed
2.4 Space Management	Skill 10 Manage and Adjust Vehicle Space Relations
UNIT 3 - ADVANCED OPERATING PRACTICES	
3.1 Night Operation	Skill 14 Identify and Adjust to Difficult and Extreme Driving Conditions
3.2 Extreme Driving Conditions	Skill 14 Identify and Adjust to Difficult and Extreme Driving Conditions
3.3 Hazard Perception	Skill 13 Identify Potential Driving Hazards and Perform Emergency Maneuvers
3.4 Emergency Maneuvers/Skid Avoidance	Skill 13 Identify Potential Driving Hazards and Perform Emergency Maneuvers
3.5 Skid Control and Recovery	Skill 13 Identify Potential Driving Hazards and Perform Emergency Maneuvers
3.6 Passive (Unmarked or Uncontrolled) Railroad Crossings	Skill 14 Identify and Adjust to Difficult and Extreme Driving Conditions
UNIT 4 - VEHICLE SYSTEMS AND REPORTING MALFUNCTIONS	
4.1 Identification and Maintenance	Skill 11 Check and Maintain Vehicle Systems and Components
4.2 Diagnosing and Reporting Malfunctions	Skill 12 Diagnose and Report Malfunctions
UNIT 5 - NON-VEHICLE ACTIVITIES	
5.1 Handling and Documenting Cargo	Skill 15 Handle and Document Cargo
5.2 Environmental Issues	Skill 17 Address Environmental Issues
5.3 Hours of Service Requirements	Skill 21 Record and Maintain Hours of Service Requirements
5.4 Accident Procedures	Skill 16 Address Accident Scenes and Reporting Procedures
5.5 Managing Life on the Road/Personal Resources	Skill 20 Manage Personal Resources While on the Road
5.6 Trip Planning	Skill 18 Plan Trips/Make Appropriate Decisions
5.7 Interpersonal Communication Skills	Skill 19 Use Effective Communications

*See separate document: "Skill Standards for Entry-Level Commercial Motor Vehicle Drivers."

1.1 Orientation

Purpose: The orientation introduces the student to both the occupation of truck driving and to the operation of a commercial motor vehicle (CMV). It is intended as a time to better acquaint the student with the industry that they are about to enter.

Performance Criteria: Trainee will identify major components of the commercial motor vehicle (CMV) and explain some of the importance of the industry to the broader economy.

Trainee Skills Objectives:

None.

Trainee Knowledge Objectives:

Identify major components of the commercial motor vehicle.

Discuss general overview of the industry and career opportunities

Discuss course objectives and rules for student conduct.

Discuss safety rules to be observed in class, in lab, on the range, and on the highway.

Discuss dress code and requirements for personal protective equipment.

Discuss methods of trainee evaluation.

Discuss minimum requirements for graduation.

1.2 Control Systems

Purpose: The CMV trainee will identify and locate, read, and interpret the typical vehicle instruments and controls of a CMV.

Performance Criteria: Trainee will identify and locate each of the vehicular driving controls and the various monitoring devices (gauges, alarms, lights, etc.) required to operate the vehicle safely and efficiently; read instrument/gauge accurately within ± 1 unit of measure correctly each time; operate controls and switches correctly; and interpret gauge and control readings and assimilate with other available information.

Trainee Skill Objectives:

Identify, locate, read and operate each of the primary controls including those required for steering, accelerating, shifting, braking, and parking.

Identify, locate, and operate each of the secondary controls including those required for control of lights, signals, windshield wipers and washers, interior climate, engine starting and shutdown, suspension and coupling.

Identify, locate, read and operate, and indicate the acceptable reading range of the various instruments required to monitor vehicle and engine speed as well as the status of fuel, oil, air, cooling, exhaust, and electrical and electronic systems.

Use information from all sources, given that instruments may malfunction or not be entirely accurate.

Read and understand in-cab safety systems.

Trainee Knowledge Objectives:

Identify, locate, and explain function of each of the primary controls including those required for steering, accelerating, shifting, braking, and parking.

Identify, locate, and explain function of each of the secondary controls including those required for control of lights, signals, windshield wipers and washers, interior climate, engine starting and shutdown, suspension and coupling.

Identify, locate, explain, and indicate the acceptable operating range of the various instruments required to monitor vehicle and engine speed as well as the status of fuel, oil, air, cooling, exhaust, and electrical systems.

Realize that instruments malfunction so that displayed information must be augmented from other sources.

Identify, locate and explain emergency equipment.

1.3 Vehicle Inspections

Purpose: Teach CMV trainee to conduct vehicle inspections in accordance with the Federal Motor Carrier Safety Regulations (FMCSR).

Performance Criteria: Trainee must inspect and make a correct determination of the condition of various critical vehicle components, including instruments and controls; engine and drive train; chassis and suspension; steering system, braking system; tires; wheels and rims; lighting and signaling system; coupling system; emergency equipment; and cargo securement device(s). Trainee must perform inspections in a regular, systematic sequence that is accurate, uniform, and time efficient, and document in accordance with FMCSR. Trainees should refuse to operate a vehicle found to be in unsafe (for vehicle, drivers, and other highway users) operating condition, either prior to a trip or en route.

Trainee Skill Objectives:

Perform pre-trip, en route and post-trip inspections.

Inspect and determine the condition of critical vehicle components, including the instruments and controls; seat adjustment; engine and drive train; chassis and suspension; steering system; braking system; tires, wheels and rims; lighting and signaling system; coupling system; emergency equipment; and cargo securement device(s).

Perform pre-trip inspections in a regular, systematic sequence that is accurate, uniform, and time efficient. Review previous day's post-trip inspection report to verify corrections.

Perform en route inspections by checking mirrors for signs of trouble; monitoring instruments and looking, listening, and feeling for malfunctions; making periodic roadside inspections of critical components; and meeting en route requirements for transporting all types of cargo.

Perform post-trip inspections by making accurate notes of actual and suspected component abnormalities or malfunctions.

Complete driver vehicle inspection report (DVIR).

Trainee Knowledge Objectives:

Explain systematic procedure to assure quick and complete inspection.

Know the effect of undiscovered malfunctions upon safety, effectiveness, and economy.

Know federal, state/provincial, and other regulations governing inspection, including special regulations for hazardous cargo.

Know procedures for pre-trip, en route and post-trip inspections and how to prepare a driver vehicle inspection report (DVIR).

Know out-of-service criteria and FMCSR rules for operating unsafe vehicles.

Know how to report malfunctions and problems.

Know location and tolerances for required components and systems.

Know length and height of vehicle.

1.4 Basic Control

Purpose: CMV trainee will learn to start, operate and steer a CMV in a safe manner.

Performance Criteria: Trainee must start, operate, and shut down CMV such that driver scores an acceptable proficiency rating on the operational checklist for basic controls in areas such as turning the vehicle, centering the vehicle in lane, and backing in a straight line. The trainee must achieve smooth and effective acceleration and stopping, and position CMV to begin and complete turns in lane.

Trainee Skill Objectives:

Enter cab properly and adjust all safety components.

Start and warm-up the engine.

Place vehicle in motion and accelerate smoothly.

Monitor controls, mirrors, instruments, and gauges.

Center and maintain vehicle in lane.

Maintain appropriate vehicle and engine speed on upgrades and downgrades.

Negotiate left and right curves and sharp turns for various trailer lengths.

Judge clearances around vehicle and physically check position for obstructions.

Maneuver into restricted areas in various positions.

Use proper backing maneuvers using reverse steering and warning flashers.

Trainee Knowledge Objectives:

Know clearance requirements of CMV.

Know starting, warm-up, and shut down procedures according to manufacturer's specifications.

Know correct operating procedures for air brakes in all conditions.

Know correct operating procedures for using anti-lock brakes and non anti-lock brakes.

Know steering techniques to track vehicle in lane and drive a straight line.

Know the purpose/use of the Positive Differential Lock.

Demonstrate proper position from which to begin a turn and how to "set-up", execute, and recover from a turn.

Know/recognize space requirements for various trailer lengths.

Know operation of specialized equipment such as split axle and dump valve.

Know purposes and consequences of engine brakes.
Know proper hand placement on steering wheel.

1.5 Shifting

Purpose: Teach CMV trainee to execute proper shifting techniques on multi-speed dual range transmission.

Performance Criteria: Trainee must match shifting to engine needs and safe operations for highway conditions; shift smoothly to protect equipment; and shift to maximize fuel efficiency.

Trainee Skill Objectives:

Shift up and down through all gears of typical multi-speed, dual range transmissions.

Double clutch and time shift for smooth and fuel-efficient performance.

Select proper gear for traffic, terrain, turns, speed and highway conditions.

Avoid riding the clutch.

Demonstrate progressive shifting technique.

Demonstrate skip shifting.

Demonstrate proper gear recovery.

Demonstrate how to stop in any gear.

Trainee Knowledge Objectives:

Know shifting procedures and patterns for different transmissions.

Know RPM and MPH for proper gear selection.

Recognize common shifting errors and their consequences.

Know gears that most likely will be the best choice under certain traffic, turns, highway, and terrain conditions.

Know benefits of progressive shifting in terms of improved fuel mileage and reduced operating costs.

Know the importance of matching RPM and MPH for down shifting.

1.6 Backing and Docking

Purpose: CMV trainee will learn to back and dock a CMV safely.

Performance Criteria: Trainee must back CMV on performance test on range and/or highway. Test must include backing and parking into restricted areas with appropriate tolerances; backing in straight and curved lines; and parking at docks, in various positions and conditions, and to within three feet of the dock.

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Trainee Skill Objectives:

Check and adjust mirrors.

Set parking brake, get out and check area for obstructions, position, and intended path.

Determine appropriate path and clearances prior to backing.

Activate warning flashers prior to moving into reverse gear. Sound horn prior to backing if CMV does not have a back-up alarm. Keep window open and radio off.

Position vehicle correctly before beginning a backing or docking maneuver.

Use appropriate ground guide spotter with clear signals, as necessary

Execute reverse steering of an articulated vehicle.

Back slowly (using idle speed) in straight and curved lines.

Back into restricted space.

Constantly check when backing – look in mirrors, watch for conditions that could tilt trailer; identify obstructions.

Pull up and start over when necessary.

Back and park vehicle according to space conditions.

Trainee Knowledge Objectives:

Know proper mirror adjustment and use.

Know procedures for routine backing situations including visual search and warning communication.

Know rules and procedures for backing in and across traffic.

Identify and explain hazards of backing and specific dangers in various situations including blind side backing.

Explain principles of reverse steering.

Know that the "best" backing is finding a way not to back.

1.7 Coupling and Uncoupling

Purpose: CMV trainee will demonstrate safe coupling and uncoupling procedures of a CMV.

Performance Criteria: Trainee must couple and uncouple CMV safely and in accordance with manufacturer's specifications.

Trainee Skill Objectives:

Trainee Knowledge Objectives:

Coupling

Align tractor and trailer units in a straight line for coupling.

Check trailer height. Trailer nose should be slightly higher than fifth wheel.

Secure trailer against movement, if applicable.

Back tractor into trailer kingpin slowly, at right level, and with appropriate force; check coupling and pin engagement.

Check connection for security by pulling tractor forward gently. If connection is complete, release brake; if not, secure connection.

Connect and check air and electrical lines.

Check for symptoms of improper or incomplete connections and make necessary adjustments.

Set in-cab air brake controls.

Retract and secure landing gear and handle.

Uncoupling

Spot trailer on surface capable of supporting weight and secure vehicle against movement.

Lower gear to raise trailer to correct height and check support.

Disconnect and secure air and electrical lines prior to uncoupling.

Uncouple trailer(s) using correct procedures for individual equipment, if applicable.

Know proper chocking procedures.

Know components and function of fifth wheel coupling.

Know coupling procedures and king pin-lock testing.

Know components, function, and connection procedures of air and electrical lines.

Know air pressure requirements.

Know how to adjust mirrors for optimal vision field.

Know surface conditions and characteristics necessary to support weight.

Know uncoupling procedure for individual equipment.

Know components, functions, and disconnection procedures of air and electrical lines.

2.1 Visual Search

Purpose: Upon completion, the CMV trainee will know how to conduct a visual search of the highway using all available visual tools and instrumentation for potential hazards and critical objects.

Performance Criteria: Trainee will demonstrate visual search techniques by pointing out important obstacles in various types of traffic and locations, as scored on the performance test, using the “commentary driving” technique.

Trainee Skill Objectives:

Adjust all mirrors to appropriate specifications.

Visually scan up to 10 to 12 seconds ahead of current position to identify potential hazards.

Scan both sides of the highway using quick glances to observe roadside activity and vehicles nearby.

Check mirrors for hazards regularly and always before changing speed or direction.

Check instrument panel frequently.

Look ahead as far as possible during turns and on curves.

Check both sides before turning or changing lanes.

Monitor overtaking traffic in order to be aware of vehicles behind and in blind spots.

Avoid diverting attention from the path ahead.

Trainee Knowledge Objectives:

Know the correct adjustments and specifications for various types of mirrors.

Know the differences in images presented by flat and convex mirrors.

Know the importance of making all visual checks to the sides and rear of the vehicle.

Know the relationship between speed and sight distance.

Know the search patterns for straight driving, changing speed or direction, and entering or crossing traffic.

2.2 Vehicle Communication

Purpose: CMV trainee will learn techniques for different types of vehicle communication on the road.

Performance Criteria: Trainee will demonstrate techniques of vehicle communication in practice behind the wheel, with company dispatch and/or on-board communication devices while presenting a professional image.

Trainee Skill Objectives:

Signal intention to change position before pulling onto or off of the highway or changing lanes, time the signals so that they are not confusing to other drivers and cancel turn signals after completing turns.

Make selective use of horn and lights such as flashing brake lights to warn following drivers when slowing or stopping, using four-way flashers according to state laws and company policies, use of headlights in daytime under conditions of low visibility appropriately to prevent collisions.

Establish and use eye contact with drivers and pedestrians as a warning and avoid hand or light signals to signal "all clear" to turn or pass or making decisions based on other vehicle signals.

Use on-board and personal communication devices only when vehicle is parked and limit use of CB radio to communications that will enhance safety and traffic flow.

Trainee Knowledge Objectives:

Know when to activate turn signals to provide adequate warning without creating confusion.

Know state/provincial traffic laws for turn signals.

Recognize importance of signaling to the prevention of accidents.

Know importance of not giving signals that lead to the assumption of liability (e.g., inviting others to pass).

Know importance of using horn solely to give warning.

Know conditions under which other drivers may give false signals.

Know that signaling intention is essential to safe operations.

Know sources of and methods to minimize distracted driving.

2.3 Speed Management

Purpose: CMV trainee will learn to read/identify conditions, adjust speed, and manage speed in response to various highway, weather, and traffic conditions.

Performance Criteria: Trainee must adjust speed to conform with vehicle configuration and cargo; highway conditions; and weather, visibility, traffic and other driving conditions. Trainee must also maintain entrance and exit ramp speed 10 mph below posted speed, under ideal conditions.

Trainee must obey the legal speed limit and/or drive at speeds in response to highway conditions and necessary stopping distances.

Trainee Skill Objectives:

Judge safe speed at which a curve and on/off ramps can be entered and slow speed to less than posted to allow for load and other conditions.

Obey speed limit.

Maintain proper speed to manage the space around the truck.

Judge and adjust speed to maintain traction.

Recognize and interpret all types of driving conditions and highway surfaces.

Judge and adjust speed at which vehicle control can be maintained under traffic conditions, crosswinds, highway conditions, weather conditions, size of the load, and limited visibility.

Trainee Knowledge Objectives:

Know the relationship of speed to stopping distance,

Know the proper use of cruise control.

Know the effect of speed on center of gravity, loss of stability, available sight distance, and highway surface conditions.

Know consequences of speeding violations.

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2.4 Space Management

Purpose: CMV trainee will learn to properly manage the space required for safe vehicle operation.

Performance Criteria: Trainee must select a lane offering the best mobility and least traffic interruption, in accordance with the law, to cause minimum interference to other vehicles; assure a safe gap before changing lanes, passing other vehicles, merging, and crossing or entering traffic; position vehicle correctly in the lane and relative to crosswalks so as to minimize hazards to other highway users; position CMV appropriately before initiating and completing a turn so as to prevent other vehicles from passing on the wrong side and to minimize encroachment on other lanes; maintain a following distance appropriate to traffic, highway surface, visibility, speed, and vehicle weight; park a maximum distance from all traffic if CMV is disabled; if approaching a disabled vehicle, slow down and change lanes when possible to maintain a maximum distance from the disabled vehicle; avoid structures having inadequate overhead clearance; and note position and movement of bicyclists and pedestrians.

Trainee Skill Objectives:

Explain basic formula for determining safe following distance.

Judge adequacy of gaps in traffic for passing, crossing traffic, entering traffic, and changing lanes.

Use proper visual search techniques to determine and achieve appropriate space.

Properly position vehicle for making all driving maneuvers and avoid placing other vehicles or pedestrians in jeopardy.

Determine safe clearances on all sides, including height of vehicle.

Adjust following distances for traffic load and highway conditions.

Trainee Knowledge Objectives:

Know the proper following distances for various conditions to ensure room to maneuver and respond to errors of other drivers.

Know the importance of checking mirrors.

Know how the trailer reacts to individual maneuvers such as turning or backing.

Know dangers created by overhead obstructions.

Know guidelines concerning commercial vehicle following distances, lane use, changing lanes, and passing other vehicles.

3.1 Night Operation

Purpose: CMV trainee will learn and demonstrate how to operate a CMV safely at night.

Performance Criteria: The trainee will explain or demonstrate correct defensive adjustments for night driving.

Trainee Skill Objectives:

Judge and adjust speed, distances, and separation under nighttime conditions.

Demonstrate heightened scanning for night technique.

Use high beams legally; dim headlights in accord with law and safety.

Respond safely to glare of other vehicles.

Manage driver's fatigue.

Use proper signaling techniques.

Trainee Knowledge Objectives:

Know the effect of level of illumination on ability to see.

Know the value of high beams to nighttime visibility.

Know state/provincial laws covering use of headlights and auxiliary lights.

Know the symptoms and danger of fatigue.

Know the effect of headlight glare on visibility of others and its implications for the safety of both drivers.

Know the general factors affecting night vision, including interior illumination and use of sunglasses during daytime.

Know about increased wildlife movement at night.

Know proper use of cruise control at night.

3.2 Extreme Driving Conditions

Purpose: CMV trainee will learn adjustments for various extreme-driving conditions.

Performance Criteria: Trainee will explain or demonstrate correct defensive adjustments for driving in cold and hot weather, mountainous terrain, wet and windy conditions, and construction zones. CMV trainee will learn how to put chains on a stuck vehicle.

Trainee Skill Objectives:

Cold Weather Operation

Prepare for operation in cold weather, including removing snow and ice from windows, mirrors, brakes, lights, hand holds and steps.

Inspect for cold weather operation by paying special attention to coolant level and mixture, heater, defrosters, wipers, washers, tire tread, brakes, lights, reflectors, wiring system, hoses, fuel, exhaust system, and fifth wheel.

Make sure that moisture is expelled from the air tanks after each trip.

Check weather information before and during trips and adjust plan accordingly.

Check for snow and ice accumulation (and remove it) on all surfaces, as well as brakes, air hoses, electrical wiring, lights and radiator shutters during operation. This includes trailer components and surfaces.

Utilize cold weather engine starting procedures.

Observe highway surface for changes in conditions.

Adjust rate of change in speed and direction to highway conditions to avoid skidding.

Coordinate acceleration and shifting to overcome the resistance of snow, sand, and mud.

Carry additional food and clothing to deal with weather conditions and delays.

Continued

Trainee Knowledge Objectives:

Cold Weather Operation

Know how to mount and dismount tire chains, in accordance with applicable state regulations.

Explain how to extricate the vehicle from snow, sand, and mud by maneuvering or towing.

Know how to inspect vehicle components for cold weather operations.

Know the effect of cold temperatures on fuel.

Understand basic survival skills in the event a vehicle becomes inoperable.

Continued

Hot Weather:

Check tires, lubrication, levels and operation of cooling system, fan belts, fans and hoses, and check the radiator for debris.

Carry an ample supply of drinking water.

Inspect tires frequently.

Mountainous Terrain:

Check brake adjustment prior to mountain driving.

Use right lane or designated truck lanes.

Place transmission in correct gear for engine speed on downgrade.

Use proper braking technique and maintain proper engine speed on downgrades.

Explain or demonstrate operation of special speed reduction devices properly; e.g., engine brakes.

Monitor brakes for overheating.

If brakes fail on a downgrade, use truck escape ramp, if available.

Observe temperature gauge frequently when pulling heavy loads up long grades.

Use 4-way flashers in accordance with local laws.

Wet Conditions

Operate CMV within the capabilities and limitations of equipment.

Check anti-lock brakes stability control.

Adjust speed for conditions.

Select proper gear for highway conditions and surface.

Maintain increased following distance.

Continued

Hot Weather

Know procedures for hot weather driving.
Know hazards of hot weather driving.

Know the effect of hot weather on vehicle operation.

Know the effect of hot weather on tire pressure and tire life.

Mountainous Terrain

Know the effect of vehicle weight and speed on braking and shifting ability on long downgrades.

Identify the function and value of escape ramps.

Understand the meaning and use of percent of grade signs.

Recognize that the weight of the truck poses hazards on long downgrades unless the truck is put into proper gear.

Know that attempting to downshift on steep declines is too dangerous to attempt.

Know how to mount and dismount tire chains, in accordance with applicable state regulations

Wet Conditions

Know the conditions that produce low traction, including initial rainfall, ice, snow, and mud.

Identify the effects of rain, snow, and ice upon the ability to maneuver and stop the vehicle.

Explain causes and procedures for avoiding skidding and jackknifing.

Recognize the nature of hydroplaning and the highway and vehicle conditions that produce it.

Know the effect of ice, snow, water, mud, and debris on the operation of the brakes.

Continued

Adjust operation of vehicle to weather conditions, including speed selection, braking, direction changes, and following distance to maintain control and avoid jackknifing.

Ensure safe operation of brakes after driving through deep water.

Use windshield wipers, washers and defrosters to maintain visibility.

Windy Conditions

Operate CMV within the capabilities and limitations of the equipment.

Judge and adjust speed and following distance for conditions.

Adjust steering to compensate for side forces generated by wind.

Scan for unusual debris on highway.

Maintain increased following distance.

Construction Zones

Maintain adequate following distance.

Adjust speed for conditions or as directed when entering, exiting, or driving within the construction zone.

Perform visual search for vehicles approaching from rear, particularly on right side.

Observe and adjust to pavement surface differences.

Observe and identify right of way for pedestrians and construction equipment.

Recognize the need to make sure all wheels are free to turn

Windy Conditions

Know the impact windy conditions may have on fuel mileage and adjust trip planning accordingly

Know the effect wind can have on the ability to properly steer and control a CMV and adjust accordingly.

Construction Zones

Know that equipment, workers or pedestrians may enter your path, so increase visual search to avoid construction hazards.

Know that driver must maintain an adequate following distance and stay in lane. Driver may have to double or triple following distance in bad weather.

Know that driver must check or scan mirrors for drivers that may not have observed the change in the highway conditions, or are attempting to pass, particularly from the right.

Know that when following a construction vehicle into the work zone, driver must maintain additional following distance and be prepared for sudden stops or lane changes.

Know how to use advance warning signs and reduce speed accordingly. At night, these signs may be more difficult to see, look for work lighting or flashing warning signals.

Know to adjust speed to, or below, the posted speed limits.

Know that pavements and highway surfaces may be soft and there may be significant drop-offs between lanes and between the pavement and the shoulder. The uneven surface of a median crossover may cause severe rocking of vehicle.

Know that rain and high winds can increase hazards in construction zones.

Know that driver must exit construction zones with caution.

3.3 Hazard Perception

Purpose: CMV trainee will learn to recognize the potential dangers in the driving environment and take appropriate action(s) before the dangers develop into emergency situations.

Performance Criteria: The trainee must identify highway conditions and highway users that are a potential threat to the safety of the CMV and identify appropriate adjustments, as indicated by use of "commentary driving" and passing a written test on the topic or demonstrating skill.

Trainee Skill Objectives:

Perceive immediately a potential threat from visible characteristics and actions of other highway users, highway conditions, and the environment

Match and initiate prompt defensive or evasive action.

Use proper evasive steering techniques.

Respond appropriately to highway changes.

Trainee Knowledge Objectives:

Know the visible characteristics of highway conditions that present a hazard to safe CMV operations.

Know the characteristics of other highway users (drivers or pedestrians) that make them dangerous or provide clues to potential dangers.

Know the consequences of using the engine braking systems or trailer brake on slippery roads.

3.4 Emergency Maneuvers/Skid Avoidance

Purpose: CMV trainee will learn appropriate responses when confronted with driving emergencies. Further, the trainee will learn the causes, preventive measures, and recovery techniques involved in skidding and jackknifing incidents.

Performance Criteria: Trainee must demonstrate through proper speed and space management and proper acceleration, braking systems and braking techniques to avoid a skid or jackknifing.

Trainee Skill Objectives:

Identify situations where skids and jackknifing are likely to occur.

Utilize braking systems to stop the vehicle in the shortest possible distance while maintaining control.

Describe how to steer out of a skid in a way that will regain directional control.

Determine and maintain safe speed for slippery surface conditions.

Describe proper steering and stopping in the event of an emergency.

Trainee Knowledge Objectives:

Know that in an impending head-on collision, it is generally safer to leave the highway to the right than to strike another vehicle.

Know procedures for quick stops, quick turns, and evasive maneuvers.

Know procedures for handling brake failure and blowouts.

Know the role of skid control in preventing accidents.

Know skid dynamics, including friction, wheel load, and force.

Know causes of skidding - power and braking.

Know the characteristics of a tractor jackknife, trailer jackknife, front and all wheel skids.

Know how to maintain directional control and bring a CMV to a stop in the shortest possible distance while maintaining directional control when operating on a slippery surface.

Know the operating characteristics of A.B.S. and non-A.B.S brakes.

3.5 Skid Control and Recovery

Purpose: Discuss causes of skidding and jackknifing and techniques for avoiding and recovering from skids and jackknifing.

Performance Criteria: Trainee will explain causes of and techniques to avoid skids and jackknifing; and explain how to recover from skids and jackknifing

Trainee Skill Objectives:

Identify situations where skids and jackknifing are likely to occur.

Describe how to steer out of a skid in a way that will regain directional control without producing another skid.

Determine and maintain safe speed for surface conditions.

Trainee Knowledge Objectives:

Know how to maintain directional control and bring a CMV to a stop in the shortest possible distance.

Know the role of skid control in preventing accidents.

Know skid dynamics, including friction, wheel load, and force.

Know types and causes of skidding (e.g., change in speed and change in direction).

Know the characteristics of a tractor jackknife, trailer jackknife, front and all wheel skids.

Know skid recovery procedures.

3.6 Passive (Unmarked or Uncontrolled) Railroad Crossings

Purpose: CMV trainee will learn to recognize potential dangers and appropriate safety procedures at railroad crossings.

Performance criteria: Trainee will explain rules and reasons for caution and appropriate safety procedures used at railroad crossings. Trainee will correctly demonstrate skill.

Trainee's Skill Objectives

Stop when required at proper distance from crossing.

Maintain speed without shifting or stopping at crossing.

Do not cross until ample room is available for CMV to clear.

Do not stop until CMV has cleared crossing.

Approach crossing with caution, turn off communication devices and roll window down to listen for oncoming traffic and warnings.

Ensure there is ample undercarriage clearance before crossing.

Obey railroad signals or directions at crossing.

Trainee Knowledge Objectives

Know when driver is required to stop at a railroad crossing.

Identify active and passive railroad crossings.

Know how physical characteristics of crossings affect a driver's visibility.

Identify common driver distractions that affect safety at crossings.

Know rules governing convictions of federal, state/provincial, or local laws dealing with railroad crossings.

Know that there is sufficient undercarriage clearance to negotiate a crossing.

Know rules and procedures associated with various loads and railroad crossings.

4.1 Identification and Maintenance of Vehicle Systems

Purpose: CMV trainee will learn how to check each system function, correctly note indications of problems for various systems, and report those problems in accordance with FMCSR. Systems to check include engine systems, steering systems, tires, air intake and exhaust systems, brakes, drive train, coupling systems, lighting systems, and suspension.

Performance Criteria: Trainee will explain proper range of function for all primary vehicle systems; check each component and vehicle system; note symptoms or problems; and complete vehicle inspection report in accordance with FMCSR and carrier policy.

Trainee Skill Objectives:

Check engine systems to include fuel, oil, coolant, battery and electrical systems, air intake and filters, and exhaust system.

Check steering for excessive steering wheel play.

Check tire air pressure and proper tire and wheel mounting.

Drain moisture from air brake supply reservoirs and fuel system.

Check brakes. Report problems and adjust according to regulation, certification and company policy.

Clean lenses and replace light bulbs when required.

Change fuses and reset circuit breakers.

Check drive train coupling and suspension systems.

Trainee Knowledge Objectives:

Know the location, function, operation, and common failures of the following vehicle components: frames, suspension, and axles; engines; fuel systems, air intake and exhaust systems; lubrication systems; cooling systems; electrical systems; drive trains; brake systems; wheels, bearings, rims and tires; steering systems; and coupling systems.

Know the inspection, repair, and maintenance regulations of the Federal Motor Carrier Safety Regulations.

Know how to perform CMV inspections.

Know to avoid attempting repairs, if unqualified.

4.2 Diagnosing and Reporting Malfunctions

Purpose: CMV trainee will learn to describe symptoms, identify vehicle malfunctions, and report problem.

Performance Criteria: Trainee will identify and describe symptom; report problem accurately and according to guidelines; and fix problems in accordance with company policy and FMCSR.

Trainee Skill Objectives:

Check each component and vehicle system.
Identify vehicle systems or components that are functioning properly, are in imminent danger of failing, or functioning improperly.

Match symptom to possible list of problems.

Describe symptoms of improper operation completely and accurately to maintenance personnel.

Correct problems in accordance with company policy.

Avoid attempting to perform maintenance for which driver is unqualified.

Report breakdowns occurring en route according to company policy.

Complete a driver vehicle inspection report (DVIR).

Trainee Knowledge Objectives:

Know the procedures for starting vehicles with dead batteries.

Recognize the symptoms of vehicle malfunction revealed through instruments, operation characteristics, sight, sound, feel, and smell.

Know procedures for reporting malfunctions.

Know how to complete a driver vehicle inspection report (DVIR).

Know company maintenance policy.

5.1 Handling and Documenting Cargo

Purpose: CMV trainee will learn how to perform all CMV cargo inspection, handling, and documentation procedures including hazardous materials in accordance with regulatory requirements.

Performance Criteria: Trainee will verify nature, amount, and condition of cargo on both pick-up and delivery; verify load is distributed and contained correctly to meet legal and safety requirements; verify information on bill of lading and properly record and report discrepancies and damage to the cargo; obtain appropriate signatures on delivery receipts and other required forms; and properly prepare a manifest, move heavy loads safely, obtain hazardous materials endorsement prior to carrying hazardous materials.

Trainee Skill Objectives:

- Prepare manifest, as required.
- Verify cargo types, nature, amount and condition on pick-up and delivery.
- Verify seals, if used.
- Cover cargo, as necessary
- Obtain appropriate signatures.
- Verify information on bill of lading and properly record/report discrepancies and damage.
- Verify that load distribution on trailer fits within regulations.
- Verify that placards match load and meet regulations; correct placards, as necessary.
- Operate common types of cargo handling equipment safely.
- Select proper sizes of chain, cable, nylon webbing, steel strapping, or rope.
- Secure load in accordance with applicable regulatory requirements.
- Stop and inspect cargo, according to regulations.
- Demonstrate proper lifting techniques required to safely load and unload cargo.

Trainee Knowledge Objectives:

- Know rules for checking loads.
- Know the procedures for proper completion of freight bill, cargo manifest, bill of lading, and other required forms.
- Know that it is the driver's responsibility for ensuring paperwork is properly filled out.
- Explain the possible consequences and penalties of improperly completed documentation.
- Know applicable recordkeeping requirements.
- Know applicable regulatory requirements for vehicle weight.
- Know procedures for loading and unloading.
- Know regulatory requirements for cargo securement.
- Know common use of cargo handling equipment such as pallets, jacks, dollies, hand trucks, forklift trucks, nets, slings, rug poles, Johnson bars, and other equipment, in accordance with applicable federal/state/provincial regulations (e.g., OSHA).

5.2 Environmental Issues

Purpose: CMV trainee will learn to recognize environmental hazards and issues related to the CMV and load, and take action to meet city, county, state/provincial, and federal requirements.

Performance Criteria: Trainee will identify environmental hazards and take appropriate action in accordance with regulatory and company requirements. Trainee must understand various idle requirements and adjustments required to comply.

Trainee Skill Objectives:

Check hoses, couplings, and other components that may contribute to environmental issues.

Monitor idle time and make appropriate adjustments.

Check regularly for signs of leaks.

Fuel carefully to avoid spills.

Recognize and report environmental issues.

Trainee Knowledge Objectives:

Know environmental regulations that affect the profession.

Recognize symptoms of problems.

Know how to contain the spill.

Know how to report and document problems.

Know federal and state/provincial regulations regarding environmental issues.

Know how to refer to the Emergency Response Guide (E.R.G.) for appropriate procedures in the event of a spill or leak.

5.3 Hours of Service Requirements

Purpose: CMV trainee will learn how to adhere to the requirements of the Federal Motor Carrier Safety Regulations (FMCSR) Part 395 "Hours of Service of Drivers" and complete a driver's daily log and logbook recap.

Performance Criteria: Trainee will comply with hours of service requirements and maintain a complete, legible, and accurate driver's daily log and logbook recap or demonstrate ability to enter data into electronic on-board recording system while in training and perform all necessary calculations correct to the closest quarter (1/4) hour.

Trainee Skill Objectives:

Interpret and demonstrate compliance with hours of service regulations.

Record time accurately.

Perform calculations necessary to recap and apply daily totals to the hours of service regulations.

Determine driving hours remaining on a particular day or tour of duty.

Understand and maintain support documents in accordance with regulatory requirements.

Trainee Knowledge Objectives:

Know all the requirements and rules of Part 395 of the FMCSR covering Hours of Service.

Understand how to comply with the Hours of Service Regulations and know the procedures for completing the driver's daily log.

Know the procedures for using logbook recap.

Know the consequences of failure to comply with hours of service regulations.

Know en route inspection requirements.

Know industry methods for recording hours of service

Know how to use logbooks in planning a trip and meeting schedules.

5.4 Accident Procedures

Purpose: CMV trainee will learn how to follow applicable accident procedures.

Performance Criteria: Trainee will guard the scene of an accident to prevent further injury or damage, and obtain assistance; obtain all information needed for accident reports to law enforcement, the employer, and the insurance company; render assistance to any injured parties, including providing first aid, provided he/she has had proper training; extinguish fire including cargo, engine, electrical, and tire fires; and discuss liability only with law enforcement, the company, or their representative.

Trainee Skill Objectives:

Role play:

Stop and park CMV appropriately in safe location.

Notify emergency responders; place warning devices as required.

Provide aid for injured individuals if properly trained and certified.

Cooperate with first responders or emergency personnel.

Operate fire extinguishers correctly, if required.

Protect self from blood-borne pathogens.

Direct traffic, if necessary, until emergency personnel arrive.

Obtain information for accident reporting, including photographs in accordance with company policy.

Discuss accident details only with appropriate officials.

If hazardous materials are involved, call appropriate authorities and secure the area.

Stay at scene until emergency personnel and company grant permission to leave.

Notify carrier in accordance with policy.

Trainee Knowledge Objectives:

Know applicable laws and company requirements regarding stopping and rendering assistance at the scene of an accident.

Explain procedures for protecting the scene of an accident and applicable requirements for same.

Identify accident reporting requirements.

Distinguish types of fire extinguishers appropriate to each class of fire.

Know procedures for extinguishing cargo, engine, electrical, and tire fires.

Explain where to safely stop vehicle in the event of a fire.

Know how to gather information at the accident scene.

Know how to complete Accident Reporting Forms.

Know how to use the Emergency Response Guide.

5.5 Managing Life on the Road/Personal Resources

Purpose: CMV trainee will learn to effectively manage lifestyle and resources so as to take care of personal needs, career, and family/support system.

Performance Criteria: Trainee will develop and implement strategies to effectively manage personal issues such as fatigue, diet, exercise, personal hygiene, stress, personal finances and lifestyle changes.

Trainee Skill Objectives:

Identify elements of fatigue. Employ control strategies.

Identify characteristics of stress, and adopt stress-reducing techniques.

Follow healthy diet and recreation practices while on the road.

Establish a good exercise program while on the road.

Make safe decisions about where to stop and stay.

Practice good personal hygiene.

Communicate with family and/or support system frequently or as needed.

Trainee Knowledge Objectives:

Understand and know how to address driver wellness topics including:

- Diet
- Exercise
- Personal finance
- Stress and techniques to control it
- Sleep requirements and biorhythms
- Effects of drugs and alcohol
- Signs of and control of fatigue

Understand employer's payroll process.

Know the importance of communicating with family and/or support system frequently.

Identify safe and quiet truck stops.

5.6 Trip Planning

Purpose: Discuss importance of and requirements for planning trips, applicable requirements for permits, vehicle size, and weight limitations.

Performance Criteria: Trainee will plan several overnight trips, and will identify and obtain necessary/required permits, correctly estimate time of arrival, identify fuel stops, calculate and budget trip expenses, and choose most effective and authorized routes for time, budget, load and conditions.

Trainee Skill Objectives:

Plan a route from one point to another that is optimal in terms of travel time, fuel costs, potential hazards, and federal, state/provincial, and local travel restrictions.

Arrange to secure permits required by the nature of the vehicle, its cargo, and route to be traveled.

Arrange a secure place for vehicle on layovers, especially when transporting hazardous materials.

Calculate miles, fuel use, stops and expenses. Obtain funding for expenses.

Interpret maps/program Global Positioning Systems.

Estimate travel time and plan rest stops and layovers to ensure adequate rest to comply with hours of service regulations.

Document expenses according to policy.

Trainee Knowledge Objectives:

Know the types of vehicles, cargoes, and routes requiring special permits.

Know and follow regulations and procedures for obtaining special permits.

Identify common map symbols.

Learn methods for accurate record keeping.

Know procedures for route planning, including preparing paperwork, route selection, and estimating time, fuel, money, and personal needs.

Know regulatory restrictions on vehicle size and weight.

Know that failure to obtain necessary permits can result in extensive delay and fines.

5.7 Interpersonal Communication Skills

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Purpose: CMV trainee will demonstrate effective interpersonal communication techniques and interpersonal skills when interacting with the company, customers, and the general public.

Performance Criteria: Trainee will convey clear intentions in all communication; receive and send clear messages from/to dispatcher with on-board devices; and present a professional image to the general public.

Trainee Skill Objectives:

Use on-board and personal communication devices only when vehicle is parked.

Communicate clearly, professionally and effectively with the company, customers, and the general public.

Present a professional image while in control of a CMV.

Trainee Knowledge Objectives:

Know and use proper procedures for handling complaints and concerns.

Know how to listen and respond effectively.

Know how to use communication devices to convey appropriate and effective communications.

Know how to control anger when interacting with others.

Understand the importance of presenting a good image through communications.

Be aware of technology used in communications within the trucking industry.