NATIONAL SAFETY CODE
FOR
MOTOR CARRIERS

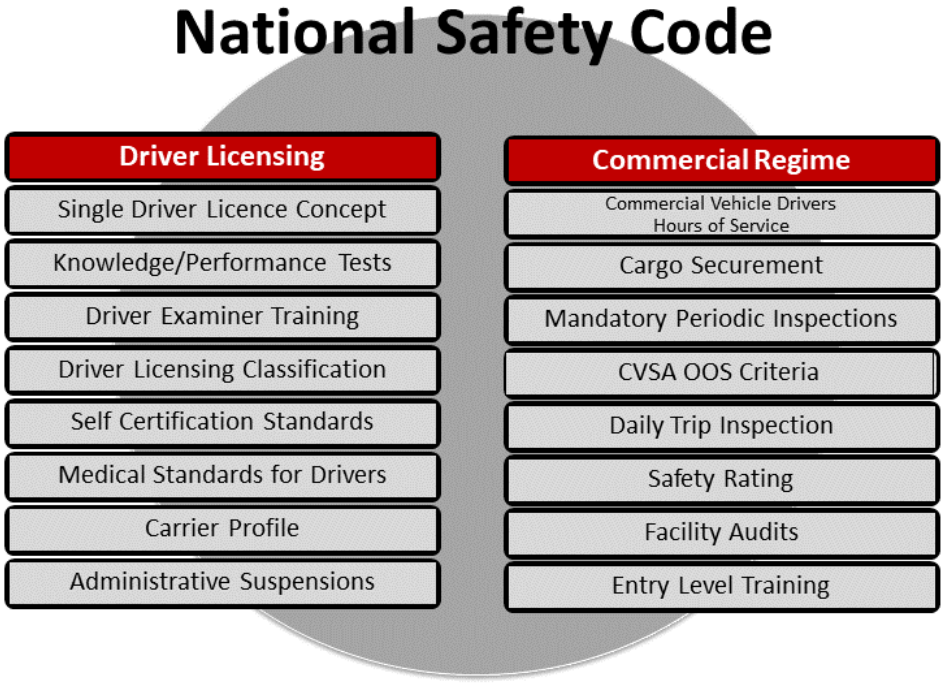
April 1988
1st Edition
ISBN 0-921795-10-7

October 2005
2nd Edition
ISBN 0-921795-75-0

Aussi disponible en français

NATIONAL SAFETY CODE

The National Safety Code (NSC) for Motor Carriers was developed by the member jurisdictions of CCMTA in conjunction with the motor carrier industry. The 16 standards that make up the NSC are subject to periodic review by CCMTA members to enhance their effectiveness or respond to new regulatory issues. CCMTA serves as custodian of the NSC.



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INTRODUCTION

MANUAL USER GUIDE

The *National Safety Code for Motor Carriers manual consists of:*

PART A National Safety Code Statement of Principles

PART B National Safety Code Standards
(See description of Part B on following pages)

NOTES for Manual Users:

- To ease reading, the masculine only was used throughout this document but shall be deemed to include both masculine and feminine genders.
- The date of the latest version of each standard is included in the footers found on the bottom of each page. Where no date appears in the footer, the date of the latest version of the standard is considered to be 1988 (the publication date of the First Edition of the manual).
- All standards, 1 through 16, may be purchased separately.
- The *National Safety Code for Motor Carriers* manual is published in both English and French.

THE NATIONAL SAFETY CODE FOR MOTOR CARRIERS

DESCRIPTION

The National Safety Code (NSC) for Motor Carriers was developed by the member jurisdictions of CCMTA in conjunction with the motor carrier industry. The NSC standards are subject to periodic review by CCMTA members to enhance their effectiveness or respond to new regulatory issues.

Part A of the NSC Manual consists of the principles of the National Safety Code.

Part B of the NSC Manual comprises the Standards. A brief description of each follows:

Standard 1 Single Driver Licence Concept

A standard which makes it an offence for a driver to hold more than one licence. In addition, a series of administrative procedures have been agreed upon to ensure driving infractions are assigned to a single licence and record.

Standard 2 Knowledge and Performance Tests (Drivers)

The purpose of this standard is to ensure that applicants possess the fundamental knowledge and driving skills for the type of vehicle to be safely operated on Canadian roads.

Standard 3 Driver Examiner Training Program

The purpose of this standard is to ensure that applicants possess the fundamental knowledge and skills for driver examiner training and testing for passenger vehicles, commercial or higher-class vehicles, motorcycles, and medically at-risk drivers.

Driver examiner standards assist in ensuring that examiners have met the minimum knowledge and skills training requirements for conducting licensing tests, with a focus on road and practical testing.

This standard has been developed based on a number of objectives:

- To establish uniform performance standards for driver examiners.
- To facilitate consistent driver examination across Canada.
- To establish a system to ensure that driver examiners have and maintain the capability to perform their jobs competently.

Standard 4 Driver Licensing Classification

The purpose of this standard is to designate classes of vehicles for driver licensing and prescribe the fundamental knowledge and skills for the type of vehicle to be safely operated on Canadian roads.

Standard 5 Self-Certification Standards and Procedures

A standard which outlines the criteria which must be met to permit carriers and driver training schools to train commercial drivers.

Standard 6 CCMTA Medical Standards for Drivers

A standard which sets the medical criteria used to establish whether drivers are medically fit to drive. All commercial drivers are required to undergo a medical examination at the time of licence application and at recommended periodic intervals.

Standard 7 Carrier and Driver Profiles

A standard which is designed to provide jurisdictions with a record of driver and carrier performance in terms of compliance with safety rules and regulations. The standard supports enforcement activity to remove unsatisfactory drivers and carriers from service, and identifies the type of information which will be maintained on each commercial driver and carrier.

Standard 8 Short-Term Suspension

A standard which describes the criteria for placing a driver out of service on a short-term (24 hour) basis when a peace officer has reasonable and probable grounds to believe the driver's ability is affected by alcohol or drugs.

Standard 9 Commercial Vehicle Drivers Hours of Service

A standard which describes the number of hours a commercial driver can be on duty and operate a commercial vehicle. It outlines the requirement to complete daily logs, describes the various cycles of operation and sets out driver and carrier record keeping requirements.

The revised CCMTA Commercial Vehicle Drivers Hours of Service Standard dated September 2002 has been superseded by the Federal Hours of Service Regulations published in the Canada Gazette Part II on November 16, 2005 for implementation January 1, 2007. Copies of the Regulations may be downloaded from the Transport Canada website at: http://www.tc.gc.ca/roadsafety/mc/menu.htm#HoS.

CCMTA has published an interpretation/guidance document on the federal rule (copy appended for convenience). A colour copy can also be downloaded from the CCMTA web site at: http://ccmta.ca/english/producstandservices/publications/reportcentre.cfm#hoursofservice.

Standard 10 Cargo Securement

A standard which outlines the specific requirements for securing loads to commercial vehicles to ensure they do not shift, move or spill onto the roadway.

Standard 11 Commercial Vehicle Maintenance and Periodic Inspection Standards

A standard which outlines maintenance and periodic inspections

Standard 12 CVSA On-Road Inspections

A standard which contains the Commercial Vehicle Safety Alliance on-road inspection criteria.

Standard 13 Trip Inspection

A standard which prescribes daily trip inspection requirements.

Standard 14 Safety Rating

A standard which establishes the motor carrier safety rating framework by which each jurisdiction assesses the safety performance of motor carriers.

Standard 15 Facility Audit

A standard which outlines the audit process used by jurisdictions to determine a carrier's level of compliance with all applicable safety standards.

Standard 16 Commercial Truck Driver Entry Level Training (Class 1)

A standard designed to ensure that Class 1 commercial truck drivers are properly and consistently trained before they are licensed.

PART A

STATEMENT OF PRINCIPLES

NATIONAL SAFETY CODE FOR MOTOR CARRIERS

PURPOSE

The National Safety Code for Motor Carriers (also referred to as "NSC") is designed to establish a comprehensive code of minimum performance standards for the safe operation of commercial vehicles.

SCOPE

The Code applies to all persons responsible for the operation of commercial vehicles on the road, including trucks, buses, tractors and trailers.

DEFINITIONS

Within the context of this document, the following definitions apply:

1. **Approved** (*approuvé*) As approved by the Canadian Council of Motor Transport Administrators (CCMTA).

2. **Carrier** (*transporteur*) A person who owns, leases or is responsible for the operation of a commercial vehicle for the purpose of transporting passengers or goods.

3. **Commercial Vehicle** (*véhicule commerical*)
   a) A truck, tractor, or trailer, or combination thereof exceeding a registered gross vehicle weight of 4 500 kg.

   OR

   b) A bus designed, constructed and used for the transportation of passengers with a designated seating capacity of more than 10, including the driver, but excluding the operation for personal use.

4. **Driver** (*conducteur*) Any person who drives a commercial vehicle subject to this Code.

5. **Inspector** (*inspecteur*) A person duly authorized to enforce federal or provincial statutes related to the Code.

GENERAL

Every carrier, his officers and persons employed by the carrier shall be conversant with this Code and shall ensure compliance with all applicable federal and provincial statues and approved CCMTA Standards.

DRIVER REQUIREMENTS

1.	Every driver shall qualify for a licence through the approved Examination Process.	Licensing
2.	Every driver shall hold a driver licence issued by the province, territory or state of residence valid for the class of commercial vehicle being operated.	
3.	No driver shall hold more than one driver licence unless otherwise required by law.	
4.	Every driver shall meet the approved Medical Standards.	
5.	Every driver shall maintain a level of driving performance in compliance with provincial Driver Improvement and Control Standards.	Driver Control
6.	Every driver or his employer shall report every commercial vehicle accident to the proper authorities in compliance with provincial statutes.	Accident reporting
7.	No driver shall operate a commercial vehicle while impaired by alcohol, fatigue, sickness, drugs or other elements.	Impairment
8.	Every driver is encouraged to complete a CCMTA approved first aid training course	First aid
9.	Every driver shall, at all times, be satisfied that the commercial vehicle is in safe operating condition.	Vehicle condition
10.	Every driver shall conduct daily vehicle trip inspections and shall report to the carrier, in writing, apparent safety-related defects on each commercial vehicle operated.	Trip inspection report
11.	No driver shall operate a commercial vehicle in violation of the Hours of Service Regulations.	Hours of service
12.	Every driver shall keep a record, in the approved form, of daily driving activities according to the Hours of Service Regulations and shall make it available at the request of an inspector.	
13.	Every driver and carrier is encouraged to operate commercial vehicles with running lamps or illuminated headlamps during daytime hours.	Daytime running lamps

14. No person shall load a commercial vehicle used to transport freight and no person shall drive such a vehicle unless: — Cargo Securement

a) the commercial vehicle's cargo is properly distributed and adequately secured as specified in the approved standard on cargo securement;

b) the commercial vehicle's tailgate, tailboard, doors, tarpaulins and spare tire along with other equipment used in its operation and the means of fastening the commercial vehicle's cargo are secured; and

c) the commercial vehicle's cargo or any other object does not interfere with the free movement of the driver's arms or legs, prevent his free and ready access to accessories required for emergencies, or prevent the free and ready exit of any person from the driver's cab or driver's compartment.

15. Every driver of a commercial vehicle shall: — Clear view

a) have a clear view of the highway to the front and to both sides of the commercial vehicle, and

b) have, without need of facing to the rear, a clear view of the highway to the rear of the commercial vehicle.

16. Every driver of a bus shall ensure that baggage, freight or express on the bus is stowed and secured in a matter which assures: — Baggage

a) unrestricted freedom of movement to the driver and his proper operation of the bus;

b) unobstructed access to all exits by any occupant of the bus; and

c) protection of occupants of the bus against injury resulting from the falling or displacement of articles transported in the bus.

17. Every driver shall ensure that:

    a) his commercial vehicle is loaded such that the overall dimensions, overall weight and the weight on each axle are within the limits authorized by the jurisdictions in which the commercial vehicle is being operated; and — Weight/ Dimensions

    b) for normal operating conditions the load on an individual tire shall not exceed its maximum load as stated by the tire manufacturer on the tire sidewall in accordance with the Canada Motor Vehicle Tire Safety Standard 119. The tires should not be inflated beyond the manufacturer's rating. — Tires

CARRIER REQUIREMENTS

18. Every carrier shall require that every driver for whom he is responsible observe safe driving practices and comply with all applicable federal and provincial statutes and all driver requirements stated herein.

19. Every carrier shall maintain records covering at least the following: accidents, hours of service, commercial vehicle inspection reports, convictions, medical reports, and from these records shall monitor each driver's performance. — Records

20. Every carrier shall obtain driver profiles from the appropriate government agency and shall review the same prior to hiring drivers. — Profile

21. Every carrier shall designate a person to promote compliance with this Code and is encouraged to employ a fleet safety supervisor and implement safety training and incentive programs. — Promote compliance

22. No carrier shall require or permit a driver to operate a commercial vehicle in violation of the Hours of Service Regulations — Hours of service

23. Every carrier shall keep a record, in the approved form, of daily driving activities according to the Hours of Service Regulations and shall make it available at the request of an inspector.

24. Where not otherwise required by law, carriers are encouraged to require all drives to wear seat belts. — Seat Belts

25. No carrier shall permit the driving or operation upon a highway of a commercial vehicle that is in a dangerous or unsafe condition. — Vehicle condition

26. Every carrier is responsible for inspection, repair, maintenance and modification of all commercial vehicles subject to his control according to the Commercial Vehicle Maintenance Standards. — Commercial vehicle maintenance

27. Every carrier shall maintain, and make available upon request to an inspector, commercial vehicle maintenance and inspection records in accordance with the Commercial Vehicle Maintenance Standards

28. Where a carrier is notified or becomes aware of a Notice of Defect issued by a vehicle manufacturer pursuant to the Motor Vehicle Safety Act and the Notice applies to a commercial vehicle operated by the carrier, the carrier shall forthwith, or as soon thereafter as is practicable, ensure that the commercial vehicle is corrected as instructed by the manufacturer or that it is repaired or modified such that the defect no longer exists. Notice of defect

29. a) Every carrier shall require every driver to conduct daily vehicle trip inspections and report, in writing, all apparent safety-related defects on each commercial vehicle operated, and the report shall cover at least the following parts and accessories: Reports of defects

service brakes, including trailer brake connections; parking brake; steering mechanism; lighting devices and reflectors; tires; horn; windshield wipers; rear-vision mirrors; coupling devices; wheels and rims; emergency equipment.

b) Prior to operating a commercial vehicle, every item listed in the driver's report or other inspection reports shall be repaired by the carrier to comply with the Commercial Vehicle Maintenance Standards.

30. No carrier shall operate, or cause or permit to be operated, any commercial vehicle for the transportation of freight unless the construction and equipment of the commercial vehicle and the manner in which freight is loaded and secured are such that the commercial vehicle can be operated safely and without danger of overturning, and such as to prevent the load or any portion thereof from shifting or swaying dangerously, falling off, leaking or otherwise escaping from the vehicle. Safety of operation

DANGEROUS GOODS

31. No driver shall operate a commercial vehicle and no carrier shall cause a commercial vehicle to be operated that is transporting dangerous goods subject to federal or provincial /territorial transportation of dangerous goods regulations other than in conformance with the requirements of the Transportation of Dangerous Goods Regulations.

PART B

NATIONAL SAFETY CODE STANDARDS

PART B
NATIONAL SAFETY CODE STANDARDS

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STANDARD 1

SINGLE DRIVER LICENCE CONCEPT

Although this Standard appears in the *National Safety Code for Motor Carriers*, it is important to note that it applies to all drivers, including commercial drivers.

SINGLE DRIVER LICENCE CONCEPT

INTRODUCTION

Legislation in force prohibits the holding of more than one valid and subsisting driver licence issued by a competent authority in Canada.

ADMINISTRATIVE PROCEDURES

In order to guarantee the principle that drivers must hold only one driver licence, the following administrative procedures have been agreed upon by all participating jurisdictions:

a) All persons applying for a driver licence shall surrender any subsisting licence issued to them by a competent authority in another jurisdiction.

b) Surrendered driver licences shall be returned to their issuing jurisdiction.

c) The driving records of persons surrendering out-of-jurisdiction licences shall be obtained.

d) When receiving driving records from other jurisdictions, the driver's record shall be updated with at least the following information:

   i) convictions for traffic offences which are analogous to offences in the issuing jurisdiction and which have occurred within the issuing jurisdiction's normal record retention period;

   ii) convictions for driving offences under the Criminal Code of Canada which have occurred within the issuing jurisdiction's normal record retention period; and

   iii) current driver licence suspensions, cancellations or driving prohibitions which are analogous to driver licence suspensions, cancellations or driving prohibitions which would normally be imposed on the issuing jurisdiction.

e) when a surrendered licence is returned to its issuing jurisdiction, the jurisdiction shall update the driving record accordingly, stating the fact that a new licence has been issued in another jurisdiction.

f) when driving records are transmitted to other participating jurisdictions, the information shall be forwarded in such format as may be prescribed in the transaction specifications of the "Interprovincial Record Exchange".

g) A feature shall be developed within the Interprovincial Record Exchange system to scan all jurisdictions' driver records by name, sex and date of birth in response to a single request. This will facilitate rapid scanning of all new driver licence applicants to determine whether they currently hold a driver licence in another jurisdiction.

h) All jurisdictions shall participate in the Driver Licence Compact or similar reciprocal agreement with U.S.A. jurisdictions negotiated through the Canadian Council of Motor Transport Administrators with its counterpart organization, the American Association of Motor Vehicle Administrators.

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National Safety Code

Standard 2: Knowledge and Performance Tests (Drivers)

January 2020
ISBN: 978-1-927993-51-4

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FOREWARD

The purpose of this standard is to ensure that applicants possess the fundamental knowledge and driving skills for the type of vehicle to be safely operated on Canadian roads.

Knowledge and performance testing are seen as essential elements of a common transportation policy, contributing to improving road safety and facilitating the free movement of persons across borders both east to west, and north to south. There is a generally accepted hypothesis that the more difficult the licencing tests, the more preparation, study and practice will occur; leading to safer driving or enhanced performance.[1]

Research has shown that a licence testing program aimed at critical knowledge requirements can reduce crash risk.[2] The rationale behind knowledge testing is to ensure that new drivers are aware of basic road laws and practices before taking to the road. This premise is based on the belief that this will promote safe operation and efficient road use[3].

The purpose of a performance/skill/practical/road test is to assess an applicant's level of skill required to operate a motor vehicle safely. Driving skills are inferred from performance in carrying out various tasks. The American Association of Motor Vehicle Administrators (AAMVA) guidelines (2007) define a driving skill as an "ability that requires both knowledge and practice for its attainment" (p.24); differentiating them from other basic skills such as sensory, attentional, perceptual, cognitive and psychomotor. Three key categories are identified in the AAMVA guidelines:

- Perceptual – ability to perceive characteristics of various highway traffic environments e.g. judging gaps, identifying hazards.
- Attentional – ability to focus and shift attention e.g. monitoring traffic ahead and to the side in a merge.
- Motor – ability to manipulate controls to maneuver the vehicle e.g. rotating steering wheel in relation to intended motion of the vehicle and its path when turning a corner (p.24).

The Canadian model requires some level of constitutional independence, mutual recognition of licences and reciprocity. Given the importance of individual means of transport, possession of a driving licence duly recognized by member jurisdictions promotes free movement of people and more efficient movement of goods. Knowledge and performance testing are two elements of the driver licensing system that contribute to the achievement of these goals.

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[1] AAMVA. (2007). *Guidelines for Knowledge & Skill Test Development.*

[2] Ibid.

[3] Watson, B., Fresta, J. Whan, H., McDonald, J. Dray, R., Beuermann, C. & Churchward, R. (1996). *Enhancing Driver Management in Queensland.* Land Transport and Safety Division, Queensland Transport, Brisbane. Haire, E., Williams, Allan F.; & Freusser, David F. (2011). *Driver License Testing of Young Novice Drivers*. NHTSA: Washington, D.C.

This standard is the result of a comprehensive process and reflects CCMTA's commitment to:

- anchor its standards on the best-evidence available as articulated in Principle 1 below
- focus on a principled approach to driver licensing standards, and to
- respond to jurisdictional need for flexibility to address unique needs.

These guidelines and standards reflect Canadian jurisdictions' continuing commitment to public safety while allowing the maximum driving privilege possible.

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BACKGROUND

Principles

The concept of "principle" generally describes rules, norms, or values that guide or describe desirable behaviours for an individual or group.[4] Principles are statements intended to guide the ways things are done by individuals and organizations, what is done and why.

A number of principles have been articulated throughout the National Safety Code (NSC) as well as the national road safety strategy. The principles below apply to NSC 2:

- Jurisdictions are committed to the principle of one driver, one licence, one record.
- NSC standard 2 has been developed to promote consistency, harmonization and road safety across Canadian jurisdictions.
- Contributes to a safe systems approach to road safety.
- Reflects an evidence-based approach to requirements, policies and guidelines based on global expertise and best available evidence.
- Standards are developed through an inclusive and consultative process.
- Knowledge and performance testing must be developed for each class of licence.
- A knowledge test should precede performance testing to ensure a basic understanding of driving and vehicles principles, and rules of the road.
- Performance testing captures skills and abilities for on or off road and is done in a vehicle reflective of the class of licence being issued.
- Licensing assessment is progressive; higher classes of licence build on basic skills acquired through initial and learning licensing stages.

These principles are to be broadly construed when applying the standards and policies within a jurisdiction; providing direction and flexibility in how road safety goals can be achieved.

[4] Merriam-Webster defines principle in a number of ways, the most relevant being "a fundamental doctrine or assumption", a "rule or code of conduct" (www.merriam-webster.com/dictionary/principle). The Cambridge Dictionary (http://dictionary.combridge.org/dictionary/english/principle) describes principles as fundamental norms, rules, or values that represent what is desirable and positive for a group, organization, or community. The online Oxford Dictionaries (www.oxforddictionaries.com/definition/english/principle) says a principle is a "rule or belief governing one's behaviour" while the MacMillan Dictionary defines principle as a basic belief, theory, or rule that has a major influence on the way in which something is done (http://www.macmillandictionary.com/dictionary/british/principle).

Structure of the Standard

NSC standard 2 contains:

1. An introduction which provides context for the standard, its interpretation and application.
2. The standard – a statement that clearly defines a minimal technical specification.[5]
3. Rationale – statements that explain the policy rationale and evidence to support the standard; and define overall goals, benefits and outcomes of an intended action, approach or strategic direction. The rationale provides policy context to support the standard's implementation.

Use of the Standard

It is expected that all Canadian jurisdictions will adopt the NSC standards as a reference. While the NSC standards imply a minimum, there is no constraint on jurisdictions going beyond this specification. In addition, a rationale is provided for the standards to help jurisdictions understand why an element is included. Finally, jurisdictional practices are included as a reference point for understanding different requirements that exist.

The authority for the CCMTA standards

Canadian Council of Motor Transport Administrators

The Canadian Council of Motor Transport Administrators (CCMTA) coordinates all matters dealing with the administration, regulation and control of motor vehicle transportation and highway safety. Membership includes representation from provincial and territorial governments as well as the federal government of Canada.

CCMTA supports its members' vision to have the safest and most efficient movement of people and goods by road in the world. CCMTA is the custodians of the National Safety Code, and provides collaborative leadership in the areas of Road Safety Research and Policies, Drivers and Vehicles and Compliance and Regulatory Affairs.

Vision
To have the safest and most efficient movement of people and goods by road in the world.

Mission
To provide collaborative leadership in addressing Canadian road safety priorities.

[5] Adapted from Policy Positions of the AAMVA, 2016.

History

The origins of the CCMTA can be traced back to 1940, when the four Western provinces met to consider issues of common interest relating to road transport. In the early fifties, the group was joined by Ontario and the Yukon Territory. The Canada-wide expansion of the organization took place in 1956, some two years after the enactment of the Motor Vehicle Transport Act by Parliament, in response to an already felt need for uniformity due to increasing movement and traffic.

In 1975 a constitution was signed by representatives of all provinces and territories and a small permanent Secretariat was established. The federal government has participated as a full member of CCMTA since 1977. The organization was incorporated in 1987 under its present name and constitution. CCMTA commemorated its 75th anniversary in 2015.

CCMTA Members are elected from provincial, territorial and federal governments. CCMTA has a responsibility to be accountable to:

- the Council of Deputy Ministers and Ministers for:
    - providing advice and making recommendations on matters relating to transportation and highway safety
- the provinces, territories and the federal government for:
    - promoting a better understanding and cooperation in all matters related to transportation and highway safety among each other, as well as other organizations where there exists a mutual interest
- its stakeholders for:
    - maintaining an ongoing dialogue and consultation to ensure CCMTA is responsive and informative

The relationship between individual Canadian jurisdictions' classification models and the CCMTA standards

All Canadian provinces and territories have the authority to establish their own knowledge and performance testing for drivers. In 1985, standards for driver licensing classification were identified as part of the National Safety Code (NSC) initiative undertaken to achieve uniformity among the provinces and territories, on many aspects relating to the administration of drivers and vehicles.

PART 1:

A MODEL FOR KNOWLEDGE AND PERFORMANCE TESTING

Chapter 1: Introduction

This part provides the standards and policy guidance for the development and evaluation of tests to assess the knowledge and skills of applicants wishing to operate a motor vehicle on Canadian roads. A national driver licensing framework is intended to help jurisdictional licensing agencies achieve uniformity in assessing the ability of driver licence applicants to operate vehicles in a manner that contributes to the safety and mobility of the driving public.

Driver licence tests attempt to measure knowledge and skills defined by motor vehicle agencies and are intended to serve as an incentive to applicants to acquire the skills, knowledge and attitudes needed for safe driving and as a means of making sure applicants possess the skills and knowledge needed before they are issued a licence. The difference in the purpose of tests leads to substantial differences in the way the licence tests are developed and evaluated.

Chapter 2: Definitions

Driver examiner: A driver examiner (DE) is an individual who is authorized by a jurisdiction to conduct assessments, tests and evaluations in order to determine licensure.

Knowledge test: means of testing an individual's knowledge of information required to operate vehicles safely, rules of the road, potential hazards, signs and signals. Testing may be done with paper and pencil, electronic/computer or verbal methods.

Practical test: practical testing, while sometimes seen as synonymous with road testing, is a broader category which may include assessments of vehicle functions, pre-trip inspections, and air brake inspections as well as the use of varying technology such as computers and simulators.

Road test: means a road test conducted by a government authorized driver-examiner. Standard road tests were traditionally designed for assessing driving skill. They may be used, however, to test for related skills such as hazard perception and, under certain circumstances, to assess motor and sensory functional ability to drive.

Chapter 3: Chapter Template

Below is the template used for the knowledge and performance testing standards. It is annotated to explain what type of information is found in each section of the template. The standard provides the minimum requirements for testing. Jurisdictions may have higher standards by imposing additional requirements to enhance safety outcomes, for example, additional areas for knowledge or road testing.

Jurisdictions may have additional requirements and practices considered beneficial in their context. Appendix III describes best practices as of December 31, 2018 that may be considered by other jurisdictions.

Standard	The requirements that must be met for a specified element of knowledge or road testing.
Rationale	A brief description of the rationale for the requirements.
Policy Guidelines	Provide more details on the application of the standard element, including procedures.

PART 2:

KNOWLEDGE TESTING

Chapter 1: Introduction

This part of the standard describes methods for assessing the knowledge of driver licence applicants for all classes of vehicles. The primary purpose of a driver knowledge test in licensing is not to predict future driving but to improve it by inducing licence applicants to acquire the requisite knowledge before they are allowed to drive. It is a quality control measure, functioning in the same manner as a final exam in a school course.

Knowledge tests are a method by which a person's theoretical, technical and operational understanding of driving rules, signs and behaviours can be measured. As applied to the process of driving, knowledge tests generally include subjects pertaining to the vehicle, road rules and traffic laws. In recent years, attempts have been made to develop knowledge tests that assess the applicant's ability to logically work out problems and identify hazards. Knowledge tests can come in various formats: written, oral, electronic, etc.

Research has shown that a licence testing program directed at critical knowledge requirements is capable of reducing the likelihood that drivers would be involved in crashes for which they are responsible (AAMVA, 2014). The purpose in giving knowledge tests is to ensure that drivers possess the information required to operate vehicles safely and facilitate mobility. Providing this assurance means not only assessing applicant knowledge through a knowledge test but providing a manual or means by which applicants can acquire that knowledge. This standard will address knowledge requirements and assessment, as well as the special requirements of applicants with language and literacy limitations.

Specifically, this part focuses on the requirements for knowledge testing:

- Test construction
- Key content areas required to safely operate a vehicle (passenger, motorcycle and commercial or higher class)
- Test administration

Chapter 2: Test Construction

The construction of knowledge tests will be discussed in terms of (a) content, format and wording of items, (b) scoring standards, and (c) alternate forms.

Content, format and wording

CONTENT

The knowledge test can only measure a sample of what applicants know. However, if the sample of items is sufficiently large, and represents the full range of knowledge requirements, the test will provide a reliable estimate of an applicant's knowledge.

Standard	To the fullest extent possible, the test items should be drawn from all knowledge domains which contain information on all key driver licensing requirements, as identified in this standard.
Rationale	While knowledge tests were previously focused on laws and regulations governing motor vehicle operation, it is now generally accepted that applicants can be held responsible for any knowledge that contributes to the safety and mobility of the public. This information is made available, in a Canadian context, through driving manuals, jurisdictional websites and other government-approved materials. In addition to laws and regulations, knowledge requirements include driving procedures, principles, facts, and concepts, including both those that enable drivers to operate their vehicles properly and those that motivate them to do so. Knowledge test areas have been developed through research involving a comprehensive analysis of driver tasks and their prioritization in terms of their criticality to traffic safety (AAMVA, 2014).
Policy Guidelines	The content of test items should be drawn directly from the driver licence manual/handbook or other approved, publicly available government sources and materials.

ITEM FORMAT

The multiple-choice format offers the best practical means for testing large numbers of licence applicants uniformly and objectively within the resources generally available to licensing agencies. This would also apply to communigraphic items. This format is comprised of a small diagram upon which a question is based. The communigraphic style tests the ability of the applicant to reason out problems based upon road rules, regulations and scenarios.

Standard	Testing items to be structured as multiple-choice, following the guidelines below.
Rationale	The multiple-choice format offers the best practical means for testing large numbers of licence applicants uniformly and objectively. True/false questions should be avoided in a licensing test given that the 50/50 chance of choosing the right answer contains a higher risk of the applicant not having the right knowledge.

Policy Guidelines	The following considerations should guide the design of multiple-choice-type format: Content of alternatives — All of the alternative responses to an individual item should address the same piece of information and attempt to assess whether the applicant possesses that information. If the various choices address different topics, there is no way of determining from responses what it is that an applicant does and does not know. Correct and incorrect answers — Each item should have only one correct answer; the rest should be clearly incorrect. Applicants should not be required to judge degrees of correctness (which is the "most correct" answer). Number of alternatives — Generally speaking, the greater the number of alternative responses, the smaller the chance of guessing the correct answer. However, the situation applies only where all alternatives are plausible. In driver licence exams, it may be difficult to develop more than three alternatives that are plausible. Adding a fourth alternative that nobody chooses makes a test longer without making it better. True-False — The true-false format should be avoided owing to the relatively high probability of guessing the correct answer, and (2) differences in the interpretation of "true" and "false". Knowledgeable applicants are often scored incorrect because they know of exceptions to what are scored on the test as true statements. Position of correct answer — The position of the correct answer in the series of alternatives should be decided by chance in order to prevent applicants from benefiting from systematic patterns, such as a tendency to put the correct answer in the middle of the series.

WORDING OF ITEMS

Licensing authorities should make every effort to prevent applicants from passing the test simply by memorizing the answers to a limited number of test questions. The best means of achieving this objective is by drawing from a large pool of test items. The availability of a large test item pool permits development of many alternative forms and, with computer testing, generation of a virtually unique test for each applicant. These practices prevent applicants from gaining high scores simply because they have taken the test before.

Standard	Items should be worded to maximize the likelihood that applicants who know the answer will answer the item correctly and those who do not know it will answer incorrectly (validity).
Rationale	This practice supports the applicant's learning of the driving knowledge requirements as opposed to memorizing test question wording.

Policy Guidelines	In order to achieve this objective, the following should be avoided: • Complex words or phrases — The test should measure driving knowledge, not verbal skill. • "All of The Above" — In this type of question, all of the alternatives are actually correct. Applicants may read no further than the first alternative. • "None of The Above" — In those cases where this is the correct response, there is no way to determine whether an applicant knows what the correct answer truly is. • Legalese — What is written by and for lawyers is not necessarily understood by the public. Avoid legal terms and direct excerpts from motor vehicle legislation. • Use of the negative form — A question that starts "Which of the following is not..." requires applicants to search for an incorrect answer. Knowledgeable applicants frequently forget this and choose the correct answer. • Inconsistent alternatives — Inconsistencies that attract attention to a particular alternative should be avoided, for example, alternatives that are substantially longer than others, use of attractive words such as "safely," or including a rationale for incorrect answers to make them appear more plausible.

KNOWLEDGE DOMAINS

The larger set of test questions should be drawn from the smaller set of knowledge domains similar to that laid out in Table 1. This table demonstrates the categorization of knowledge areas into a smaller subset of knowledge domains from which questions can be drawn.

Table 1: Knowledge Domains - Passenger Vehicles

PRE/POST DRIVING Adjustments Occupant protection Vehicle inspection Securing vehicle	**COMMUNICATION** Signaling intentions Communicating Presence	**DRIVER PREPARATION** Fitness Use of alcohol and other drugs Driver distractions Road rage Aggressive driving
VEHICLE CONTROL Starting Accelerating Shifting (manual transmission) Steering Staying in lane Turning Regulating speed Slowing/stopping Special handling characteristics Backing	**ADJUSTING SPEED** Compliance with limits Adjusting to traction Adjusting to visibility Adjusting to traffic Specific hazards	**SHARING THE ROAD** Cyclists & pedestrians Tow-trucks Large/commercial vehicles Motorcycles Animals Emergency vehicles

RULES OF THE ROAD	POSITIONING VEHICLE	DRIVING ENVIRONMENT
Traffic controls Lane control Turns Right-of-Way Vehicle restrictions Parking restrictions	When following Passing vehicles Crossing/entering intersection When stopping/parking	Fog Glare Lighting Snow, ice (including black ice), rain Gravel roads Construction Flooding
VISUAL SEARCH	**HANDLING EMERGENCIES**	**VEHICLE READINESS**
Maintaining attention Search ahead To the side Over-the-shoulder Mirrors Headlight use	Vehicle failures Collision avoidance Crash procedures	Safety check Inspection

KNOWLEDGE ELEMENTS AND DOMAINS FOR MOTORCYCLE KNOWLEDGE TESTING

This list provides additional knowledge domains for a motorcycle specific knowledge test. It is not assumed that applicants taking a motorcycle specific knowledge test have already passed the basic knowledge test for passenger vehicles and thus, the knowledge domains above remain relevant for new motorcycle riders.

Table 2: Knowledge Domains – Motorcycles

VEHICLE INSPECTION	LANE POSITIONING
Pre-ride check	Visibility (see and be seen) Space cushioning Avoiding surface hazards Escape routes
PROTECTIVE GEAR	**NEGOTIATING CURVES**
Conspicuity Protection	Speed control Line selection Visual directional control Counter-steering for cornering
MOTORCYCLE CONTROLS	**EMERGENCY MANEUVERS**
Location Operation	Stopping quickly Obstacle avoidance Vehicle failures
VEHICLE CONTROL	**SPECIAL RIDING SITUATIONS**
Getting underway/clutch control Balance and direction control Shifting braking	Carrying passengers and loads Roadway characteristics Weather factors

ROAD SIGNS TESTING

Testing on knowledge of road signs is particularly important as it is an indicator of an applicant's ability to understand driving and road rules that govern safe and effective traffic movement. Various methods can be used such as multiple-choice, charts, and communigraphic questions. Computer technology is making this latter form of testing much simpler and facilitates updating of educational and testing material.

HAZARD PERCEPTION TESTING

Hazard perception is a vital component to safe driving and hazard perception tests (HPTs) are being used with greater frequency for driver training, assessment and licensing. Hazard perception is defined as drivers' ability to anticipate potentially dangerous situations on the road ahead.[6] Observers must recognize the existence of a potentially hazardous event, make a judgement as to whether its trajectory or their own vehicle could cause a conflict and then determine an appropriate response.[7] In contrast to dynamic hazard perception testing (DHPT), static hazard perception testing (SHPT) provides no motion information.

In general, hazard perception testing has been related causally to collision risk[8] and performance on HPT predicts crash risk in diverse populations.[9] Many studies that have looked at the validity and effectiveness of hazard perception testing have used dynamic sequences or simulated scenarios versus the use of still images. However, evidence is not sufficiently clear-cut to be able to say that one approach is better than another.[10]

Scoring the Test

DETERMINING THE QUESTIONS

Individual jurisdictions will ultimately decide the number of test items that must be answered correctly in order for the applicant to pass the test. What jurisdictions can influence is the knowledge levels of the licenced population; the higher the standard, the more people will be expected to know.

Standard	Pass/fail rates to be reviewed to maintain the accuracy and fairness of the test.
Rationale	It is important to review pass and fail rates, along with questionable items (those with significantly higher or lower correct responses) to ensure fair, accurate and valid testing.

[6] Horswill and McKenna, 2004

[7] Scialfa, Borkenhagen, Lyon, Deschenes, 2012

[8] Insurance Institute for Highway Safety, 2010; McKnight and McKnight, 2003

[9] Darby et al., 2009; Horswill et al., 2010a; Wells et al., 2008

[10] Scialfa et al., 2012

Policy Guidelines	Response frequencies - The proportion of applicants answering each item correctly or incorrectly should be examined to determine possible deficiencies in the wording of items. Items with extremely low post-test pass rates and those showing little pre-post improvement should be examined to make sure they are not misleading in some way. On the other hand, if the percent choosing the correct answer is close to 100%, wording should be examined to make sure that the correct answer is not being given away. Where an unacceptably high proportion of applicants fail to meet established passing standards, efforts should be made to seek improvements in applicant knowledge and/or test procedure rather than lowering the test standards. Improvements may include the following steps: • Examining individual items to identify the specific ones that are causing trouble, • Revising the test to clarify any ambiguous questions and eliminate unnecessarily fine distinctions, and • Revising the treatment of the corresponding subject matter in the driver manual where the test items appear valid, giving it greater visibility and/or improving the effectiveness of communication.

EVALUATING KNOWLEDGE TESTS

Any knowledge test must be evaluated against the purpose it serves. The purpose of a driving knowledge test is to foster safe operation of vehicles. The questions that make up a licence test constitute a small sample of what drivers are expected to know. If the sample does not give a reliable estimate of an applicant's overall knowledge, the test may fail many applicants who really know enough to pass while passing many applicants who do not.

Standard	• A minimum of 80% is required to pass a knowledge test.
Rationale	In the general educational arena, a passing grade has historically been recognized at lower than the current Canadian knowledge test standard of 80%. Where knowledge and skill are related to the need for higher standards, a higher pass threshold may be justified. Such is the case for driver licensing. Most of those taking the knowledge test are new drivers, lacking the skill and road savvy that comes with experience. For such a population, a high standard can be justified.
Policy Guidelines	Being informed of the scoring standard in advance will encourage the preparation needed to take the knowledge test with greater confidence.

Alternate Test Forms

Alternate forms of the knowledge test are generally available in Canadian jurisdictions to minimize the chance of an applicant's being able to answer questions correctly because of previous exposure to the same questions on an earlier test.

AUTOMATED TESTING

Electronic and computer devices have been developed and widely used to automate the administration of knowledge tests. While a wide range of automated devices are available, almost all display test questions on a screen and require responses to be registered electronically.[11]

Automation offers a number of potential advantages:

- Processing — reduced labour associated with scoring tests. This includes not only marking but the recording of results entered into driver records and stored for statistical purposes.

- Reduces human error; no subjectivity with computer marking.

- Feedback — automation allows applicants to be given correct answers after they have responded, and their answers have been recorded. A key value of feedback is relieving examiners of the need to explain and justify answers to applicants who fail the test and ask to review their results; an activity that can be more demanding of an examiner’s time than scoring the tests.

- Individualization or randomization — automation allows different sets of test items for individual applicants. Individual items are selected at random for each applicant from a pool of electronically stored test questions. While automated testing lends itself to such an approach, it is also relatively simple to print various forms of the test where questions have been randomly generated. With a large enough item pool and adequate test length, individual forms would be representative and equal in overall difficulty. The possible number of test "forms" would be extremely large. The selection of items can be programmed to prevent the answers to one item appearing in the stem of another question.[12]

  The advantage of such individualization is two-fold. First, it prevents applicants from knowing in advance the specific set of items on which they will be tested, thereby reducing cheating. Second, it allows for termination of tests if the applicant hits the fail threshold. The time saved frees up the test equipment for other applicants, thereby increasing system efficiency.

- Imagery — Computer technology allows detailed static and dynamic images to be displayed in full color relatively inexpensively. Questions about driving situations can be presented in the same way they occur on the road, allowing complex situations to be addressed without placing demands on verbal skills. If applicants know what to do in actual driving situations, they should be able to answer questions correctly; a requirement for valid testing that often cannot be achieved through written knowledge tests.

[11] AAMVA Guidelines for Non-commercial Knowledge and Skills Test Development, 2014.

[12] Ibid

WRITTEN TESTS

While historically the method of choice, written tests are becoming more of a secondary format compared to electronic or computer testing. An applicant's knowledge is tested by using a series of written questions, which may be printed from electronic, randomly selected questions. This way, various forms of written tests are more easily generated in order to minimize the chance of an applicant memorizing responses.

READING IMPAIRMENT

Some applicants have various forms of reading impairment which impact their ability to successfully take a written or online version of a knowledge test. These reading impairments are distinguished from those of applicants whose primary language is not English or French, and can involve the form of language, including grammar, morphology, syntax, and the functional aspects of language, including semantics and pragmatics.[13] Oral tests are generally used to test applicants whose ability to read is impaired.

The AAMVA Guidelines for Knowledge and Skill Test Development (2014) identify several drawbacks to oral testing: (1) the spoken word is incapable of handling questions dealing with highly visual content, such as signs, signals, and scenarios (e.g., hazard perception) (2) even where reading limited applicants are able to understand questions, they may be unable to weigh the alternative responses simultaneously in selecting among them, (3) the oral testing process can be influenced by the examiners, who may provide aid that is unavailable to an applicant taking a written test, and (4) oral testing is extremely labour intensive and therefore more costly than written testing.

Standard	Jurisdictions will have policies in place to address requirements for oral testing.
Rationale	The standardization of oral testing is important to maintain the integrity and validity of knowledge testing. Having guidelines in place provides consistency both for staff and clients and supports the integrity of knowledge testing and its contribution to safe driving.
Policy Guidelines	Oral questions should follow the content outline in written/electronic testing with consideration given to phrasing and terminology that can be understood by the applicant. In some situations, oral questions could be utilized to confirm certain areas where the examiner feels the applicant is unsure. Questions should be clear in meaning, direct and have a defined response. Oral questions should not allow or ask an answer of opinion as this could lead to argument and contribute to confusion about a correct response. Where used, the pass-fail rates of individual examiners should be reviewed periodically to identify those whose averages deviate sharply from others in the same office or a recognized normal response rate.

[13] Batshaw, Mark L, Roizen, Nancy J., & Lotrecchiano, Gaetano R. (2016). *Children with disabilities*. 7th ed. Baltimore: Paul H. Brookes.

FOREIGN LANGUAGE TESTING

Foreign language[14] versions of knowledge tests are common among Canadian jurisdictions. Offering knowledge tests in other languages is one way to ensure the equitable testing of foreign-speaking applicants.

Standard	Policies and processes should be in place to ensure the integrity of the translation process and outcomes, to ensure the equitable testing of foreign-speaking applicants, and to prevent cheating (**see following section**).
Rationale	The inability to read or speak the English and French languages is not necessarily a barrier to proper motor vehicle operation so long as drivers meet prescribed knowledge requirements and are able to interpret highway signs, signals and road instructions. It is the responsibility of the licensing agency to assure that these conditions are met before issuing a licence and fulfilling this responsibility imposes special requirements. Given the importance of mobility to the welfare of the individual, the inability of an individual to pass the knowledge test in English or French may lead to gaining a licence fraudulently or operating a vehicle without one. Steps taken to accommodate the needs of foreign-speaking applicants will help prevent unqualified drivers from undermining safety on our roads.
Policy Guidelines	Alternate forms of the written test may be translated for foreign-speaking applicants that cannot complete the test in English or French. Where foreign language versions of tests are unavailable, or where applicants are not literate in their own language, oral testing may be used to assess knowledge. Where translators may be used to assist in the testing process (see following section), applicants should not be permitted to bring their own translators. If no examiner speaks the language, arrangements can be made to employ, or obtain assistance from an independent and jurisdictionally approved translator.

[14] Recognized as those that are not official languages of a jurisdiction. For example, the Northwest Territories and New Brunswick have English and French as official languages. Nunavut has four official languages: Inuktitut, English, French and Inuinnaqtun.

USE OF TRANSLATORS & INTERPRETERS

In some cases where an applicant is impaired by a language barrier, it may be desirable to obtain an interpreter or translator to assist with the knowledge test.

Standard	• Language translators used for knowledge testing will be approved by the jurisdiction. • Interpreters for the deaf and hard of hearing used for knowledge testing will be approved by the jurisdiction. • Jurisdictions will have policies in place to address the risks and consequences of cheating.
Rationale	The applicant must be able to understand basic directions from the test administrator with support from a qualified translator, including interpreters for the deaf and hard of hearing.
Policy Guidelines	A qualified translator used by applicants should have credentials proving they are one of the following: • Be employed, or have been employed, in interpreter or translation services • A member, or have been a member, of a professional association that provides interpreter and translation services (e.g. Association of Translators and Interpreters of the jurisdiction). In-person interpreters and/or translators should show a valid photo identification prior to conducting on-site interpretation and/or translation services. Interpreters should not provide translation or interpretation services for family members.

Chapter 3: Testing Administration

With increased attention paid to driver licences and licensing post-September 11, 2001, driver licensing fraud began to surface as a significant problem, including in the testing and licensing of drivers. The documents issued by driver licensing authorities have significant street value for those who wish to commit crime or illegally obtain financial benefits and entitlements.[15]

It is important to control the knowledge test process and environment to minimize fraud and protect the integrity of the test. Cheating, copying or consulting with any person other than an authorized test administrator during the test is not permitted. This undermines the validity of the test as a means to ensure safe drivers on our roads.

TEST SECURITY, FRAUD PREVENTION AND CHEATING

Standard	• Questions for all forms of knowledge test will be randomly assigned. • Written versions of the test will remain with the licensing or testing authority and not the applicant. • Jurisdictions will have policies in place for consequences of cheating on knowledge tests. • Unapproved electronic devices are not to be used during the test.
Rationale	As licensing authorities increasingly develop online knowledge practice tests, questions will be widely available to applicants. Having randomized versions of tests, written, electronic and verbal/oral, will help ensure the integrity of the knowledge test. Having processes in place for testing (all forms) will minimize and prevent cheating.
Policy Guidelines	Examination stations should be arranged to mitigate the opportunities for copying, cheating and other fraudulent behavior such as checking answers on cell phones.

SCHEDULING KNOWLEDGE RE-TESTS

Standard	Applicants who fail the knowledge test are required to wait at least one day before being re-tested.
Rationale	Some applicants may seek an immediate retest in the mistaken belief that they can pass simply by looking up answers to the questions they missed, an unlikely event where alternate forms are administered. Requiring a day's wait provides applicants an opportunity to study areas where they lack sufficient knowledge and thus prepare for any test form they might receive.
Policy Guidelines	NA

[15] AAMVA. (2015). *Best Practices for the Deterrence and Detection of Fraud*.

Chapter 4: Higher Class Vehicles (Classes 1-4)

Generally, passenger vehicle licensing standards, rationale and guidelines are the foundation upon which knowledge testing for higher classes is based; including learning basic driving concepts, rules of the road and road signs. While most of the standards and guidelines for passenger vehicle knowledge testing apply for commercial classes, there are some unique differences. Only the unique elements are addressed below.

READING IMPAIRMENT

Most Canadian jurisdictions limit knowledge testing for higher class licences to French and English. Where there are impairments to the ability to read in either of these languages, oral testing may be available.

Standard	If permitted, above standards for passenger vehicles should be an absolute minimum and compliance monitoring strictly adhered to.
Rationale	Given the potential for greater harm associated with heavy, commercial vehicle crashes, Canadian policy as articulated in the National Safety Code, imposes a higher threshold for testing, licensing and operating.
Policy Guidelines	Jurisdictions should consider U.S. Federal Motor Carrier Safety Regulations[16] when developing new policies and practices. FMCSA requires that drivers be able to read and speak the English language sufficiently to converse with the general public, to understand highway traffic signs and signals in the English language, to respond to official inquiries, and to make entries on reports and records.

FOREIGN LANGUAGES AND USE OF TRANSLATORS & INTERPRETERS

Knowledge testing for higher class driver licences is even more restricted with respect to foreign languages. The use of translators is much more limited given the general higher level of skill and driving behavior that is expected for driving commercial vehicles. Drivers are expected to be able to communicate in English or French for the purposes of compliance and enforcement related to driver and carrier requirements in the National Safety Code.

Standard	• Translators used for knowledge testing will be approved by the jurisdiction.
Rationale	This allows jurisdictions to control and monitor the quality and integrity of knowledge tests.

[16] Link to FMCSA Regulation
https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&ty=HTML&h=L&mc=true&=PART&n=pt49.5.391#se49.5.391_111

Policy Guidelines	A qualified translator used by applicants should have credentials proving they are one of the following: • Be employed, or have been employed, in interpreter or translation services • A member, or have been a member, of a professional association that provides interpreter and translation services (e.g. Association of Translators and Interpreters of the jurisdiction). In-person interpreters and/or translators should show a valid photo identification prior to conducting on-site interpretation and/or translation services.

PART 3:

PERFORMANCE TESTING: ROAD AND PRACTICAL

Chapter 1: Introduction

The purpose of a road or performance test is to assess an applicant's necessary skills to operate a vehicle in a manner consistent with the safety and mobility of the motoring public.[17] What a performance test can do is to influence applicants to acquire requisite skills through instruction and practice, and to assure possession of these skills before they are issued a licence to operate unsupervised. However, it cannot necessarily predict how safely people actually drive when they are not being tested as the way people behave on the highway is influenced by attitudes and habits that are seldom revealed in the presence of a licenced examiner.

A New Model for Assessment

Assessing driving skills and performance is done in a number of contexts, for example, for new drivers, commercial drivers, renewal of a driver licence, and determining fitness to drive. In the last context, there has been a shift in the approach taken to assessing driving skill, which is relevant to our considerations for this standard. Traditionally, CCMTA medical standards were based mostly on the diagnostic model, that is, on the medical condition and the presumed group characteristics of people with that condition rather than on how the medical condition affected the functions necessary for driving on an individual basis. In terms of an evidentiary basis, the standards reflected the consensus opinion of practicing physicians. Nationally and internationally, driver fitness authorities are moving toward adopting a functional approach to driver fitness. A functional approach means that, when making driver fitness determinations, the focus is on the effect that a medical condition has on the functions necessary for driving rather than making a decision based solely on a diagnosis. The functions necessary for driving are cognitive, motor, and sensory. To the extent possible and relevant, this part of NSC 2 will strive to be consistent with the functional approach as outlined in NSC 6 – Determining Driver Fitness in Canada.

Skills

While driving skills are differentiated from knowledge, the latter is recognized as key to achieving a skill as defined by Miriam Webster:

> the ability to use one's knowledge effectively and readily in execution or performance
> dexterity or coordination especially in the execution of learned physical tasks
> a learned power of doing something competently: a developed aptitude or ability.[18]

Driving specific skills are distinguished from basic sensory, attentional, perceptual, cognitive and psychomotor abilities. While tests for the latter are appropriate to assessment of individuals who may be deficient with respect to certain abilities, they have traditionally been outside the scope of initial licence testing. However, this is changing and jurisdictions around the globe, and indeed in Canada, have implemented elements of risk assessment and hazard perception testing to address these relevant abilities.

While basic cognitive skills are required to learn and apply facts, procedures, and principles, driving-specific cognitive skills are primarily concerned with navigation rather than safety. Applicant skill is inferred from performance in responding to highway traffic conditions encountered during the road

[17] American Association of Motor Vehicle Administrators. (2014). *AAMVA Guidelines for Non-commercial Knowledge and Skills Test Development*. Arlington, VA: AAMVA.

[18] Online Miriam Webster Dictionary. https://www.merriam-webster.com/dictionary/skill. Accessed January 28, 2018.

test. The road test itself consists of applicant performances that examiners are to observe, the criteria that distinguish acceptable from unacceptable performance, routes over which the test takes place, administrative procedures, and a method of scoring performance to determine whether applicants have passed or failed the test.

Testing Modes

Testing driving skills may be done in a number of ways:

Road testing — Observing and recording the performance of applicants operating their own vehicles over prescribed routes under prevailing traffic conditions. In some cases, special vehicles may be required for fitness and general driving assessments such as those with hand controls, interior mirrors, dual brakes, and small round mirrors that assess where the driver is looking (used by driver examiners).

Practical and off-street testing — Observing and scoring the performance of applicants carrying out prescribed maneuvers under controlled conditions in an off-street area. May be more commonly used for certain types of commercial vehicles and motorcycles, for example, air brake testing, pre-trip inspections and motorcycle skills tests.

Simulation — Observing the performance of applicants responding to highway traffic conditions simulated through displays and controls that demand of drivers the same skills required in operating an automobile.

The various testing modes are suited for assessment of different skills and require different procedures.

Administration of Road Tests

A road or practical test is the best means to gauge a driver's capability to operate a motor vehicle safely under varying road and traffic conditions, as well as a measure of their knowledge of the vehicle and rules of the road. The driving test can also help to mold safe driving attitudes as well as reinforce and solidify safe driving practices. Driver examination is a key element of road testing and is addressed in NSC Standard 3.

Skills cannot be measured directly but are inferred from performance in carrying out various driving tasks. To yield reliable and valid measures of skills, the performances making up a skill test must meet the following requirements:

Uniformity — All applicants must receive essentially the same test, no matter when or where they take it. Applicants with the same ability should have the same probability of passing the test.

Objectivity — The scores received by applicants should reflect their performance to the greatest extent possible and be influenced as little as possible by examiners. Two examiners observing the same performance should score the applicant in the same way.

Public Acceptance — Any skill test must be acceptable to the public in that it must appear to be a valid measure of necessary driving skills, must avoid subjecting applicants to stress or unnecessary embarrassment, and must minimize exposure of them, driver examiners or the general public, to danger.

Chapter 2: Road Test

Certain preparations will help to ensure that the driver will be given the best possible driving test. Important is recognition of more general principles in giving and scoring the driving test:

- A driving test is not intended to train or re-train the driver, its purpose is to evaluate their driving skill and knowledge.
- A thorough driving test with high standards will encourage drivers to acquire driving skills and experience beforehand.
- Feedback on the road test is an opportunity for learning.

An important element in the effectiveness of the driving test is the method used for scoring. While answers to written questions are either right or wrong, road test elements may require a degree of judgement by examiners, for example, signaling for a left turn. If the signal were given 30 metres in advance of the turn, clearly, correctly, and continuously through the turn, it would be entirely correct. But if it were given only 15 metres in advance of the turn, if it were discontinued before the turn was begun, and if it were such that it might be mistaken for a right turn signal where the driver is signaling by means of his hand, it would be partly right and partly wrong. In such cases, the driver examiner must decide whether or not the degree of error is sufficient to score a demerit or fail an element.

Prior to Road Test

ADMINISTRATION

Jurisdictions should ensure that applicants are lawfully entitled to have a valid licence, temporary permit, or are statutorily permitted for the class of road test they are taking. In addition, a driver may have other conditions on the licence such as requiring glasses or ignition interlock. Examiners should also ensure that the vehicle is properly registered and insured.

Standard	• Driver has valid and appropriate driver licence. • Vehicle is properly registered and insured. • All other legal requirements and conditions are met prior to beginning the road test. • An individual will not be permitted to begin a road test where a driver examiner reasonably believes that the applicant is impaired by drugs or alcohol.
Rationale	Invalid licensing increases the risks associated with crashes and impacts the validity of insurance for all parties. With respect to other legal requirements, a significant development in driver assessment came with the '*Grismer*'[19] case in B.C. which held that each driver must be assessed according to the driver's own personal abilities rather than presumed group characteristics. While this functional approach has evolved from a driver fitness context, driver road tests more generally have moved towards a consistent approach both nationally and internationally.

[19] British Columbia (Superintendent of Motor Vehicles) v. British Columbia (Council of Human Rights), [1999] 3 S.C.R. 868

Policy Guidelines	Other legal requirements may be indirectly related to driver licensing or vehicle registration and insurance, for example, human rights legislation and legal precedent. Generally, only the applicant and the driver examiner can be in the vehicle for a road test. However, provincial human rights legislation may provide for specific situations that would allow for individuals and assistance animals to accompany the applicant.

VEHICLE CHECK

Applicants must bring a vehicle to the road test that is safe to drive and meets the Federal Motor Vehicle Safety Standard. A vehicle check prior to the road test helps ensure the safety of all parties, giving the driver examiner discretion to refuse a road test if they deem the vehicle unsafe.

Standard	Road test vehicles must be inspected prior to commencing a road test and deemed safe and legal for on-road driving. Inspections must be completed by a certified or jurisdictionally approved driver examiner.
Rationale	Vehicles for road testing need to be in proper working order for on road assessment and safety of the applicant, the examiner and the public.
Policy Guidelines	Vehicles with serious defects or deficiencies should not be taken out on road tests, for example: – steering – speedometer – brakes including parking brake – windshield wipers not working (when raining) – brake and signal lights not working – faulty seatbelts – noisy exhaust and leaks – environmental concerns such as smoking or cannabis Jurisdictions may specify other conditions.

Skill Requirements

A driving "skill", as defined by AAMVA[20], is an ability that requires both knowledge and practice for its attainment. The specific driving skills addressed are those considered critical for the safety of both the driver and other road users. The skills that are required for safe automobile operation may be divided into the following three categories:

Attentional — The ability to focus and shift attention, e.g. to monitor traffic ahead and to the side in a merge.

Perceptual — The ability to perceive characteristics of the many highway traffic environments in a way that permits safe vehicle operation, e.g. judging gaps, identifying hazards.

Motor — The ability to manipulate controls in order to maneuver the vehicle, e.g. ability to rotate the steering wheel in relation to the motion of the vehicle and intended path when turning a corner.

SKILL CATEGORIES

Standard	Required skills in each category: *Attentional Skills* • Attention-sharing - Controlling and maneuvering a vehicle while attending to traffic controls and other road users (search, signaling, space management) • Attention shifting - Shifting attention as needed (ahead, to the side, and to mirrors, observation checking and visual scanning) *Perceptual Skills* • Spatial judgment - Judging the nature and magnitude of changes in speed and direction of other road users • Gap judgment - Judging the adequacy of gaps when merging, crossing, or entering traffic • Distance judgment - Judging the adequacy of distance of an oncoming vehicle when passing • Hazard detection - Detecting hazards; characteristics and movement of other road users in the roadway environment, for example, pedestrians, cyclists, emergency vehicles and potholes. *Motor Skills* • Acceleration - Regulating pedal force to accelerate on level and inclined surfaces. • Shifting - Coordinating clutch, accelerator, and shift lever if manual transmission is used. • Maintaining speed - Regulating accelerator force in order to maintain a steady speed

[20] AAMVA. (2014). *Guidelines for Non-commercial Knowledge and Skills Test Development*. Washington, D.C.: AAMVA.

	• Lane keeping - Coordinating speed and steering in order to keep the vehicle position within lane on straight and curved paths. • Turning - Coordinating speed and steering when turning corners; left and right-hand turns. • Slowing - Regulating brake and accelerator to reduce speed • Stopping - Coordinating brake, accelerator (and clutch) to bring the vehicle to a stop at a given point • Backing - All of the above in moving the vehicle backward • Adjusting to limited traction - All of the above when operating on slippery surfaces • Parking - On level surfaces, on hills, between vehicles
Rationale	The specific driving skills addressed are those considered critical for the safety of both the driver and other road users.
Policy Guidelines	**Road Test Maneuvers** Even when the performances to be observed are limited, no examiner can possibly observe them all. Whether or not examiners observe a particular performance depends on whether their attention is specifically focused on it. In deciding what performances should be scored, the following needs to be considered: Opportunity - Situations requiring each performance must occur with sufficient regularity to assure that all applicants are scored on the same set of performances. Looking for performances that depend upon particular traffic conditions or weather conditions tend to be unproductive as well as detracting from the uniformity of the test. Objectivity - Performances that can be assessed objectively are to be preferred over those that require subjective judgment on the part of the examiner. For example, signaling, checking a mirror, or staying in the correct lane can be defined far more objectively than slowing for a “hazard.” Safety/Mobility - Performance tests should be conducted in an environment that does not threaten the safety of the applicant, examiner, or other road users, or obstruct traffic. One way of assuring that attention will be properly focused is by identifying the sequence of performances as they occur in specific maneuvers. Maneuvers that involve a set series of performances include: • right/left turns without cross traffic • right/left turns with cross traffic • straight across traffic • left turn • oncoming traffic • negotiating a curve • lane change and blind spot checking (shoulder check)

	• merge • straight driving • exit • traffic responses • parking • stopping • negotiating intersections, visual scan - looking left and right Within each of the maneuvers, a set of performances can be listed in the order by which they occur during the maneuver. These performances form the basic elements of the road test, and include the following: • Signal - for turns, lane changes, merges, exits • Entry position - in turns, curves • Entry speed - turns, curves • Full stop - stop signs, traffic • Stop position - stop signs, traffic lights • Gap judgment - cross/enter traffic, lane change • Search - in turns, lane changes, merges, straight driving • Speed - in turns, curves, merge, exits, straight driving • Path - in turns, curves, merges, exits • Lane selection - in turns, straight driving • Lane position - straight driving • Following distance - straight driving • Three-point turn • Parking - straight, backing or reversing, hill, parallel, roadside stop

ROUTE SELECTION

All road testing should take place over specified routes. Examiners should not be called upon to make up routes during a road test unless they are faced with unexpected circumstances. Designating routes in advance helps to maintain uniformity in testing.

Standard	• Number of routes - Several routes should be devised for each licence testing location.
Rationale	Having only a few routes allows applicants to practice driving each route to the point that their performance reflects their memory of the route rather than their general driving skills.

Policy Guidelines	Route length - Fifteen minutes of driving in typical urban-suburban settings generally allows for approximately 150 observations of the driver performances making up the maneuvers that have been listed. This number of observations is a minimum for reliable estimation of a driver's skill.[21] Setting up routes - A test route should be viewed as a path between maneuvers. Locations that permit the full array of maneuvers should be selected first and routes planned to interconnect these locations. The art comes in finding enough of the right locations to test required knowledge and skills. Maximizing observations - The various maneuvers differ greatly in the opportunities they provide to observe the performances that involve skill. For example, turning, particularly at uncontrolled intersections, permits much more opportunity to assess driver skill than does straight driving. Routes need to be chosen in a way that will result in maneuvers that maximize the opportunities to observe scored performance. Uniformity of maneuvers – Although test routes necessarily differ from one another, a degree of uniformity can be achieved by seeing to it that they all consist of the same number of each type of maneuver, e.g. three left turns across oncoming traffic, three with oncoming traffic controlled, and so on. Route conditions - Areas characterized by many traffic lights, heavy vehicular travel or pedestrian traffic may need to be avoided if they introduce lengthy delays. The number of performances that can be assessed under these conditions may be too few for the time spent. Separating observations - Locations at which performances are observed need to be sufficiently far apart to allow examiners time to record applicant performance. For example, requiring two turns a block apart may not allow the examiner enough time between the last observation of the first turn and the first observation of the next turn. *Traffic Dependent Performance* Traffic conditions along a test route may require decisions and actions that cannot be anticipated (e.g., following a vehicle ahead, cyclists on the road, responding to a pedestrian crossing the street, construction). Because there is no way of knowing in advance just where traffic-dependent situations will arise, the number and nature of situations may vary from one applicant to another. Jurisdictions should have a policy in place to address performance in these situations.

[21] AAMVA. (2014). *Guidelines for Non-commercial Knowledge and Skills Test Development*. Washington, D.C.: AAMVA

Chapter 3: Termination of Road Test

Examiners should be permitted to immediately fail an applicant on the road test where a skill deficiency is sufficiently great that the continuation of the test is not only unnecessary but may place the applicant, examiner, or motoring public in jeopardy. Such performances would include, but not be limited to, running a red light, driving at extremely high or low speed, driving the wrong way on a one-way street or off-ramp, or requiring intervention by the examiner to avoid or prevent a crash.

Standard	**Disqualifying Situations:** • serious violations of traffic law such as speeding, careless driving, crossing double lines, not stopping at a stop sign • acts that endanger the driver examiner or the public • examiner intervention • a crash • lack of cooperation, aggressive/threatening/abusive (physical and/or verbal) behaviour toward driver examiner or refusal to perform a requested manoeuvre • offering bribes or a “gratuity”
Rationale	Examiners are permitted to immediately fail an applicant on the road test where a skill deficiency is sufficiently great that the continuation of the test is not only unnecessary but may place the applicant, examiner, or motoring public in jeopardy.
Policy Guidelines	A definition of dangerous action should be developed by jurisdictions capturing the key elements of the standard. Road tests may be terminated for reasons other than the applicant’s lack of ability such as: • The vehicle running out of gas, having a punctured tire or otherwise failing to function during the driving test • Applicant becomes sick and is unable to continue safely • Weather or other environmental conditions become so unfavourable as to require termination of the road test for safety.

Chapter 4: Scheduling Road Re-tests

No Canadian jurisdiction currently has a maximum number of times that a road or skills test may be taken for any class of vehicle. However, the majority provide for a waiting time for road re-tests.

Standard	• Applicants who fail the road test are required to wait at least one week before being re-tested.
Rationale	Requiring a wait time provides applicants an opportunity to practice areas where they lack sufficient skill.

Chapter 5: Off-Road Testing

The ability of applicants to carry out certain vehicle maneuvers can be assessed more accurately in the off-road environment than on the road. These maneuvers may be more demanding and require a unique skill level; require a more precise measurement (such as stopping distance); or require completely standardized test characteristics.

Off-road skill testing has been used primarily for three purposes:

(1) Pre-test screening

Initial screening for minimum skill levels before applicants are exposed to the potential hazards of road testing. The ability of applicants to control the vehicle may be so marginal as to make road testing a hazard to applicants, examiners, and the motoring public. In these cases, the interests of safety may be best served by assessing applicants before a road test begins. Basic skills may be assessed by a separate test conducted in a parking area such that several turns and stops are required before entering the road.

(2) Assessing Vehicle Control Skills

This allows for certain vehicle control skills to be assessed more efficiently than is possible in an uncontrolled road environment. Off-street tests have been used instead of, or in addition to, road tests. Basic vehicle driving skills that are testable off-road are those involved in accelerating, (including shifting gears), braking, turning corners, and backing. Exercises capable of assessing these skills have been devised using stanchions, traffic cones, painted lines, and in some facilities, traffic control devices such as stop signs, yield signs, and traffic lights. This form of off-road testing is more recognizable in motorcycle testing, where many Canadian jurisdictions conduct an off-road skills or basic handling assessment prior to allowing new riders on the road.

(3) Emergency Skills Testing

Permits assessment of emergency skills not safely assessed in a road test. The off-street environment offers an opportunity to assess skills in carrying out emergency maneuvers without interference from or risk to other road users. Important emergency maneuvers include maximum braking, evasive steering, and skid recovery. None of these skills are currently part of automobile licence testing.

Chapter 6: Simulation

The limitations of a road test as a measure of skill has stimulated interest in simulation although there is limited use in Canadian jurisdictions at this time. The potential benefits of simulation over road testing in the assessment of driving skills include:

Scope — in a few minutes, an applicant can be confronted with an array of highway traffic situations that it might take days or weeks to encounter on the road,

Uniformity — every applicant can be presented with the same situation, or situations that have been equated for difficulty,

Automation — the examiner performance recording, scoring and debriefing functions can be carried out automatically, and

Safety — applicants can be presented with hazardous conditions to which examiners may be reluctant to expose to an unlicenced driver.

As an adjunct to the licensing process, low-cost forms of simulation may have potential benefit in pre-screening drivers to (1) avoid testing unprepared and potentially dangerous applicants, (2) identify renewal or out of state applicants who may require road testing, (3) guide examiners in deciding on the nature and length of road testing, and (4) to help pinpoint the source of deficiencies among drivers performing poorly on the road test.

Simulators appropriate to assessment of driving skills fall into two categories: (a) interactive, in which drivers respond to simulated highway traffic scenes while the scenes change as a function of what the driver does and (b) non-interactive, in which the simulated scenes are prerecorded and remain the same no matter what the driver does. More specifically:

Interactive Simulation
An interactive simulation is one that people can actually "drive" in that simulated driving scenes change realistically as the driver operates the simulated controls.

Non-Interactive Simulation
In non-interactive simulation, drivers respond to recorded images of the scene ahead of the vehicle and that afforded by its mirrors. Since the images are pre-recorded, the scenes do not respond to what the driver does; thus, this type of simulation is limited for teaching or testing vehicle control skills.

Chapter 7: Motorcycles

In general, the above standards will apply where relevant. The domain and skill elements below are unique to road testing for motorcycles.

Standard	**Preparation** • Vehicle inspection • Motorcycle controls • Motorcycle riding gear **Motorcycle Control** • Getting under way and riding slowly **Motorcycle Operation** • Shift smoothly • Maintain directional control • Use of both brakes • Use of mirrors and head checks • Gap selection • Prevailing speed **Lane Positioning** • Visibility • Lane protection • Space cushioning • Escape route • Surface hazards • Stop position in lane **Turning** • Visual directional control • Speed management **Emergency Situations** • Quick stop • Obstacle avoidance

Rationale	The domain and skill elements captured in this standard are unique to road testing for motorcycles to ensure correct handling and safe riding.
Policy Guidelines	**Motorcycle Controls** • identification • operation **Getting Under Way and Riding Slowly** • smooth clutch control • balance and coordination ▪ using foot/feet balance ▪ visual directional control **Motorcycle Operation** • riding through and turning right and left at intersections • entering and leaving traffic • riding straight, on curves and hills **Shift Smoothly** • no missed shifts or gear grinding **Visibility** • being seen • seeing others **Speed Management** • lane/boundary violations **Parking** • at side of road • reverse stall

SCHEDULING ROAD RE-TESTS (MOTORCYCLES)

Where an individual fails their motorcycle road test, rescheduling a re-test is treated similarly to class 5 road re-testing. However, some jurisdictional practices differ from the rescheduling of motorcycle practical tests.

Standard	• Applicants who fail the road test are required to wait at least one week before being re-tested.
Rationale	Requiring a wait time provides applicants an opportunity to practice areas where they lack sufficient skill.
Policy Guidelines	

Chapter 8: Higher-Class Vehicles (Classes 1-4)

As above, relevant standard elements from the class 5 road test will be applied. The standard elements below are unique to commercial or higher classes of licences.

PRE-DRIVE VEHICLE CHECK

Standard	• Pre-drive vehicle checks will be in compliance with NSC 13 – Daily Vehicle Trip Inspection. • Vehicle elements to be checked: o signal and brake lights o headlights and horn working o brakes working, including air brakes o windshield (cracks and tinting) o seatbelts working o vehicle properly licenced and insured o emergency equipment
Rationale	The daily vehicle trip inspection standard (NSC 13) is intended to ensure early identification of vehicle problems and defects, and to prevent the operation of vehicles with conditions that are likely to cause or contribute to a collision or vehicle breakdown.
Policy Guidelines	Jurisdictions may check for proper seating, hand position and mirror adjustments. In addition, it is important to ensure that the gas tank or electric charge is sufficient to complete the road test.

ON-ROAD ASSESSMENT

Standard	• In addition to the applicable standard elements for passenger vehicles, the following are unique requirements for on-road testing for higher class licences: o backing up o starting and stopping smoothly o shifting gears o attention shifting (the ability to shift attention as needed, e.g., to the side, ahead, to mirrors) o attention sharing (the ability to control and maneuver a vehicle while attending to traffic controls and other road users)
Policy Guidelines	Parking manoeuvres are very important skills for higher class licensing, in particular for large commercial trucks. Parking may be assessed by using cones set up at a designated location for the backing-up or reverse maneuver. Jurisdictions should have policies in place to determine what constitutes a failure of the backing-up manoeuvre. This may include failing to sound the horn; failure to walk around before backing; making contact with an object; or, the examiner has to stop them from doing an unsafe maneuver.

ADMINISTRATIVE

Standard	• No internal cameras are allowed during the road test. • Except for training purposes and driver examiner performance evaluation, the only people allowed in a vehicle during a road test are the Driver Examiner and the customer.
Policy Guidelines	Electronic vehicle safety features such as lane departure warnings, electronic stability control, blind spot monitoring, are becoming more common not only in passenger vehicles, but commercial vehicles. For the purposes of driver licensing road tests, jurisdictions may limit their use in order to better assess the driver's skill in key areas. The length the road test is generally longer than for passenger vehicles or motorcycles given the added requirements to be assessed as a reflection of a higher standard for driving higher vehicles.

SCHEDULING ROAD RE-TESTS (CLASSES 1-4)

No Canadian jurisdiction currently has a maximum number of times that a road or skills test may be taken for any class of vehicle, including higher classes. However, the majority provide for a waiting time for higher class licensing road tests.

Standard	• Applicants who fail the road test are required to wait at least one week before being re-tested.
Rationale	Requiring a wait time provides applicants an opportunity to practice areas where they lack sufficient skill.
Policy Guidelines	

PART 4:

AIR BRAKE TESTING

Chapter 1: Introduction

Air brake systems are unique from hydraulic braking systems which are generally used in passenger vehicles. Air brakes are commonly found in larger, commercial vehicles because they are capable of stopping heavier vehicles safely. They use much greater force to apply the brakes than hydraulic braking systems and are more tolerant to small leaks which, in a hydraulic system, could result in brake failure.

As air brakes must be operated differently from more common hydraulic systems, drivers must have basic knowledge of proper operation and maintenance. They must also be able to perform required inspection of the air pressurization system prior to driving and make sure all tanks are in working order.

Chapter 2: Knowledge Test

Standard	• Applicants will have a valid driver licence prior to applying for an air brake endorsement • The following areas are included in an air brake knowledge test: o vehicle braking systems o air supply subsystem o air brake subsystems o foundation brakes o demands on brakes while driving o air brake compliance o inspecting air brake components o inspection air brake system operation o inspecting air brake adjustment o reporting requirements
Rationale	Air brake systems are unique from hydraulic brakes and require specific application, inspection and maintenance. Pressure is applied slowly, and air levels must be monitored at all times as a loss in air pressure will result in brake lockup.
Policy Guidelines	If you are driving a vehicle equipped with air brakes, it is important to understand how an air brake system works and how it compares to other vehicle braking systems. The knowledge and practical testing components are critical to ensuring that a driver understands how to safely operate an air brake system.

AIR BRAKE PRACTICAL ASSESSMENT

Standard	The following elements are tested as part of the air brake practical assessment: preparing the vehicle for inspection foundation brake components and chambers at each wheel brake drums or rotors at each wheel all accessible air lines air tanks and drain valves air compressors low-air warning device air pressure build-up time and air loss rate air-compressor governor settings tractor (towing vehicle) protection valve automatic application of the trailer spring brakes spring (parking/emergency) brakes
Rationale	Same as above for the knowledge test.

Policy Guidelines	Proper brake adjustment is important to your safety and that of other road users. Drivers of vehicles with air brakes should inspect brake adjustment regularly; commercial vehicles with airbrakes will be subject to relevant regulation such as NSC 13. When conducting an inspection of the air brake system, be sure to take the following precautions to avoid potential hazards: Park on a level surface to keep the vehicle from rolling. Inspection of the air brake system requires certain steps to be completed with the parking brakes released. A level surface will reduce the possibility of unexpected vehicle movement. Park away from traffic and other hazards to provide a safe work area around the vehicle to conduct the inspection. Turn off the engine. Moving parts within the engine compartment pose safety hazards, so inspections should always be performed with the engine stopped. Avoid getting in the direct path or immediate area of compressed air exhausting from air brake system components. During inspections, commercial vehicle drivers are required to report defective vehicle conditions as it is illegal to operate or drive a defective vehicle (NSC 13).

APPENDIX 1: REFERENCES

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APPENDIX II: ROAD TEST SCORING GUIDELINES

These guidelines are intended to provide additional information on assessing driver skills and knowledge during a road test. The driver may show a number of repeated mistakes, lack of knowledge and skill which would point to the need for further knowledge and/or skill development. The following section will guide you in consistent scoring of problems on the driving test.

BEGINNING THE TEST

Key Points
Carefully watch whether the driver checks all controls before setting the vehicle in motion (seat, mirrors, etc.). If the applicant checks traffic, then controls, then pulls out, he may be struck by a fast-moving vehicle that has come up while he was checking controls.

Points to Watch for
- Hand brake not released.
- Fails to check traffic in mirror and side window before starting.

SIGNALING INTENTION (General)

Signaling intention should be scored in connection with:

right turns and left turns into streets or driveways;
keeping in lane (score when changing lanes);
parallel parking, pulling out, slowing down;
starting, pulling away from the curb.

Points to Watch for:
- No signal given;
- Signaling combined with other operations;
- Signal changed or corrected.

CLUTCH (if applicable)

Key Points
Watch whether the driver constantly keeps foot on clutch pedal.

Points to Watch for:
- Clutch released in stopping when speed is 15 kph or over;
- Foot on clutch when not shifting (riding clutch);
- Engine stalls in stopping;
- Coasts downhill or around corners;
- Does not engage clutch smoothly;
- Clashes gears.
- Seat too far back to permit good brake pedal pressure, or too close;
- Unnecessary one-hand driving.

THE QUICK STOP (Skill Test)

To be done only if you are in doubt, re: driver or brakes. Have the driver depress brakes in response to a quick command to stop the vehicle (only when safe to do so).

Key Points
Look for following cars. Do not give the test where cars are parked on both sides of a narrow street. Applicant is liable to swerve or slide into parked vehicles. Do not give the test if the street is slippery or if the vehicle is loaded with loose objects.

Points to Watch for:
- Stopping distance
- Vehicle swerves considerably;
- Necessary to pump brakes;
- Vehicle turns sideways.

BACKING (Skill Test)

This is a skill problem in driving backwards in a straight line and is normally given immediately after the quick stop.

Instructions

"Please back straight down the street just as if you were backing down a driveway."

Key Points
Give full credit for use of outside mirror on vehicles in which it is not practical to look back, if mirror is adjusted properly and vision not obscured. Make certain it is safe to back before you tell the driver to do so.

Points to Watch for:
- Backing too fast;
- Does not look back all the time while backing, but looks ahead and coasts last five feet;
- Opens door and leans out of vehicle to look back while vehicle is in motion;
- Uses mirror to back instead of turning head to look back through rear window;
- Fails to check traffic to left before starting to back;
- Backs into curb or across center of road.

PARALLEL PARKING (Skill Test)

This tests the driver's judgment and ability to park parallel to the curb.

Instructions

"In the middle of the next block, I would like you to pull up beside that green vehicle and then park behind it as if you were parking in a space between two cars."

Points to Watch for:

- Uses rear-view mirror to back instead of looking out through window;
- Bumps other cars sharply;
- Leaves vehicle more than 45 centimetres from the curb;
- Backs over curb;
- When leaving space, fails to check traffic.

SPEED AND BRAKING (General)

Key Points

Observe especially smoothness of operation. Hesitation and uncertainty are indications that habits have not been completely formed.

Points to Watch for:

- Stops very abruptly and starts with a jerk. Score "jerky starts" under "clutch";
- Hesitates as though timid or uncertain of what to do. Good drivers should not have to think through simple operations;
- Races engine before starting or vehicle standing;
- Stops and starts while shifting or when not necessary;
- Hurries or seems to be trying to get through quickly;
- Exceeds speed limit.

POSITION IN ROAD

This is an observation made in connection with other problems. A feeling for position in the roadway is an important part of good driving.

Key Points

Score as part of turning or keeping lanes.

Points to Watch for:

- Straddles lane lines on right half of road;
- Straddles center line (except when passing);
- Bumps or scrapes the curb or runs off the pavement where there is no curb;
- Swings wide or cuts corners when turning left or right;
- Moves into wrong lane for left or right turn;
- Blocks crosswalk when stopping for signal, sign or traffic.

STOP ON UPGRADE (Skill Test)

This is to find out the driver's ability to safely control his vehicle on a grade.

Instructions

"As you drive up this hill, pull over to the side and park your vehicle parallel to the curb near the telephone pole (or some other landmark) as if you were going to leave it there for a short time."

Points to Watch for:

- Hand brake not set;
- Ignition not turned off;
- Front wheels not cramped properly;
- Gears not properly set;
- Vehicle rolls back;
- Leaves vehicle more than 18 inches from curb.

START ON GRADE (Skill Test)

This test is to find out the driver's ability to control his vehicle and start without rolling back.

Instructions

The test can be combined with the parts on an upgrade by having the driver start again after parking.

Key Points

Watch the driver's hand and foot work (if applicable). Watch carefully to see if he checks traffic before pulling out into the traffic lane.

Points to Watch for :

- Rolls back;
- Stalls engine;
- Does not release hand brake before starting;
- Looks back in mirror rather than out through window for traffic behind.

TRAFFIC SIGNALS (Traffic)

This observation is to determine whether the driver understands and watches traffic lights.

Key Points

If no lights are available, question the driver as to the meaning and location of lights, but do not score.

Points to Watch for:

- Stops across crosswalk;
- Brakes suddenly because he failed to anticipate light changing;
- Straddles lanes in stopping;
- Stops in intersection;
- Intersection is entered on amber or red light;
- Fails to make full stop on right turn at red light where such turn is permitted.

STOP SIGN (Traffic)

This observation is to find out whether the driver looks for traffic control devices and makes use of them.

Key Points
Be careful when directing applicant. You may have told him earlier to go "straight through" and he may interpret your remarks to mean to go straight through without stopping.

Points to Watch for:
- Stops across marked crosswalk, or stops blocking waiting pedestrians;
- Straddles lane at stop sign;
- Neglects to look in all directions before starting;
- Fails to come to complete stop;
- Fails to notice stop sign.

RIGHT TURNS (Traffic)

This test is to find out whether the driver can exercise the required skill and judgment to perform a right turn.

Key points
Score off for turning from wrong lane only if the driver's vehicle is far enough to the left to permit a vehicle to overtake on the right.

Points to Watch for:
- Signal not given soon enough;
- Signal indistinct or too brief;
- Signal continued after turn is begun (manual);
- Driver fails to get into proper lane in time;
- Climbs curb when turning;
- Goes into turn too fast and has to apply brakes in turn;
- Turns into wrong lane;
- Coasts with clutch disengaged on turn;
- Has to shift to lower gear after starting turn;
- Turns from wrong lane;
- Crowds other cars to get into lane;
- Swings wide on turn.

LEFT TURNS (Traffic)

Instructions

Similar to those for right turn.

Key Points
Score off for turning from wrong lane only if driver's vehicle is far enough from the center to encourage overtaking on left or suggest that a right turn is to be made.

Points to Watch for:
- Signal not given soon enough;
- Signal indistinct or too brief;
- Signal continued after turn is begun (manual);
- Driver fails to get into proper lane in time;
- Goes into turn too fast and has to apply brakes in the turn;
- Turns into wrong lane;
- Coasts with clutch disengaged on turn;
- Has to shift to lower gear after starting turn;
- Swings wide or cuts corners;
- Turns from wrong lane;
- Crowds other vehicles to get into lane.

ATTENTION AND DISTRACTION (Traffic)

Key Points
Do not score off for failure to follow instructions which are not clearly given or understood. Watch whether the driver "glues" his eyes to the road or whether he glances to the right and left occasionally.

Points to Watch for:
- Doesn't follow instructions on where to go or what to do;
- Considerably irrelevant conversation;
- Takes eyes off the road to talk or make vehicle adjustments for more than one second at a time.

KEEPING LANE (Traffic)

This observation is made for the purpose of finding out whether the driver keeps his vehicle where it belongs, and whether he respects other drivers.

Key Points
Do not score off for failure to drift over to the right lane in business and residential areas where there are parked vehicles. Be careful on scoring to observe whether the driver drives too closely to parked vehicles.

Points to Watch for:
- Straddles lane when it is clearly marked;
- Drives unnecessarily close to vehicles parked on the right;
- Crosses center line when not overtaking;
- At intersection, going straight ahead, straddles lanes and takes up space which could be used by another vehicle;
- Changes unnecessarily from one lane to another.

FOLLOWING (Traffic)

This observation is made to determine how well the driver judges' distance and speed, and whether he makes efficient use of street area.

Key Points
Pay careful attention to following when streets are wet or slippery. Note whether driver, in following, looks ahead to study traffic. Note also whether he follows so closely that he cannot see traffic signs on the right, or whether he "blindly" follows other vehicles.

Points to Watch for:
- Follows so closely that he would not be able to stop in time in an emergency.
- Does not look ahead or around vehicle in front because he is too close.

OVERTAKING (Traffic)

This observation is made, when possible, to find out whether the driver has his vehicle under control, whether he can estimate the speed of other vehicles, and whether he chooses the proper time and place to overtake.

Key Points
Watch driver's confidence as to his ability to overtake, whether he hesitates and then speeds up or makes overtaking more in one steady operation.

Points to Watch for:
- Misjudges speed of oncoming traffic and must pull back into lane.
- Starts to overtake in wrong place, such as when a double-parked vehicle is nearby.
- Cuts in too sharply after overtaking.
- Does not check traffic behind before overtaking.
- No arm or mechanical signal to following cars of intention to change lanes.
- Overtakes on right in violation of law.

USE OF HORN (Traffic)

This observation is made to find out if the driver makes use of horn as safety device or whether he uses it to demand right of way.

Key Points
Do not suggest use of horn but simply watch performance. Note difference between a "blast" and a "beep".

Points to Watch for:
- Fails to warn inattentive pedestrian, or in overtaking.
- Blows horn in going through intersection.
- Uses horn to hurry driver waiting at an intersection.

BEING OVERTAKEN (Traffic)

This observation is made to determine whether the driver shares the street with other highway users.

Key Points
Observe, if possible, whether the driver slows down when the driver behind has signaled that he is about to overtake.

Points to Watch for:
- Fails to give way to right on signal from vehicle overtaking on left.
- Speed is not decreased.

APPROACH TO CORNER (Traffic)

This observation is made to see if the driver is one who anticipates danger in time to do what is necessary.

Key points
Watch whether the driver looks in both directions, and whether he takes an additional look at the left. Watch speed to see if the driver could stop in time if he had to.

Points to Watch for:
- Does not look sufficiently well in all directions to find out what traffic may be coming.
- Stops before entering intersection although there is no stop signs and no traffic going through.
- Has to slow down by applying brakes after he has entered intersection.

RIGHT OF WAY (Traffic)

This observation is made to find out whether the driver shares the road equally with other drivers.

Key Points
Try to find out whether the driver "bluffs" for the right of way even though he may be legally entitled to it. This applies to the right of way of both pedestrians and vehicles.

Points to Watch for:
- Edges too close to pedestrian in crosswalk and gives appearance of demanding the right of way.
- Is overly aggressive in taking right of way even though legally within the law.
- Other cars are forced to stop suddenly because of his failure to grant right of way.

APPENDIX III: JURISDICTIONAL PRACTICES – 2018

Part 2 Knowledge Testing (Chapter 2 Test Construction)

Content

Standard	• To the fullest extent possible, the test items should be drawn from all knowledge domains which contain information on all key driver licensing requirements, as identified in this standard.
Jurisdictional Practices	Most Canadian jurisdictions draw their questions from a manual or guide where available.

Item Format

Standard	• Testing items to be structured as multiple-choice, following the guidelines below.
Jurisdictional Practices	Most Canadian jurisdictions primarily use multiple choice with limited true/false and communigraphic style questions.

Wording of Items

Standard	• Items should be worded to maximize the likelihood that applicants who know the answer will answer the item correctly and those who do not know it will answer incorrectly (validity).
Jurisdictional Practices	None

Determining the Questions

Standard	• Pass/fail rates to be reviewed to maintain the accuracy and fairness of the test.
Jurisdictional Practices	None

Evaluating Knowledge Tests

Standard	• A minimum of 80% is required to pass a knowledge test.
Jurisdictional Practices	Most Canadian jurisdictions have a minimum 80% pass threshold for their knowledge tests for all classes.

Reading Impairment

Standard	• Jurisdictions will have policies in place to address requirements for oral testing.
Jurisdictional Practices	BC (class 5-8 only), Alberta, Saskatchewan, Manitoba, Ontario, Que, NT and the Yukon all provide some level of oral knowledge testing. Manitoba, New Brunswick and Ontario offer one-on-one oral tests in English or French where the questions will be read to the customer by a staff member. In Manitoba, the customer can request one of these tests once they have attempted the knowledge test at least twice, with at least one attempt via computer. In Ontario, an applicant can request the oral test right away. In New Brunswick, an oral test can be requested when scheduling appointment.

Foreign Language Testing

Standard	• Policies and processes should be in place to ensure the integrity of the translation process and outcomes, to ensure the equitable testing of foreign-speaking applicants, and to prevent cheating (**see following section**).
Jurisdictional Practices	In BC, classes 5-8 are available in English, French, Cantonese, Mandarin, Punjabi, Croatian, Farsi, Arabic, Russian, Vietnamese, Spanish. Commercial class knowledge tests are taken in English only. In Alberta, tests are available in 25 languages including Arabic, Chinese (Traditional), English, Farsi, French, Hindi, Punjabi, Spanish, Tagalog (Philippines), and Vietnamese. Saskatchewan uses Google translate for over 100 languages. However, it has been found that accuracy varies with the language. Manitoba provides knowledge tests in Amharic, Arabic, Bosnian, Simplified Chinese, Cree, Croatian, Czech, Farsi, German (High), Hindi, Hungarian, Italian, Khmer/Cambodian, Korean, Kurdish, Lao, Polish, Portuguese, Punjabi, Romanian, Russian, Saulteaux, Serbian, Spanish, Tagalog, Ukrainian, and Vietnamese. Ontario makes knowledge tests available in over 20 languages including English and French. Quebec's knowledge tests are available in English, French, Arabic, Mandarin, and Spanish. Both NT and Yukon offer knowledge tests in English and French only.

Standard	• Language translators used for knowledge testing will be approved by the jurisdiction. • Interpreters for the deaf and hard of hearing used for knowledge testing will be approved by the jurisdiction. • Jurisdictions will have policies in place to address the risks and consequences of cheating.
Jurisdictional Practices	Most jurisdictions provide some level of translation or interpreter services for applicants who are impaired by a language barrier. In B.C., interpreters and translators provide different services. An interpreter is able to interpret a knowledge test and a translator can translate documents such as a licence or driving record. Manitoba offers recorded oral tests when the customer's preferred language is not available in electronic or paper format, or if they have attempted the knowledge test at least twice, with at least one attempt via computer. The customer provides the interpreter. The test is monitored and recorded by a Service Centre staff member. The interpreter reads the questions and answers from a computer- generated paper test. If the customer passes the test, the recording and the paper test are sent to a certified interpreter for auditing. For class 5 tests, there is no additional charge for this service. In Alberta, effective November 10, 2017, changes were made to the Translator Identification Number (TIN) Program. There are now requirements for registering with Alberta Transportation to provide sight translation of Class 3, 6 and 7 driver's licence knowledge tests. The following documents are required, in addition to an application form: • Criminal Record Check including a vulnerable sector check, provided by a law enforcement agency and dated within 90 days of the date of TIN application • Signed and witnessed Code of Conduct (available at http://www.transportation.alberta.ca/531.htm) • Proof of language aptitude for each language to be translated (except English): i. CILISAT test results for languages listed at www.cisoc.net/en/cilisat ii. Special Investigations Unit (SIU) interview and approval within the past five (5) years of the date of TIN application for languages NOT listed at www.cisoc.net/en/cilisat • Proof of affiliation with one of Alberta Transportation's Approved Translator Organizations (list available at http://www.transportation.alberta.ca/531.htm) OR proof of employment by a Service Alberta Registry Agency All successful applicants receive a Letter of Approval citing a new Translator Identification Number. All new TINs will automatically expire in two (2) years from

	the date on the Letter of Approval. It is the responsibility of the TIN holder to provide renewal documents at least 30 days before the TIN expiry date. In Ontario, an approved interpreter must be employed (or have been employed) in interpreter services, be a member (or have been a member) of a professional association that provides interpreter services or be an experienced interpreter who is a member of the clergy. For the central, Greater Toronto Area (GTA), and eastern regions of Ontario, approved interpreters must be members of a provincial association that provides accreditation or certification or be accredited by a provincial or federal government. Interpreters must provide proof of qualification. BC, Saskatchewan, Manitoba, Ontario, and the Yukon allow interpreters for the deaf and hard of hearing.

Part 2 Knowledge Testing (Chapter 3 Testing Administration)

Test Security, Fraud Prevention and Cheating

Standard	• Questions for all forms of knowledge test will be randomly assigned. • Written versions of the test will remain with the licensing or testing authority and not the applicant. • Jurisdictions will have policies in place for consequences of cheating on knowledge tests. • Unapproved electronic devices are not to be used during the test.
Jurisdictional Practices	BC has a number of policies to reduce the potential for cheating: • Have the examinee complete the test at a kiosk, or table within view of staff. • Carefully check identification documents, reference dictionaries, and signatures. • Ensure the examinee understands that no conversation is allowed. • Ensure that the examinee understands that the test is “closed-book” (i.e., they cannot look up the answers in the *RoadSense for Drivers/Riders* or any other reference book while taking the test). • Keep paper tests in a secure place. Dispose of any used tests in a secure manner. In BC, individuals caught cheating on a knowledge test for the first time are subject to a 30-day prohibition from re-taking the test. A second infraction results in a 60-day prohibition.

Scheduling Knowledge Re-tests

Standard	• Applicants who fail the knowledge test are required to wait at least one day before being re-tested.
Jurisdictional Practices	Most jurisdictions have a waiting period before an applicant can re-take the knowledge test. Both BC and Manitoba have a 7 day wait period for GDL applicants. Quebec has a 28-day waiting period. No Canadian jurisdiction currently has a maximum number of times that the test may be written. Like Canada, US states do not have consistent policies with respect to when a re-test can be taken. North Carolina requires waiting five business days before trying again. Ohio has a seven-day waiting period. California allows you to take the written test up to three times in one day. The waiting period in Tennessee depends on the score, which, at worst, could last 30 days. An older study done by CIECA of European jurisdictions, also recognized the differences in waiting periods for theory (knowledge) testing across countries. While it didn't specify a desired waiting time, the study recommended a waiting period between theory (knowledge) tests of between 3 and 7 days.[22]

Part 2 Knowledge Testing (Chapter 4 Higher Class Vehicles Classes 1-4)

Standard	• If permitted, above standards for passenger vehicles should be an absolute minimum and compliance monitoring strictly adhered to.
Jurisdictional Practices	Oral testing is permitted in English and French in Saskatchewan, Manitoba, Ontario, Quebec, the Yukon and New Brunswick. In addition, BC and Alberta allow for translators in English only, for those who are dyslexic and hearing impaired.

Foreign Languages and Use of Translators & Interpreters

Standard	• Translators used for knowledge testing will be approved by the jurisdiction.
Jurisdictional Practices	Eight jurisdictions (Manitoba, Ontario, New Brunswick, Nunavut, Quebec, Yukon, Saskatchewan and the Northwest Territories) currently allow for translation of knowledge tests.

[22] International Commission for Driver Testing. (1998). *Report on the Theoretical Test.* Brussels: CIECA. http://www.cieca.eu/sites/default/files/documents/projects_and_studies/ConclCatBtheoryEn_1.pdf

Part 3 Performance Testing (Chapter 2 Road Test)

Administration

Standard	• Driver has valid and appropriate driver licence. • Vehicle is properly registered and insured. • All other legal requirements and conditions are met prior to beginning the road test. • An individual will not be permitted to begin a road test where a driver examiner reasonably believes that the applicant is impaired by drugs or alcohol.
Jurisdictional Practices	Most jurisdictions including Ontario, Quebec, New Brunswick, Manitoba, Saskatchewan, Alberta and B.C. do not allow anyone except the driver examiner in the vehicle during the road test with the exception of staff for training and evaluation. Alberta and Manitoba allow translators and interpreters at the beginning and end of test but not on road.

Vehicle Check

Standard	• Road test vehicles must be inspected prior to commencing a road test and deemed safe and legal for on-road driving. Inspections must be completed by a certified or jurisdictionally approved driver examiner.
Jurisdictional Practices	BC's guidelines state that the vehicle must be capable of getting through the road test route without breaking down and must have no obvious defects that are likely to cause a peace officer to pull the vehicle over during the road test. A Road Test Vehicle Defects form MV2040 is to be completed where certain minor vehicle defects such as a cracked windshield or missing front licence plate are discovered prior to conducting a road test. The examinee will be required to sign the form to acknowledge that they are willing to continue with the road test, knowing that should the vehicle be stopped by law enforcement, a violation ticket may be issued

Skill Categories

Standard	Required skills in each category: *Attentional Skills* • Attention-sharing - Controlling and maneuvering a vehicle while attending to traffic controls and other road users (search, signaling, space management) • Attention shifting - Shifting attention as needed (ahead, to the side, and to mirrors, observation checking and visual scanning) *Perceptual Skills*

	• Spatial judgment - Judging the nature and magnitude of changes in speed and direction of other road users • Gap judgment - Judging the adequacy of gaps when merging, crossing, or entering traffic • Distance judgment - Judging the adequacy of distance of an oncoming vehicle when passing • Hazard detection - Detecting hazards; characteristics and movement of other road users in the roadway environment, for example, pedestrians, cyclists, emergency vehicles and potholes. *Motor Skills* • Acceleration - Regulating pedal force to accelerate on level and inclined surfaces. • Shifting - Coordinating clutch, accelerator, and shift lever if manual transmission is used. • Maintaining speed - Regulating accelerator force in order to maintain a steady speed • Lane keeping - Coordinating speed and steering in order to keep the vehicle position within lane on straight and curved paths. • Turning - Coordinating speed and steering when turning corners; left and right-hand turns. • Slowing - Regulating brake and accelerator to reduce speed • Stopping - Coordinating brake, accelerator (and clutch) to bring the vehicle to a stop at a given point • Backing - All of the above in moving the vehicle backward • Adjusting to limited traction - All of the above when operating on slippery surfaces • Parking - On level surfaces, on hills, between vehicles
Jurisdictional Practices	In Ontario, if there is no hill available to assess parking, applicants will be asked to park as if they were situated on a hill. The 2nd level test in Ontario includes freeway driving. The applicant will be asked if they have practiced and if they haven't then they may not be allowed to continue with the test.

Route Selection

Standard	• Number of routes - Several routes should be devised for each licence testing location.
Jurisdictional Practices	None

Termination of Road Test

Standard	**Disqualifying Situations:** • serious violations of traffic law such as speeding, careless driving, crossing double lines, not stopping at a stop sign • acts that endanger the driver examiner or the public • examiner intervention • a crash • lack of cooperation, aggressive/threatening/abusive (physical and/or verbal) behaviour toward driver examiner or refusal to perform a requested manoeuvre • offering bribes or a "gratuity"
Jurisdictional Practices	Most Canadian jurisdictions have policies in place that reflect the standard elements above.

Part 3 Performance Testing (Chapter 4 Scheduling Road Re-Tests)

Standard	• Applicants who fail the road test are required to wait at least one week before being re-tested.
Jurisdictional Practices	the majority of jurisdiction have policies on when a road test may be re-taken: British Columbia — 1st failure - 14 days; 2nd failure - 30 days; 3rd failure - 60 days Alberta — once per day Saskatchewan — 2 weeks Manitoba — 14 days Ontario — 10 days Quebec — 28 days New Brunswick — 1st fail - 1 week; 2nd fail - 2 weeks; 3rd & subsequent fails - 3 weeks Prince Edward Island — 2 weeks/14 days Yukon — GDL - 1 month; Non-GDL - 1 week Northwest Territories — Same as Yukon In the Yukon, the waiting period may be extended to two or more weeks at the examiner's discretion depending on driving skills on the first road test. In P.E.I., if the driver examiner feels at any time, on any test, that the client requires further training outside of the two-week waiting period then they are asked to complete a training course. Client must show proof of completion of training course before client is booked for next road test.

Part 3 Performance Testing (Chapter 6 Motorcycles)

Standard	**Preparation** • Vehicle inspection • Motorcycle controls • Motorcycle riding gear **Motorcycle Control** • Getting under way and riding slowly **Motorcycle Operation** • Shift smoothly • Maintain directional control • Use of both brakes • Use of mirrors and head checks • Gap selection • Prevailing speed **Lane Positioning** • Visibility • Lane protection • Space cushioning • Escape route • Surface hazards • Stop position in lane **Turning** • Visual directional control • Speed management **Emergency Situations** • Quick stop • Obstacle avoidance
Jurisdictional Practices	Most jurisdictions assess for observational skills and hazard perception. This is somewhat unique for motorcycles in that what may not be a hazard in a passenger or higher-class vehicle, may well be a hazard for a motorcycle, for example, small potholes, pointed road lines, oil in the lane, manhole covers, etc.

Scheduling Road Re-tests (motorcycles)

Standard	• Applicants who fail the road test are required to wait at least one week before being re-tested.
Jurisdictional Practices	Ontario - provides a 3-day waiting period for motorcycle road re-tests. Quebec - if an applicant fails the motorcycle closed track test, they must wait 14 days to re-test. Failure of the on-road motorcycle test results in a 56 day wait period

Part 3 Performance Testing (Chapter 8 Higher-Class Vehicles Classes 1-4)

Pre-drive Vehicle Check

Standard	• Pre-drive vehicle checks will be in compliance with NSC 13 – Daily Vehicle Trip Inspection. • Vehicle elements to be checked: o signal and brake lights o headlights and horn working o brakes working, including air brakes o windshield (cracks and tinting) o seatbelts working o vehicle properly licenced and insured o emergency equipment
Jurisdictional Practices	Given that the requirements for NSC 13 are detailed, it is expected that jurisdictional practices would be consistent with that standard.

On-road Assessment

Standard	• In addition to the applicable standard elements for passenger vehicles, the following are unique requirements for on-road testing for higher class licences: o backing up o starting and stopping smoothly o shifting gears o attention shifting (the ability to shift attention as needed, e.g., to the side, ahead, to mirrors) o attention sharing (the ability to control and maneuver a vehicle while attending to traffic controls and other road users)
Jurisdictional Practices	While many jurisdictions have a time limit for backing up manoeuvre, some do not. At least three jurisdictions provide a maximum number of tries (i.e., three).

Administrative

Standard	• No internal cameras are allowed during the road test. • Except for training purposes and driver examiner performance evaluation, the only people allowed in a vehicle during a road test are the Driver Examiner and the customer.
Jurisdictional Practices	Parking assist technologies have been addressed by some jurisdictions. In most cases they may not be used at all and alternately, they may only be used as an additional tool.

Scheduling Road Re-tests (class 1-4)

Standard	• Applicants who fail the road test are required to wait at least one week before being re-tested.
Jurisdictional Practices	The majority of Canadian jurisdictions do have policies on when a higher-class road test may be re-taken: British Columbia: pre-trip inspection & motorcycle skills test 7 days Passenger vehicle, motorcycle and heavy trailer road test 1st time - 14 days 2nd time - 30 days 3rd time - 60 days Commercial road test 1st time - 14 days 2nd time - 30 days Alberta 1 day Saskatchewan 1 day (can be extended) Manitoba next day Ontario 10 days Quebec 7 days New Brunswick 1st fail - 1 weeks 2nd fail - 2 weeks 3rd and subsequent fails – 3 weeks Prince Edward Island 2 weeks/14 days Yukon 1-2 weeks or more depending on the driving skills displayed during the first road test

Part 4 Air Brake Testing (Chapter 2 Knowledge Test)

Standard	• Applicants will have a valid driver licence prior to applying for an air brake endorsement • The following areas are included in an air brake knowledge test: ○ vehicle braking systems ○ air supply subsystem ○ air brake subsystems ○ foundation brakes ○ demands on brakes while driving ○ air brake compliance ○ inspecting air brake components ○ inspection air brake system operation ○ inspecting air brake adjustment ○ reporting requirements
Jurisdictional Practices	Some jurisdictions allow for acquisition of an air brake endorsement for drivers with a novice licence.

	Several jurisdictions provide different approaches based on class of licence or vehicle to be operated. Some jurisdictions allow for third party testing for air brake endorsements based on a standardized curriculum and assessment process. Alberta and Manitoba have an exemption for 2 axle, single vehicles registered as a farm vehicle. An air brake course is required by some jurisdictions (Alberta).

Air brake practical assessment

Standard	The following elements are tested as part of the air brake practical assessment: ○ preparing the vehicle for inspection ○ foundation brake components and chambers at each wheel ○ brake drums or rotors at each wheel ○ all accessible air lines ○ air tanks and drain valves ○ air compressors ○ low-air warning device ○ air pressure build-up time and air loss rate ○ air-compressor governor settings ○ tractor (towing vehicle) protection valve ○ automatic application of the trailer spring brakes ○ spring (parking/emergency) brakes
Jurisdictional Practices	Some provinces have a requirement for applicants to bring specified equipment to the practical test, for example, Ontario requires wheel chocks, a watch, and a device for measuring the pushrods (among other things). Alberta requires the third-party tester to bring a tow vehicle which can be a tractor or body job coupled to an air brake trailer and device for holding a service brake application to check the brake adjustment.

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Canadian Council of Motor Transport Administrators
Conseil canadien des administrateurs en transport motorisé

National Safety Code

Standard 3: Driver Examiner Training and Testing

January 2020
ISBN: 978-1-927993-52-1

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FOREWARD

The purpose of this standard is to ensure that applicants possess the fundamental knowledge and skills for driver examiner training and testing for:

- Passenger vehicles
- Commercial or higher-class vehicles, and
- Motorcycles
- Medically at-risk drivers

Driver examiner standards assist in ensuring that examiners have met the minimum knowledge and skills training requirements for conducting licensing tests, with a focus on road and practical testing. Quality training and education is seen to contribute to the safety of individual drivers and the public on our roads. Training supports the professional driver licensing examiner; assuring the public, government, and the clients it serves, of the competence and quality of the practitioners in the field.

This standard has been developed based on a number of objectives:

- To establish uniform performance standards for driver examiners.
- To facilitate consistent driver examination across Canada.
- To establish a system to ensure that driver examiners have and maintain the capability to perform their jobs competently.

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BACKGROUND

Principles

The concept of "principle" generally describes rules, norms, or values that guide or describe desirable behaviours for an individual or group.[1] Principles are statements intended to guide the ways things are done by individuals and organizations, what is done and why.

A number of principles have been articulated throughout the National Safety Code (NSC) as well as the national road safety strategy. The principles below apply to NSC 3:

- NSC standard 3 has been developed to promote consistency, harmonization and road safety across Canadian jurisdictions.
- Contributes to a safe systems approach to road safety with its focus on the validity and integrity of driver examiner training.
- Reflects an evidence-based approach to requirements, policies and guidelines based on global expertise and best available evidence.
- Standards are developed through an inclusive and consultative process.
- Superior, training standards help ensure the integrity of the driver licensing system and are important because of the need to be able to judge other peoples' driving capabilities.
- The professionalism of driver examiners is reflected in the requirements for considerable skill in assessment, communication, exercising judgement, and hazard perception.
- Driver Examiners are required to commit to upholding a Code of Conduct.

These principles are to be broadly construed when applying the standards and policies within a jurisdiction; providing direction and flexibility in how road safety goals can be achieved.

[1] Merriam-Webster defines principle in a number of ways, the most relevant being "a fundamental doctrine or assumption", a "rule or code of conduct" (www.merriam-webster.com/dictionary/principle). The Cambridge Dictionary (http://dictionary.combridge.org/dictionary/english/principle) describes principles as fundamental norms, rules, or values that represent what is desirable and positive for a group, organization, or community. The online Oxford Dictionaries (www.oxforddictionaries.com/definition/english/principle) says a principle is a "rule or belief governing one's behaviour" while the MacMillan Dictionary defines principle as a basic belief, theory, or rule that has a major influence on the way in which something is done (http://www.macmillandictionary.com/dictionary/british/principle).

Structure of the Standard

NSC standard 3 contains:

1. An introduction which provides context for the standard, its interpretation and application.
2. The standard – a statement that clearly defines a minimal technical specification.[2]
3. Rationale – statements that explain the policy rationale and evidence to support the standard; and define overall goals, benefits and outcomes of an intended action, approach or strategic direction. The rationale provides policy context to support the standard's implementation.

Use of the Standard

It is expected that all Canadian jurisdictions will adopt the NSC standards as a reference. While the NSC standards imply a minimum, there is no constraint on jurisdictions going beyond this specification. In addition, a rationale is provided for the standards to help jurisdictions understand why an element is included. Finally, jurisdiction practices are included as a reference point for understanding different requirements that exist.

The authority for the CCMTA standards

Canadian Council of Motor Transport Administrators

The Canadian Council of Motor Transport Administrators (CCMTA) coordinates all matters dealing with the administration, regulation and control of motor vehicle transportation and highway safety. Membership includes representation from provincial and territorial governments as well as the federal government of Canada.

CCMTA supports its members' vision to have the safest and most efficient movement of people and goods by road in the world. We are the custodians of the National Safety Code, and we provide collaborative leadership in the areas of Road Safety Research and Policy, Drivers and Vehicles and Compliance and Regulatory Affairs.

Vision
To have the safest and most efficient movement of people and goods by road in the world.

Mission
To provide collaborative leadership in addressing Canadian road safety priorities.

[2] Adapted from Policy Positions of the AAMVA, 2016.

History

The origins of the CCMTA can be traced back to 1940, when the four Western provinces met to consider issues of common interest relating to road transport. In the early fifties, the group was joined by Ontario and the Yukon Territory. The Canada-wide expansion of the organization took place in 1956, some two years after the enactment of the Motor Vehicle Transport Act by Parliament, in response to an already felt need for uniformity due to increasing movement and traffic.

In 1975 a constitution was signed by representatives of all provinces and territories and a small permanent Secretariat was established. The federal government has participated as a full member of CCMTA since 1977. The organization was incorporated in 1987 under its present name and constitution. CCMTA commemorated its 75th anniversary in 2015.

CCMTA Members are elected from provincial, territorial and federal governments. CCMTA has a responsibility to be accountable to:

- the Council of Deputy Ministers and Ministers for:
    - providing advice and making recommendations on matters relating to transportation and highway safety
- the provinces, territories and the federal government for:
    - promoting a better understanding and cooperation in all matters related to transportation and highway safety among each other, as well as other organizations where there exists a mutual interest
- its stakeholders for:
    - maintaining an ongoing dialogue and consultation to ensure CCMTA is responsive and informative

The relationship between individual Canadian jurisdictions' examiner training and testing models and the CCMTA standards

All Canadian provinces and territories have the authority to establish their own standards and requirements for examiner training and testing. This National Safety Code (NSC) standard is intended to facilitate a level of uniformity among the provinces and territories, that supports a harmonized approach to driver examiner training and testing, is consistent with Canadian principles of labour and driver mobility and enhancing road safety pursuant to Canada's Road Safety Strategy 2025.

PART 1:

A MODEL FOR DRIVER EXAMINER TRAINING AND TESTING

Chapter 1: Introduction

This part provides the standards and policy guidance for driver examiners across Canada. The standard focuses on general requirements for driver examiners, training and testing. A national standard for driver examiners is intended to help jurisdictions achieve uniformly high quality for conducting licensing tests by requiring minimum knowledge and skills. Quality training, education and assessment contributes to the safety of individual drivers on Canada's roads.

Chapter 2: Definitions

Knowledge test: means of testing an individual's knowledge of information required to operate vehicles safely, rules of the road, potential hazards, signs and signals. Testing may be done with paper and pencil, electronic/computer or verbal methods.

Practical test: practical testing, while sometimes seen as synonymous with road testing, is a broader category which may include assessments of vehicle functions, pre-trip inspections, and air brake inspections as well as the use of varying technology such as computers and simulators.

Road test: means a road test conducted by a government authorized driver-examiner. Standard road tests were traditionally designed for assessing driving skill. They may be used, however, to test for related skills such as hazard perception and, under certain circumstances, to assess motor and sensory functional ability to drive.

Driver examiner: A driver examiner (DE) is an individual who is authorized by a jurisdiction to conduct assessments, tests and evaluations in order to determine licensure.

Chapter 3: Chapter Template

Below is the template used for the driver examiner standards. It is annotated to explain what type of information is found in each section of the template. The standard provides the minimum requirements for driver examiners. Jurisdictions may have higher standards by imposing additional requirements to enhance safety outcomes, for example, additional areas for training and testing.

Jurisdictions may have additional requirements and practices considered beneficial in their context. Appendix II describes best practices as of December 31, 2018 that may be considered by other jurisdictions.

Standard	The requirements that must be met for a specified element of knowledge or road testing.
Rationale	A brief description of the rationale for the requirements.
Policy Guidelines	Provide more details on the application of the standard element, including procedures.

PART 2:

DRIVER EXAMINER REQUIREMENTS

Chapter 1: Introduction

The original objectives of this standard in the National Safety Code are still relevant in that they establish behavioural and performance standards for driver examiners. What is missing are any provisions for pre-requisites and for maintaining the capability to competently perform driver licensing assessments. This is particularly important as the road safety context, laws and policies change along with evolving technologies and safety science.

Superior driving skills are considered an important requirement for getting access to driver examiner training because of the need to be able to judge other peoples' driving capabilities.[3] *The Commission Internationale des Examens de Conduite Automobile (CIECA)* experts determined that having a driver licence over a period of time is one indicator of potentially good driving skills. However, having a licence does not necessarily mean the licence holder has sufficient experience. Many jurisdictions, then, have adopted a dual approach to assessing the capacity of driver examiners: a required length of driving experience (e.g., 5 years with a full class licence) and some form of test or assessment.

[3] Commission Internationale des Examens de Conduite Automobile (CIEC). (1998). *Training of the examiner.* Brussels: CIECA.

Chapter 2: Passenger Vehicles

MINIMUM REQUIREMENTS FOR DRIVER EXAMINERS

Standard	• must hold a valid, full class passenger vehicle (or equivalent) driver licence for a minimum of 2 years • must have an acceptable driving record for 2 years prior to being authorized to conduct driver licensing assessments • successfully complete specified training (see below for training standard elements) • pass a test/assessment/evaluation on required knowledge and skill elements • complete a criminal record, background or other mandatory check prior to certification or granting of authority to conduct assessments • ensure that they are up to date on laws, policies, and practices, etc., related to their roles in their current jurisdiction
Rationale	A person authorized to conduct tests and assessments for a driver licence should be able to drive to a consistently high standard. They should also have higher level of theoretical and practical knowledge of driving ability than that needed to obtain a driving licence. The above standard elements reflect the necessary elements for successful driver examination and contribute to maintaining consistency in driver licensing assessment across jurisdictions. Consistency supports reciprocity as well as contributing to road safety pursuant to Canada's Road Safety Strategy 2025.
Policy Guidelines	Candidates should have sufficient communication (verbal and written) skills for conducting, knowledge, on-road and practical assessments. On-road tests also require considerable assessment skill, judgement and hazard perception ability and training and evaluation of driver examiners should consider these job elements. The requirement to hold a valid Class 5 licence includes the need for driver examiners to hold a full Class 5 and not a learner's licence or equivalent. Driver examiners should not be in a graduated licensing program. While jurisdictions have somewhat different definitions of "acceptable driving records", the concept is consistently recognized across Canada. Definitions may include having fewer number of demerit points, no violations, no suspensions, no loss of driving privileges, etc., over a specified period of time. The quality of testing is dependent on a DE's ability to communicate well with a candidate throughout the testing experience; to establish and communicate what the candidate can expect during the test, provide clear and consistent direction and feedback, and treat individuals with respect and fairness. Best practices suggest that some form and level of refresher training is needed to ensure that DEs are up to date on regulations, assessment practices, techniques, and skills, behavioural guidelines and testing procedures.

TRAINING CONTENT

Standard	Driver Examiner Training should include: (a) Principles and standards for driver licensing (b) National Safety Code Standard 4 – Classification, Standard 2 – Knowledge and Practical Testing, Standard 6 – Determining Driver Fitness (c) Legislation and regulation (d) Jurisdictional driver licensing process (e) Workplace safety (f) The role of the examiner Code of ethics Rules of conduct Interacting with applicants and the public Evaluation/assessment theory and techniques including incident reporting (g) Medical information and reassessment intervals (h) Vehicle maneuvering skills (i) Understanding how vehicle maneuvering skill test areas are designed (j) Understanding how road test routes are designed (k) Road test procedures Passenger Vehicles Air brake endorsement (l) Assessment skills (m) Hazard perception knowledge and skills (n) Evaluation skills (o) Retesting – practical and on-road
Rationale	The above standard elements contribute to the ability of a DE to observe accurately, monitor, and evaluate overall candidate performance.
Policy Guidelines	Driver examiners need to be able to correctly and comprehensively recognize dangerous situations; be competent in recognizing driving errors; conduct uniform and consistent assessments; assimilate information and react quickly; look ahead, identify potential problems and develop strategies to deal with them; and, provide timely and constructive directions and feedback. Driver examiners will need to be familiar with their jurisdiction's requirements for reporting incidents, crashes/collisions pursuant to policy and legislation.

Chapter 3: Motorcycles

MINIMUM REQUIREMENTS FOR MOTORCYCLE EXAMINERS

Standard	• have a valid full passenger vehicle licence with a motorcycle learner, or full motorcycle licence • must have an acceptable driving record for 2 years prior to being authorized to conduct driver licensing assessments • successfully complete approved motorcycle rider training • successfully complete motorcycle examination training • pass a test on required knowledge and skill elements
Rationale	All driver examiners must be able to demonstrate competency in riding and motorcycle knowledge and skill assessment.
Policy Guidelines	Given that different skills and knowledge are required to ride a motorcycle, developing a level of superior knowledge and skill for examiners is very important. This is highlighted with the different types of risks associated with riding, including crash vulnerability. Best practices suggest that some form and level of refresher training is needed to ensure that DEs are up to date on regulations, assessment practices, techniques, and skills, behavioural guidelines and testing procedures. Driver examiners will need to be familiar with their jurisdiction's requirements for reporting incidents, crashes/collisions pursuant to policy and legislation.

TRAINING CONTENT

Standard	Motorcycle Examiner Training should include: (a) Principles and standards for motorcycle riding (b) National Safety Code Standard 4 – Classification, NSC 2 – Knowledge and Practical Testing, Standard 6 – Determining Driver Fitness (c) Legislation and regulation (d) Driver and motorcycle licensing process (e) The role of the examiner Code of ethics Rules of conduct Interacting with applicants and the public Evaluation/assessment theory and techniques (f) Medical information and reassessment intervals (g) Motorcycle dynamics and maneuvering skills (h) Designing motorcycle maneuvering skill and on-road test areas (i) Designing/modifying road test routes (j) Road test procedures including assessment skills (k) Hazard perception knowledge and skills (l) Evaluation skills (m) Retesting – practical and on-road
Rationale	The above standard elements contribute to the ability of a DE to observe accurately, monitor, and evaluate overall candidate performance.
Policy Guidelines	Motorcycle examiners need to be able to correctly and comprehensively recognize dangerous situations; be competent in recognizing riding errors; conduct uniform and consistent assessments; assimilate information and react quickly; look ahead, identify potential problems and develop strategies to deal with them; and, provide timely and constructive directions and feedback. Driver examiners will need to be familiar with their jurisdiction's requirements for reporting incidents, crashes/collisions pursuant to policy and legislation.

Chapter 4: Higher Class Vehicles

MINIMUM REQUIREMENTS FOR DRIVER EXAMINERS

Standard	• air brake endorsement (or equivalent education or training) • candidates must have the class of licence for which they are testing • must have an acceptable driving record for 2 years prior to authorization to conduct assessments • successfully complete specified training • pass a test on required knowledge and skill elements • complete a criminal record or other mandatory check prior to certification or granting of authority to conduct assessments • must maintain an acceptable driving record
Rationale	A person authorized to conduct tests and assessments for a higher class or commercial licence should be able to drive to a consistently high standard. They should also have a higher level of theoretical and practical knowledge of driving ability than that needed to obtain the higher-class licence. These principles are important to encourage and assist commercial examiners in maintaining and increasing their knowledge and competence through continuing education and professional development opportunities. The standards also promote highway safety and protect the public interest by increasing public understanding and acceptance of commercial licensing professionals as essential personnel in fighting fraud. Achieve uniformity in training and commercial licensing examination practices in accredited jurisdictions.
Policy Guidelines	While jurisdictions have somewhat different definitions of “acceptable driving records”, the concept is consistently recognized across Canada. Definitions may include having fewer number of demerit points, no violations, no suspensions, no loss of driving privileges, etc., over a specified period of time. Best practices suggest that some form and level of refresher training is needed to ensure that DEs are up to date on regulations, assessment practices, techniques, and skills, behavioural guidelines and testing procedures. The need to maintain an acceptable driving record is important when considering requirements for motor carriers under NSC 14 – Safety Rating and NSC 7 – Carrier and Driver Profiles. These standards outline the elements for a motor carrier profile system designed to monitor carrier safety performance. NSC 14 requires jurisdictions to include reportable crashes and convictions against its drivers resulting from violations, highway safety laws and Criminal Code provisions relating to operation of vehicles. Given the standard to which higher class drivers and motor carriers are held, it is important for driver examiner standards to minimally be consistent with the level of expectation for those which will be subject to their assessment.

TRAINING CONTENT

Standard	Higher Class Examiner Training should include: (a) Principles and standards for driving higher class and commercial vehicles (b) National Safety Code Standards 4 - Classification, Standard 2 – Knowledge and Practical Testing and Standard 6 – Determining Driver Fitness (c) Legislation and regulation – for example, other NSC standards such as hours of service, FMCSA requirements; load securement, dangerous goods (d) Driver and higher-class licensing process (e) The role of the examiner i. Code of ethics ii. Rules of conduct iii. Interacting with applicants and the public iv. Evaluation/assessment theory and techniques (f) Medical information and reassessment intervals (g) Higher class vehicle dynamics and maneuvering skills (h) Designing maneuvering skill and on-road test areas (i) Designing/modifying road test routes (j) Road test procedures including assessment skills (k) Hazard perception knowledge and skills (l) Evaluation skills (m) Retesting – practical and on-road
Rationale	The above standard elements contribute to the ability of a DE to observe accurately, monitor, and evaluate overall candidate performance.

Policy Guidelines	Higher class vehicle examiners need to be able to correctly and comprehensively recognize dangerous situations; be competent in recognizing riding errors; conduct uniform and consistent assessments; assimilate information and react quickly; look ahead, identify potential problems and develop strategies to deal with them; and, provide timely and constructive directions and feedback. In addition, examiners should be familiar with the medical and reassessment intervals for commercial drivers articulated in NSC Standard 6. Article 7.1.1 specifies that unless a different reassessment interval is set because of a medical condition, authorities will routinely identify commercial drivers for a review of driver fitness at the time of licence application and then at the following intervals: (a) up to age 45, every 5 years (b) from age 45 to age 65, every 3 years, and (c) from age 65, annually. NSC Standard 7 (Carrier and Driver Profiles) is an important reference for driver examiners to be familiar with in their role of assessing applicants. There are a number of driver components that will be kept on a carrier's profile to review current and past performance for licensing purposes: 1. Criminal Code Offences 2. Moving Violations (highway safety offences) 3. Driver's Liabilities such as failure by a driver involved in an accident to report 4. Roadside violations Driver examiners are a vital part of the education of commercial drivers given the serious impacts of crashes involving commercial and larger vehicles. Driver examiners will need to be familiar with their jurisdiction's requirements for reporting incidents, crashes/collisions pursuant to policy and legislation.

Chapter 5: Addressing Medical Fitness

While many factors contribute to safety on the road, driver health and fitness to drive is an important consideration. Drivers must meet certain medical standards to ensure their health status does not unduly increase their crash risk. Driver examiners have an important role in the licensing process and need to be knowledgeable about fitness issues and their responsibilities in the assessment process.

In Canada, medical fitness to drive is determined by each province within a national framework detailed in NSC 6, Determining Driver Fitness in Canada. This standard provides driver fitness authorities with research-based information, standards and guidelines to support consistent driver fitness decisions within and across Canadian jurisdictions. Driver fitness determinations are based primarily on functional ability to drive which means that the focus is on the effect that a medical condition has on the functions necessary for driving.

Standard	• An educational component on Canada's medical fitness requirements will be included in jurisdictional training and testing regimes (see cognitive, sensory and motor functions needed for driving in NSC 6). • Policies in place for examiners to be able to determine a level of risk that results in appropriate adaption or cessation of a driving test or assessment.
Rationale	As driver fitness authorities review and consider the best information available when making driver fitness determinations, driver examiners need to understand their role and responsibilities in the licensing process. They also need to be aware of the risks associated with medical conditions which may impair safe driving ability by applicants.
Policy Guidelines	Identifying drivers who may not be fit to drive, and who therefore pose a risk to public safety, is a key function of driver fitness authorities. Standard road tests are conducted by provincial and territorial driver examiners who assess whether an individual has mastered the skills needed for driving. Standard road tests are not traditionally designed to measure whether or not there is an impairment of the cognitive functions needed for driving. However, a driver examiner may observe behaviours indicative of a medical or functional impairment related to driving, where they reasonably believe that the individual will not be able to safely undertake their test. NSC 6, Article 5.2 addresses the requesting of functional assessments. 5.2.1 If an authority decides further information on a driver's functional ability to drive is necessary in order to make a driver fitness determination, the authority will request a functional assessment. This provision suggests that jurisdictions need to have a policy in place for driver examiners (and other licensing staff) to address these situations. This requires not only having driver examiners being educated and trained on medical and functional conditions that affect driving but having in place policies and procedures that guide appropriate action.

APPENDIX I: JURISDICTIONAL PRACTICES - 2018

Part 2 Driver Examiner Requirements (Chapter 2: Passenger Vehicles)

Minimum Requirements for Driver Examiners

Standard	• must hold a valid, full class passenger vehicle (or equivalent) driver licence for a minimum of 2 years • must have an acceptable driving record for 2 years prior to being authorized to conduct driver licensing assessments • successfully complete specified training (see below for training standard elements) • pass a test/assessment/evaluation on required knowledge and skill elements • complete a criminal record, background or other mandatory check prior to certification or granting of authority to conduct assessments • ensure that they are up to date on laws, policies, and practices, etc., related to their roles in their current jurisdiction
Jurisdictional Practices	A number of Canadian jurisdictions have developed their DE programs based on AAMVA's Certified Driver Examiner (CDE) program; ensuring a level of consistency and quality. Some level of focus is being given to refresher training. For example, B.C. (ICBC) rolled out its Quality Assurance & Consistency Program (QACP) for Driver Examiners refresher training in 2017. Each type of Driver Examiner is tested once every three years. There is a one day in-class refresher course and a Driver Examiner Knowledge Test for which a mark of at least 80% is required. The Driver Examiner then must requalify on a standardization test as they did upon initial qualification. There is a one-month practice period, between the theory day/knowledge test and standardization test. This allows Driver Examiner Supervisors conduct ride checking and coaching ahead of the standardization test. Should a Driver Examiner not requalify, additional coaching and training is provided until the Driver Examiner requalified. While Saskatchewan does not formally "re-train" or "re-certify" its examiners, they do participate in regular training based on business needs, changes, individual performance etc. Examiners also attend an annual two-day training workshop. Annual audits are performed for each driver examiner. Ontario requires successful completion of refresher maintenance training and yearly check rides by supervisors. In the Yukon, full time examiners are monitored, and retraining may occur at any time new practices are put into place or work quality and professionalism are in question. Part time examiners are monitored, and refresher courses conducted as needed as well as reviewing part time examiners professionalism.

Part 2 Driver Examiner Requirements (Chapter 2: Passenger Vehicles)

Training Content

Standard	Driver Examiner Training should include: (p) Principles and standards for driver licensing (q) National Safety Code Standard 4 – Classification, Standard 2 – Knowledge and Practical Testing, Standard 6 – Determining Driver Fitness (r) Legislation and regulation (s) Jurisdictional driver licensing process (t) Workplace safety (u) The role of the examiner Code of ethics Rules of conduct Interacting with applicants and the public Evaluation/assessment theory and techniques including incident reporting (v) Medical information and reassessment intervals (w) Vehicle maneuvering skills (x) Understanding how vehicle maneuvering skill test areas are designed (y) Understanding how road test routes are designed (z) Road test procedures Passenger Vehicles Air brake endorsement (aa) Assessment skills (bb) Hazard perception knowledge and skills (cc) Evaluation skills (dd) Retesting – practical and on-road
Jurisdictional Practices	The above elements are intended to be consistent with the AAMVA guidelines, which are followed by many Canadian jurisdictions.

Part 2 Driver Licencing Requirements (Chapter 3 – Motorcycles)

Minimum Requirements for Motorcycle Examiners

Standard	• have a valid full passenger vehicle licence with a motorcycle learner, or full motorcycle licence • must have an acceptable driving record for 2 years prior to being authorized to conduct driver licensing assessments • successfully complete approved motorcycle rider training • successfully complete motorcycle examination training • pass a test on required knowledge and skill elements
Jurisdictional Practices	Some jurisdictions require that an individual be a class 5 DE prior to undertaking steps to become a DE for motorcycles. This may mean an individual has to have conducted a number of road tests, taking training for a class 6 (or equivalent), or obtaining a class 6 learners' licence. For example, Ontario requires that 250 road tests be conducted as a Class 5 DE and Alberta requires 150 road tests for DE's to be able to conduct basic motorcycle road tests. In British Columbia, ICBC's Road Test Quality Assurance and Consistency Program (QACP) for motorcycle testing provides a regular combination of classroom training and on the job coaching for all DEs and DE Supervisors and a standardization exercise for all DEs to measure success. While Saskatchewan does not formally "re-train" or "re-certify" its examiners, they do participate in regular training based on business needs, changes, individual performance etc. Examiners also attend an annual two-day training workshop. Annual audits are performed for each driver examiner. Ontario requires successful completion of refresher maintenance training and yearly check rides by supervisors. In the Yukon, full time examiners are monitored, and retraining may occur at any time new practices are put into place or work quality and professionalism are in question. Part time examiners are monitored, and refresher courses conducted as needed as well as reviewing part time examiners professionalism.

Part 2 Driver Licencing Requirements (Chapter 3: Motorcycles)

Training Content

Standard	Motorcycle Examiner Training should include: (n) Principles and standards for motorcycle riding (o) National Safety Code Standard 4 – Classification, NSC 2 – Knowledge and Practical Testing, Standard 6 – Determining Driver Fitness (p) Legislation and regulation (q) Driver and motorcycle licensing process (r) The role of the examiner Code of ethics Rules of conduct Interacting with applicants and the public Evaluation/assessment theory and techniques (s) Medical information and reassessment intervals (t) Motorcycle dynamics and maneuvering skills (u) Designing motorcycle maneuvering skill and on-road test areas (v) Designing/modifying road test routes (w) Road test procedures including assessment skills (x) Hazard perception knowledge and skills (y) Evaluation skills (z) Retesting – practical and on-road
Jurisdictional Practices	All jurisdictions require that an examiner be able to ride a motorcycle and specify additional training for motorcycle examiners.

Part 2 Driver Licencing Requirements (Chapter 4: Higher Class Vehicles)

Minimum Requirements for Driver Examiners

Standard	• air brake endorsement (or equivalent education or training) • candidates must have the class of licence for which they are testing • must have an acceptable driving record for 2 years prior to authorization to conduct assessments • successfully complete specified training • pass a test on required knowledge and skill elements • complete a criminal record or other mandatory check prior to certification or granting of authority to conduct assessments • must maintain an acceptable driving record
Jurisdictional Practices	Most jurisdictions require additional training for higher class vehicles, and more commonly it is external in terms of learning to drive a higher class or commercial vehicle. Refresher training also appears to be more common. B.C. (ICBC) rolled out its Quality Assurance & Consistency Program (QACP) for Driver Examiners refresher training in 2017. Each type of Driver Examiner is tested once every three years. There is a one day in-class refresher course and a Driver Examiner Knowledge Test for which a mark of at least 80% is required. The Driver Examiner then must requalify on a standardization test as they did upon initial qualification. There is a one-month practice period, between the theory day/knowledge test and standardization test. This allows Driver Examiner Supervisors conduct ride checking and coaching ahead of the standardization test. Should a Driver Examiner not requalify, additional coaching and training is provided until the Driver Examiner requalified. While Saskatchewan does not formally “re-train” or “re-certify” its examiners, they do participate in regular training based on business needs, changes, individual performance etc. Examiners also attend an annual two-day training workshop. Annual audits are performed for each driver examiner. Ontario requires successful completion of refresher maintenance training and yearly check rides by supervisors. In the Yukon, full time examiners are monitored, and retraining may occur at any time new practices are put into place or work quality and professionalism are in question. Part time examiners are monitored, and refresher courses conducted as needed as well as reviewing part time examiners professionalism.

Part 2 Driver Licencing Requirements (Chapter 4: Higher Class Vehicles)

Training Content

Standard	Higher Class Examiner Training should include: (a) Principles and standards for driving higher class and commercial vehicles (b) National Safety Code Standards 4 - Classification, Standard 2 – Knowledge and Practical Testing and Standard 6 – Determining Driver Fitness (c) Legislation and regulation – for example, other NSC standards such as hours of service, FMCSA requirements; load securement, dangerous goods (d) Driver and higher-class licensing process (e) The role of the examiner i. Code of ethics ii. Rules of conduct iii. Interacting with applicants and the public iv. Evaluation/assessment theory and techniques (f) Medical information and reassessment intervals (g) Higher class vehicle dynamics and maneuvering skills (h) Designing maneuvering skill and on-road test areas (i) Designing/modifying road test routes (j) Road test procedures including assessment skills (k) Hazard perception knowledge and skills (l) Evaluation skills (m) Retesting – practical and on-road
Jurisdictional practices	Many jurisdictions require that an examiner have the class of licence for which they are testing.

Part 2 Driver Licencing Requirements (Chapter 4: Higher Class Vehicles)

Minimum Requirements for Driver Examiners

Standard	• An educational component on Canada's medical fitness requirements will be included in jurisdictional training and testing regimes (see cognitive, sensory and motor functions needed for driving in NSC 6). • Policies in place for examiners to be able to determine a level of risk that results in appropriate adaption or cessation of a driving test or assessment.
Jurisdictional Practices	Manitoba **-** When dealing with customer's that do not have a Driver Fitness file, the Driver Examiner will advise the Driver Fitness program of their concern and provide them with as much information as possible. Based on the information provided, Driver Fitness will determine what is required.

CCMTA | CCATM
Canadian Council of Motor Transport Administrators
Conseil canadien des administrateurs en transport motorisé

National Safety Code

Standard 4: Driver Licensing Classification

January 2020
ISBN: 978-1-927993-53-8

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FOREWARD

The purpose of this standard is to designate classes of vehicles for driver licensing and prescribe the fundamental knowledge and skills for the type of vehicle to be safely operated on Canadian roads. Research has shown that a licence testing program aimed at critical knowledge requirements can reduce crash risk.[1] The rules are seen as essential elements of a common transportation policy, contributing to improving road safety and facilitating the free movement of persons across borders both east to west, and north to south. The Canadian model requires some level of constitutional independence, mutual recognition of licences, and reciprocity. Given the importance of individual means of transport, possession of a driving licence duly recognised by member jurisdictions promotes free movement of people and more efficient movement of goods. The classification system is one element of the driver licensing system that contributes to the achievement of these goals.

The Classified Driver Licensing System is comprised of seven distinct classes, each designating a certain type of vehicle in accordance with the degree of capability necessary for its operation. The updating of this standard is the result of a lengthy and intensive process, begun in 2016 and concluded in 2017 and reflects CCMTA's commitment to:

- anchor its standards on the best-evidence available as articulated in Principle 1 below
- focus on a principled approach to vehicle and driver licensing standards, and to
- respond to jurisdictional need for flexibility to address unique needs.

These guidelines and standards reflect Canadian jurisdictions' continuing commitment to public safety while allowing the maximum driving privilege possible.

[1] AAMVA. (2007). *Guidelines for Knowledge & Skill Test Development.*

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BACKGROUND

Principles

The concept of "principle" generally describes rules, norms, or values that guide or describe desirable behaviours for an individual or group.[2] Principles are statements intended to guide the ways things are done by individuals and organizations, what is done and why.

A number of principles have been articulated throughout the NSC as well as the national road safety strategy. The principles below apply to NSC 4:

- NSC standard 4 has been developed to promote consistency, harmonization and road safety across Canadian jurisdictions.
- Standards are developed through an inclusive and consultative process.
- Classification contributes to a safe systems approach to road safety with a focus on the integrity of the driver licensing system.
- A consistently applied classification system contributes to reciprocity which facilitates the movement of people and goods.
- Classification of vehicles and associated driving skills reflect an evidence-based approach to requirements, policies and guidelines based on global expertise and best available evidence.
- The definitions of licensing categories should reflect, to the greatest extent, the technical characteristics of the vehicles concerned, and the skills needed to drive a vehicle.

These principles are to be broadly construed when applying the standards and policies within a jurisdiction; providing direction and flexibility in how road safety goals can be achieved.

Structure of the Standard

NSC standard 4 contains:

1. An introduction which provides context for the standard, its interpretation and application.
2. The standard – a statement that clearly defines a minimal technical specification.[3]
3. Rationale – statements that explain the policy rationale and evidence to support the standard; and define overall goals, benefits and outcomes of an intended action, approach or strategic direction. The rationale provides policy context to support the standard's implementation.

[2] Merriam-Webster defines principle in a number of ways, the most relevant being "a fundamental doctrine or assumption", a "rule or code of conduct" (www.merriam-webster.com/dictionary/principle). The Cambridge Dictionary (http://dictionary.combridge.org/dictionary/english/principle) describes principles as fundamental norms, rules, or values that represent what is desirable and positive for a group, organization, or community. The online Oxford Dictionaries (www.oxforddictionaries.com/definition/english/principle) says a principle is a "rule or belief governing one's behaviour" while the MacMillan Dictionary defines principle as a basic belief, theory, or rule that has a major influence on the way in which something is done (http://www.macmillandictionary.com/dictionary/british/principle).

[3] Adapted from Policy Positions of the AAMVA, 2016.

Use of the Standard

It is expected that all Canadian jurisdictions will adopt the NSC standards as a reference. While the NSC standards imply a minimum, there is no constraint on jurisdictions going beyond this specification. In addition, a rationale is provided for the standards to help jurisdictions understand why an element is included. Finally, jurisdictional practices are included as a reference point for understanding different requirements that exist.

The Authority for The CCMTA Standards

Canadian Council of Motor Transport Administrators

The Canadian Council of Motor Transport Administrators (CCMTA) coordinates all matters dealing with the administration, regulation and control of motor vehicle transportation and highway safety. Membership includes representation from provincial and territorial governments as well as the federal government of Canada.

CCMTA supports its members' vision to have the safest and most efficient movement of people and goods by road in the world. We are the custodians of the National Safety Code, and we provide collaborative leadership in the areas of Road Safety Research and Policy, Drivers and Vehicles and Compliance and Regulatory Affairs.

Vision
To have the safest and most efficient movement of people and goods by road in the world.

Mission
To provide collaborative leadership in addressing Canadian road safety priorities.

History
The origins of the CCMTA can be traced back to 1940, when the four Western provinces met to consider issues of common interest relating to road transport. In the early fifties, the group was joined by Ontario and the Yukon Territory. The Canada-wide expansion of the organization took place in 1956, some two years after the enactment of the Motor Vehicle Transport Act by Parliament, in response to an already felt need for uniformity due to increasing movement and traffic.

In 1975 a constitution was signed by representatives of all provinces and territories and a small permanent Secretariat was established. The federal government has participated as a full member of CCMTA since 1977. The organization was incorporated in 1987 under its present name and constitution. CCMTA commemorated its 75th anniversary in 2015.

CCMTA Members are elected from provincial, territorial and federal governments. CCMTA has a responsibility to be accountable to:

- the Council of Deputy Ministers and Ministers for:
    - providing advice and making recommendations on matters relating to transportation and highway safety
- the provinces, territories and the federal government for:
    - promoting a better understanding and cooperation in all matters related to transportation and highway safety among each other, as well as other organizations where there exists a mutual interest
- its stakeholders for:
    - maintaining an ongoing dialogue and consultation to ensure CCMTA is responsive and informative

The relationship between individual Canadian jurisdictions' classification models and the CCMTA standards

All Canadian provinces and territories have the authority to establish their own classification models and related driver licensing requirements. In 1985, standards for driver licensing classification were identified as part of the National Safety Code (NSC) initiative undertaken to achieve uniformity among the provinces and territories, on many aspects relating to the administration of drivers and vehicles.

PART 1:

A MODEL FOR DRIVER LICENSING CLASSIFICATION

Chapter 1: Introduction

Individual territorial and provincial authorities will administer their classification and driver licensing programs to maximize safety in a variety of ways. However, to support the consistent use of the classification standards, guidelines for their administration have been developed for the use of provinces and territories.

Chapter 2: Definitions

Commercial driver: means a driver with a commercial class licence (Class 1-4) as determined by the licensing authority, or a driver deemed to be a commercial driver as determined by the licensing authority.

Condition: means a term of licensing that is imposed on an individual or an individual's licence by the authority. The terms 'condition' and 'restriction' are used interchangeably in many Canadian jurisdictions. For the purposes of these guidelines, 'condition' includes the concept of 'restriction'. All authorities use conditions on a driver licence as part of their driver fitness program, for example, wearing corrective lenses, nighttime driving restriction, and only operate a vehicle with an ignition interlock device.

Driver: means any person with any class of valid, suspended or cancelled driver licence and a person applying for any class of driver's licence

Driver control record: generally, includes:

- the length of time an individual has been licensed
- driving offences/administrative actions
- driving sanctions applied
- current and past licence conditions
- motor vehicle related Canadian Criminal Code convictions
- crash history
- past road test results, and
- other medical tests that are not requested by authorities but are often submitted by physicians and provide useful information regarding an individual's medical condition.

Endorsement a permissive status on a driver's licence that allows an individual to drive a vehicle with a special characteristic. Individuals must meet specified criteria for an endorsement. Examples include air brakes.

Knowledge test: means of testing an individual's knowledge of information required to operate vehicles safely, rules of the road, potential hazards, signs and signals. Testing may be done with paper and pencil, electronic/computer or verbal methods.

Non-commercial driver: means a driver with a non-commercial class licence (class 5 or 6) as determined by the driver fitness or licensing authority.

Practical test: practical testing, while generally synonymous with road testing, is a broader category which may include assessments of vehicle functions, pre-trip inspections, and air brake inspections as well as the use of varying technology such as computers and simulators.

Restriction: See definition of 'Condition'

Road test: means a road test conducted by a government authorized driver-examiner. Standard road tests were traditionally designed for assessing driving skill. They may be used, however, to test for related skills such as hazard perception and, under certain circumstances, to assess motor and sensory functional ability to drive.

Chapter 3: Key Factors Related to New Driver Crash Risk

There has been much research and data on the crash risk associated with new and young drivers; recognizing their over-representation in fatal and injury crashes.[4] Over the last couple of decades, more effective provisions in graduated driver licensing (GLP) programs have contributed to significant reductions in fatalities and injuries for new and young drivers. Research has shown that the first few months of licensure for new drivers represents the highest risk.[5]

The high crash rate of new drivers suggests that restricting driving in situations known to be risky during this initial licensure period is one option for dealing with crash vulnerability. To address this issue, all Canadian and most U.S. states have adopted GLP systems requiring that progression to full licensing privileges occur in stages. In these systems, the new driver receives additional supervision in the earlier stages and is prohibited from driving in higher-risk conditions such as nighttime driving and driving with teen passengers. [6]

Experience

A universal problem of new drivers is inexperience. Experience means that learning to drive takes time and needs extensive practice to reach a sufficient competence level regardless of age. With time, the actions of driving – operating controls, looking in the rear-view mirror, shoulder checking, steering, correctly assessing situations, changing lanes, reacting appropriately, etc. – become automated. However, for the new driver, these actions require consideration, increasing overall mental workload and possibly distracting attention from the road. New drivers' attention is easily overloaded, and their ability to combine simultaneous actions is relatively poor.[7]

[4] Insurance Institute for Highway Safety (IIHS). (2014). *Fatality facts: teenagers 2014*. Arlington (VA): The Institute. (cited 2017 April 16). http://www.iihs.org/iihs/topics/t/teenagers/fatalityfacts/teenagers. Mayhew, D.R., Simpson, H.M., Pak A. (2003). Changes in collision rates among novice drivers during the first months of driving. *Accident Analysis and Prevention* (35), 683-91. Vanlaar, W., Mayhew, D., Marcoux, K., Wets, G., Brijs, T., & Shope, J. (2009). *An Evaluation of Graduated Driver Licensing Programs in North America*. Ottawa, ON:
Traffic Injury Research Foundation. Fell, James C., Todd, M., Voas, Robert B. (2011). A national evaluation of the nighttime and passenger restriction components of graduated driver licensing. *Journal of Safety Research,* 42, 283-290.

[5] Mayhew, D.R., Simpson, H.M., Pak A. (2003). Changes in collision rates among novice drivers during the first months of driving. *Accident Analysis and Prevention* (35), 683-91.

[6] National Highway Traffic Safety Administration [NHTSA]. (2008). *Traffic Safety Facts, Law: Graduated Licensing System* (DOT HS 810 888W). Washington, DC: Author.

[7] OECD. (2006). *Young Drivers, The Road to Safety.*

Minimum Duration

Data shows that novice driver crash involvement decreases as the licensing age for solo driving increases.[8] Indeed, physical and emotional immaturity, as well as the lifestyles associated with youth, can increase crash risk and severity. Young people are typically in a period of rapid maturation, whereby they test boundaries and assert independence. They are at a stage in life that is often intensely social, including being active at night and on weekends, in groups, and sometimes involving alcohol and/or drugs.

Research has shown that a longer period in the earliest stage of licensing has reduced the short- and longer-term crash involvement rates of new drivers.[9] A New Zealand study reported that increased time spent in the learner stage was associated with a reduced risk of collision involvement during the unsupervised restricted license stage.[10] Twelve months is consistent with the principles of GLP in providing more time for supervised driving practice in the low-risk learner period. Masten, Foss & Marshall (2013)[11] found evidence supporting a 9-12-month learner phase and a subsequent study found that 12 months had the most safety benefits.[12] A 12-month learner period also allows beginners to practice driving under supervision in all seasons of the year which may be especially important in those jurisdictions experiencing severe seasonal weather conditions.

Passengers

Passenger restrictions are common in many jurisdictions including Europe, Australia and the U.S. In the U.S., passenger restrictions vary with regard to their durations, the ages of passengers to whom they apply, and the availability of exceptions. Most people are well aware of the heightened crash risk when teenagers travel together in a car.[13] The social dynamic in a vehicle occupied by several teenagers can be distracting to beginning drivers who need to learn to attend to the driving task and environment. Several studies in the 1990s have quantified the excess risk created when teenage drivers transport passengers, which is greatest for the youngest teenagers. Crash risk for teenage drivers increases incrementally with one, two, three or more passengers. With two, three or more passengers, the crash risk is 3-5 times greater than driving alone.[14] This risk is minimized with older new drivers.

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[8] Ibid.

[9] Wiggins, S. (2006). *Graduated Licensing: Year Six Evaluation Report.* Vancouver, B.C.: Insurance Corporation of B.C.

[10] Gulliver, P., Begg, D., Brookland, R., Ameratunga, S., and Langley, J. (2013). Learner driver experiences and crash risk as an unsupervised driver. *Accident Analysis and Prevention*, 46: 41-46.

[11] Masten, S. V., Foss, R. D., and Marshall, S. W. (2013). Graduated driver licensing program component calibrations and their association with fatal crash involvement, *Accident Analysis & Prevention*, 7: 105-113.

[12] Masten, S. V., Thomas, F. D., Korbelak, K. T., & Blomberg, R. D. (2015). *A meta-analysis of graduated driver licensing programs and components in the United States*. (Report No. DOT HS 812 211). Washington, DC: National Highway Traffic Safety Administration.

[13] Williams, A.F. & Ferguson, S.A. (2003). Rationale for graduated licensing and the risks it should address. *Injury prevention*, 8 (Suppl II): ii9-ii16.

[14] Chen L, Baker SP, & Braver ER. (2000). Carrying passengers as a risk factor for crashes fatal to 16- and 17-year-old drivers. JAMA, 283,1578–82. Doherty ST, Andrey JC, & MacGregor C. (1998). The situational risks of young drivers: the influence of passengers, time of day, and day of week on accident rates. *Accident Analysis Prevention*, 30,45–52. Aldridge B, Himmler M, & Aultman-Hall L. (1999). Impact of passengers on driver safety.
Transportation research record 1693. Washington, DC: Transportation Research Board, 25–30.

PART 2:

STANDARDS FOR DRIVER LICENSING CLASSIFICATION

Chapter 1: Introduction

Purpose of this Part

The classification chapters in this part of the document:

- identify the groups of vehicles for a particular driver licensing classification
- identify the minimum proposed standards for a particular driver licensing classification:
    - entry and exit requirements;
    - vehicle operation parameters;
    - endorsements and restrictions.
- provide additional best practices and guidelines based on best available evidence and information

Chapter Template

Below is the template used for the classification standards. It is annotated to explain what type of information is found in each section of the template. The standard provides the minimum requirements for licensing for each classification. Jurisdictions may have higher standards by imposing additional requirements to enhance safety outcomes, for example, increase the age at which individuals can apply for a learner licence, impose nighttime driving restrictions, or increase the time required to stay in the learner stages.

Jurisdictions may have additional requirements and practices considered beneficial in their context. Appendix I describes best practices as of December 31, 2018 that may be considered by other jurisdictions, based on current program requirements.

Standard	The requirements that must be met in order to be licensed for a particular class of licence.
Rationale	A brief description of the rationale for the requirements.
Policy Guidelines	Provide more details on the application of the standard element, including procedures.

Vehicle Descriptions Included in the Standard[15]

Enclosed motorcycle means a motorcycle that

a) has steering handlebars that are completely constrained from rotating in relation to the axle of only one wheel in contact with the ground,
b) is designed to travel on two wheels in contact with the ground,
c) has a minimum driver's seat height, when the vehicle is unladen, of 650 mm, and
d) has a structure partially or fully enclosing the driver and passenger that is an integral part of the vehicle chassis; (*motocyclette à habitacle fermé*)

Limited-speed motorcycle means a motorcycle (including moped) that

a) has steering handlebars that are completely constrained from rotating in relation to the axle of only one wheel in contact with the ground,
b) has a maximum speed of 70 km/h or less,
c) has a minimum driver's seat height, when the vehicle is unladen, of 650 mm, and
d) does not have a structure partially or fully enclosing the driver and passenger, other than that part of the vehicle forward of the driver's torso and the seat backrest; (*motocyclette à vitesse limitée*)

Low-speed vehicle means a vehicle, other than a restricted-use motorcycle or a vehicle imported temporarily for special purposes, that

a) is designed for use primarily on streets and roads where access and the use of other classes of vehicles are controlled by law or agreement,
b) travels on four wheels,
c) is powered by an electric power train (an electric motor and, if present, a transmission) that is designed to allow the vehicle to attain a speed of 32 km/h but not more than 40 km/h in a distance of 1.6 km on a paved level surface,
d) does not use fuel as an on-board source of energy, and
e) has a GVWR of less than 1,361 kg; (*véhicule à basse vitesse*)

Motorcycle means a vehicle that is of the subclasses enclosed motorcycle, open motorcycle, or motor tricycle, and

a) is designed to travel on not more than three wheels in contact with the ground,
b) has a minimum wheel rim diameter of 250 mm, and
c) has a minimum wheelbase of 1,016 mm,

[15] Federal *Motor Vehicle Act Regulation*, C.R.C., c., 1038. The definitions of moped, minibike and motor driven cycle have been repealed.

Motor tricycle means a motorcycle, other than an antique reproduction vehicle, that

a) is designed to travel on three wheels that are in contact with the ground and symmetrically arranged in relation to the longitudinal median plane,
b) has seating on which the driver and passenger must sit astride,
c) has not more than four designated seating positions,
d) has a GVWR of 1,000 kg or less,
e) has a maximum speed of more than 70 km/h, and
f) does not have a structure partially or fully enclosing the driver and passenger, other than that part of the vehicle forward of the driver's torso and the seat backrest; (*tricycle à moteur*)

Open motorcycle means a motorcycle that

a) has steering handlebars that are completely constrained from rotating in relation to the axle of only one wheel in contact with the ground,
b) is designed to travel on two wheels in contact with the ground or, if the wheels are asymmetrically arranged in relation to the longitudinal median plane, three wheels in contact with the ground,
c) has a minimum driver's seat height, when the vehicle is unladen, of 650 mm,
d) has a maximum speed of more than 70 km/h, and
e) does not have a structure partially or fully enclosing the driver and passenger, other than that part of the vehicle forward of the driver's torso and the seat backrest; (*motocyclette sans habitacle fermé*)

Restricted-use motorcycle means a vehicle, excluding a power-assisted bicycle, a competition vehicle and a vehicle imported temporarily for special purposes, but including an all-terrain vehicle designed primarily for recreational use, that:

a) has steering handlebars,
b) is designed to travel on not more than four wheels in contact with the ground,
c) does not have as an integral part of the vehicle a structure to enclose the driver and passenger, other than that part of the vehicle forward of the driver's torso and the seat backrest, and
d) bears a label, permanently affixed in a conspicuous location, stating, in both official languages, that the vehicle is a restricted-use motorcycle or an all-terrain vehicle and is not intended for use on public highways; (*motocyclette à usage restreint*)

Three-wheeled vehicle means a vehicle, other than a competition vehicle, an antique reproduction vehicle, a motorcycle, a restricted-use motorcycle, a trailer or a vehicle imported temporarily for special purposes, that

a) is designed to travel on three wheels in contact with the ground,
b) has no more than four designated seating positions, and
c) has a GVWR of 1,000 kg or less; (*véhicule à trois roues*)

Vehicle means any vehicle that is capable of being driven or drawn on roads by any means other than muscular power exclusively but does not include any vehicle designed to run exclusively on rails. (*véhicule*)

Chapter 2: Classes of Licence

Learners Licences - Classes 5 and 6

Jurisdictions generally differentiate licensing needs based on whether an applicant is a new or experienced rider or driver. New applicants may only need to go through a graduated licensing program (GLP) once – whether for class 5 or 6. If the applicant has a full class 5 or 6 and is seeking the other, they may be subject to less restrictive learner requirements. Most jurisdictions do not permit drivers to hold a GLP and non-GLP licence class at the same time, resulting in GLP licences being converted to a non-GLP equivalent once drivers complete GLP with one class.

The following describes graduated licensing requirements for classes 5 and 6.

Class 5 - Passenger Vehicles

Definition: Permits the operation of:

- any two-axle single vehicle
- any combination of a two-axle towing vehicle and a towed vehicle that does not exceed 4,600 kg
- any recreational vehicle
- any bus, taxi or ambulance without passengers
- any motorcycle known as a moped or limited speed motorcycle, but excluding the operation of any other type of motorcycles; and
- any motor vehicle known or described as a tractor, grader, loader, shovel, roller, scraper or any other self-propelled road building machine used for grading or paving of highways or other construction work, but excluding a construction vehicle with more than two axles other than a grader or three-axle compactor.

Stage 1 - Learner

Stage 1 is designed as a Learner Driver Licence and intended to be applied to all new drivers.

Standard	• Minimum age for application is 16 years • Age of application may be reduced if applicant is taking approved training or education • Knowledge test required (see NSC 2 for testing requirements) • Vision test required • 12-month minimum time requirement • Zero BAC • Passenger restrictions • Supervisor who has held a valid passenger vehicle driver licence, with no restrictions, for a minimum of 2 years • Lower threshold for demerit points • No use of handheld electronic devices such as cell phones, tablets, etc., while driving
Rationale	These requirements have demonstrated safety benefits in terms of mitigating crash risk for new drivers. Research has shown that the longer the new driver learns driving skills and behaviours in a controlled environment, the better the outcome in terms of crashes and crash risk. Key risk factors include driving skill, maturation and number of passengers. In addition, the 12-month minimum time requirement allows a new driver to practice in a controlled environment through all four seasons. GLP programs in Canada apply penalties such as fines, demerit points, and suspensions/prohibitions for violations of graduated driver licensing (GLP) conditions. During both the learner (stage 1) and intermediate/novice (stage 2) stages, new drivers are subject to lower demerit point thresholds than fully licensed drivers. When licence suspensions or driving prohibitions are applied, learners may begin the stage again and/or the stage is extended by the duration of the suspension to ensure that the learner has the full amount of driving experience before progressing to the next stage.
Policy Guidelines	Jurisdictions will conduct knowledge tests based on whether the individual wishes to drive a passenger vehicle as their entry to a graduated licensing program. For those jurisdictions offering a time discount with driver education, the 12-month minimum may not be strictly applied. Time discounts with driver education recognize an added value of monitored learning and driving experience in a controlled environment.

Stage 2 - Novice

Stage 2 recognizes that new drivers have achieved a level of driving competence that results in the removal of some restrictions; providing continued opportunity to develop safe driving behaviours in a lower risk environment.

Standard	• Successful completion of a road test to demonstrate safe driving skills and behaviours (following stage 1) • 12-month minimum time requirement • Zero BAC • Lower threshold for demerit points
Rationale	Research has demonstrated that crash risk decreases with age and maturation. After 12-months of learner experience and good driving behaviour, new drivers would be permitted to enter a second, less restricted driving phase, following the passing of a road test to demonstrate sufficient safe driving skills and behaviours. Lower thresholds for demerit points are maintained in order to incent safe driving behaviours for new drivers. These lower thresholds may trigger a re-start of the time duration for stage 2 of a GLP.
Policy Guidelines	Some jurisdictions choose to do two road tests: one to demonstrate basic driving skills and the other more advanced road and driving behaviour. However, if a jurisdiction chooses to administer only one test, they will assess skill and driving behaviour based on a driver's record in this phase of licensing. Higher risk drivers (those who go over a specified threshold of demerit points, convictions or other sanctions) will be subject to extended time in this phase while those who maintain a safe driving record will automatically be given their full licence at the end of this phase.

Stage 3 - Full Licence

Standard	• Pass a second, more advanced, road test or complete stage with safe driving record as defined by the jurisdiction.
Rationale	This stage of licensing reflects the achievement of individual readiness to drive without graduated licensing program restrictions.
Policy Guidelines	A road test is one method to assess necessary skills, attitudes and behaviours to operate a motor vehicle safely on-road. While not all jurisdictions have a second road test, behavioural outcomes are monitored and assessed with the requirement to remain in the GLP longer with higher risk behaviour – as demonstrated by at fault crashes, violations, licence suspensions, etc.

Class 6 - Motorcycles

Definition: for this licence class a motorcycle is defined as a vehicle that is of the subclasses: enclosed motorcycle, open motorcycle, or motor tricycle, but does not include a power-assisted bicycle, a moped, a restricted-use motorcycle, a passenger car, a truck, a multi-purpose passenger vehicle, a competition vehicle, a vehicle imported temporarily for special purposes or a three-wheeled vehicle.

Stage 1 - Learner

Standard	• Minimum age of application is 16 years • Knowledge test required (see NSC 2 for testing requirements) • Vision test required • 12-month minimum time requirement • Motorcycle skills test required • Zero BAC • No passengers • Lower threshold for demerit points • No use of handheld electronic devices such as cell phones, tablets, etc., while riding.
Rationale	These requirements have demonstrated safety benefits in terms of mitigating crash risk for new riders. Research has shown that the longer the new riders learn riding skills and behaviours in a controlled environment, the better the outcome in terms of crashes and crash risk. Key risk factors include riding skill, vehicle control, hazard perception, and maturation. In addition, the 12-month minimum time requirement allows a new rider to practice in a controlled environment through all four seasons. GLP programs in Canada apply penalties such as fines, demerit points, and suspensions/prohibitions for violations of graduated licensing (GLP) conditions. During both the learner (stage 1) and /novice (stage 2) stages, new riders are subject to lower demerit point thresholds than fully licensed drivers. When licence suspensions or driving prohibitions are applied, learners may begin the stage again and/or the stage is extended by the duration of the suspension to ensure that the learner has the full amount of driving experience before progressing to the next stage.

Policy Guidelines	Jurisdictions will conduct knowledge tests based on whether the individual wishes to drive a class 5 or 6 vehicle as their entry to a graduated licensing program. However, only one graduated licensing program is generally administered for each applicant. An individual who wishes to acquire their class 5 or 6 following the completion of a GLP for the alternate class, may be accepted into a shortened and less restrictive learner phase before being allowed to take the relevant road test. For class 6, appropriate skills, practical and road tests will be conducted based on the type of motorcycle applied for. A motorcycle skills test is generally a short test to confirm an individual's balance and ability to handle a motorcycle. It is often shorter than a full road test and may take place on or off road, e.g., a parking lot.

Stage 2 - Novice

Standard	• Successful completion of a road test to demonstrate safe riding skills and behaviours • 12-month minimum time requirement • Zero BAC • Lower threshold for demerit points • No use of handheld electronic devices such as cell phones, tablets, etc., while riding.
Rationale	Research has demonstrated that crash risk decreases with age and maturation. After 12 months of learner experience and good riding behaviour, new riders would be permitted to enter a second, less restricted driving phase. Lower thresholds for demerit points are maintained in order to incent safe riding behaviours for new drivers. In addition, these lower thresholds may trigger a re-start of the time duration for stage 2 of a GLP.

Stage 3 - Full Licence

Standard	• Completion of 2nd, more advanced road test • Demonstrated safe riding behaviour
Rationale	Distinguishing between learning for new riders and those that already have experience with on-road driving, is recognized by most jurisdictions. New riders with a class 5 would already have taken both knowledge and road tests that assess basic skills; understanding of signs, signals, rules of the road and riding. In addition, individuals would be expected to have grasped basic riding skills and gained experience which a new rider/driver would not have. Therefore, the same controlled riding context is not seen as necessary, and different learning requirements, those that address knowledge and skills related specifically to motorcycles, are imposed.
Policy Guidelines	Jurisdictions may require new riders to complete a graduated licensing program for motorcycles in addition to that for class 5. However, most jurisdictions require that an individual only go through GLP once and have alternate licensing requirements for experienced riders. While most jurisdictions have two practical tests, the first is usually a form of skill or balance test which determines that a new rider can handle the motorcycle and has basic riding competencies. Where jurisdictions differ is in the timing of their second, more advanced road test.

Higher Class Licences (1-4)

The higher licence classes may provide for subdivision of vehicle types. For example, Class 2 could distinguish between buses used for transit operation as opposed to those used as school buses. Class 3 could be sub-classified to differentiate between industrial vehicles and ordinary and straight trucks. The operation of a vehicle equipped with air brakes is generally not permitted without an endorsement for air brakes. Some jurisdictions include air brake testing in a specific class of licence.

Rationale

Continued focus on commercial trucking safety in the 1980's and 90's drove the work of numerous jurisdictions. In the U.S., the *Commercial Motor Vehicle Safety Act* (CMVSA; 1986) created a national Commercial Driver's License (CDL) program by requiring national minimum testing and licensing standards for commercial drivers. The CMVSA was intended to achieve two goals: to improve highway safety by ensuring that drivers of large trucks and buses are qualified to operate those vehicles and, second, to remove unsafe, unqualified drivers from the highways.

While the CMVSA came into effect in 1987, regulatory changes in 1988, established the minimum standards for state testing (knowledge and driving skills) and licensing of commercial motor vehicle (CMV) drivers. These changes also established the various classes of CDLs along with the necessary restrictions and air brake endorsement.

The desire for harmonization with the U.S. followed in the form of the *Motor Vehicle Transportation Act* (MVTA) which came into force on January 1, 1988; deregulating economic barriers to entry to the motor carrier industry. Prior to that, the Council of Ministers Responsible for Transportation and Highway Safety signed a Memorandum of Understanding in 1987, to develop and implement the NSC. The Senate approval of the MVTA was conditional upon implementation of a National Safety Code by the federal, provincial and territorial governments, to address concerns about the potential for negative safety impacts with increased participation and competition in the trucking industry. The objective was to establish uniform national safety standards for commercial vehicles which promote improved safety and efficiency within the motor carrier industry (Fifth Annual Report to Parliament, 1997, p.1). Fifteen mandatory and one discretionary standard were intended to govern intra and extra-provincial highway travel by commercial vehicles.

The rationale for these changes underpins higher class driver licensing for Standard 4 of the NSC. Trucks and buses are treated in separate classes because the special features of these vehicles demand a higher level of skill to operate as well as a different set of abilities than those required in the operation of other vehicles. Truck drivers also have a greater responsibility given the large size and weight of trucks and the greater potential for such vehicles to inflict damage and injury (McKnight 1986).

Air brakes

The operation of a vehicle equipped with air brakes is generally not permitted without an endorsement for air brakes. Some jurisdictions include air brake testing in a specific class of licence.

Class 4

Definition

Permits the operation of:
- any bus having a seating capacity of not more than 24 passengers (excluding the driver);
- any taxi or emergency response vehicles such as ambulances, fire trucks and police cars; and
- any motor vehicle or combination of vehicles in Class 5.

Eligibility

Standard	• Minimum age of application is 18 yrs. • Knowledge test • Must hold a full class 5 licence • Compliance with NSC 6 • Pre-trip inspection • Road test
Policy Guidelines	If an individual does not pass the medical, they will not be eligible to continue in the process for this class of licence. Knowledge tests should reflect the type of vehicle the individual wishes to drive or have questions that reflect all types of vehicles included in this class. Learners should be accompanied by a supervising driver who must hold a valid licence for this class of vehicle or higher.

Class 3

Definition

Permits the operation of:
- any single vehicle with three or more axles;
- any motor vehicle or combination of vehicles in Class 5; and
- any combination of three axle vehicles where the towed vehicle does not exceed 4,600 kg

Eligibility

Standard	• Minimum age of application is 18 yrs. • Knowledge test • Must hold a full class 5 or higher • Compliance with NSC 6 • Pre-trip inspection • Road test

Policy Guidelines	If an individual does not pass the medical, they will not be eligible to continue in the process for this class of licence. Learners should be accompanied by a supervising driver who must hold a valid licence for this class of vehicle or higher.

Class 2

Definition

Permits the operation of:
- any motor vehicle or combination of vehicles in Classes 5 and 4; and
- any bus of any seating capacity

Eligibility

Standard	• Minimum age of application is 18 yrs. • Knowledge test • Must hold a full class 5 or higher • Compliance with NSC 6 • Pre-trip inspection • Road test
Policy Guidelines	If an individual does not pass the medical, they will not be eligible to continue in the process for this class of licence. Learners should be accompanied by a supervising driver who must hold a valid licence for this class of vehicle.

Class 1

Definition

Permits the operation of:
- any tractor semi-trailer or truck trailer combination; and
- all vehicles in Classes 5, 4, 3 and 2.

Eligibility

Standard	• Minimum age of application is 18 years • Knowledge test • Must hold a full class 5 or higher • Compliance with NSC 6 • Pre-trip inspection • Road test
Policy Guidelines	If an individual does not pass the medical, they will not be eligible to continue in the process for this class of licence. There are no time requirements for learners in any jurisdiction. An individual may take a road test at any time after acquiring their learner status. Learners should be accompanied by a supervising driver who must hold a valid licence for this class of vehicle.

Chapter 3: Licensing Conditions/Restrictions and Endorsements

Conditions

A condition means a term of licensing that is imposed on an individual or an individual's licence by the authority. The terms 'condition' and 'restriction' are used interchangeably in many Canadian jurisdictions. For the purposes of these standards, 'condition' includes the concept of 'restriction'.
All Canadian jurisdictions use conditions on a driver licence as part of their driver fitness program, driver improvement program and to denote other program requirements or driving restrictions, for example, wearing corrective lenses, daylight hours only, and may only operate a vehicle with an ignition interlock device.

The following conditions may be commonly found on a driver licence or record:

- Corrective lenses
- Other medical (including prohibition for commercial drivers to operate into the U.S.)
- Ignition interlock
- Automatic transmission only
- Time of day restriction
- Hand or foot controls
- Speed limit restriction
- Geographic location restriction
- Tow weight restrictions

Jurisdictions may have more detailed restrictions relative to the above categories, which are intended to capture key areas related to safe driving.

Endorsements

An endorsement is a permissive status on a driver's licence that allows an individual to drive a vehicle with a special characteristic. Individuals must meet specified criteria for an endorsement, for example, air brakes.

The following endorsements may be required on a driver licence depending upon the class of licence and vehicle configuration:

- Air brakes
- Towing trailers above 4600 kg or jurisdictional threshold (heavy trailers)

Some jurisdictions have a unique endorsement for school buses (AB, SK, NB, NS, NT, NU). Another more common endorsement is the driving of longer vehicles (NU, NT, QC).
For classes 1, 2 & 3 in Quebec, a standard transmission endorsement is required.

APPENDIX 1: JURISDICTIONAL PRACTICES - 2018

Part 2 Standards for Driver Licensing Classification (Chapter 2 Classes of Licence)

Learners Licences - Classes 5 and 6

Stage 1 – Learner (classes 5 and 6)

Standard	• Minimum age for application is 16 years • Age of application may be reduced if applicant is taking approved training or education • Knowledge test required (see NSC 2 for testing requirements) • Vision test required • 12-month minimum time requirement • Zero BAC • Passenger restrictions • Supervisor who has held a valid passenger vehicle driver licence, with no restrictions, for a minimum of 2 years • Lower threshold for demerit points • No use of handheld electronic devices such as cell phones, tablets, etc., while driving
Jurisdictional Practices	The majority of Canadian jurisdictions have a parental consent requirement for new drivers under a specified age. Most jurisdictions increase sanctions for new drivers as a means of shaping good driving behaviour and applying harsher sanctions to control poor drivers who represent a greater risk on the road. For example, there are lower penalty point thresholds for learner drivers; administrative penalties may be imposed; and learners may need to re-start their time in a stage. Driving supervisors, while not required to have zero BAC, are subject to regular impaired and BAC laws (provincial and Criminal Code). As a best practice, jurisdictions may consider imposing a zero BAC for supervising drivers. Another common requirement is restricting driving to certain times of day, e.g., no nighttime driving. The restriction is used more in the stage 1 learner, but some jurisdictions also use it in stage 2 novice. While these time periods differ, so may the benefits, depending on other factors such as having a supervisor present, limiting passengers and restricting driving to roads with speed limits under 80 kph. Driver education and training may be encouraged to acquire basic operating skills. Such programs also provide opportunity to practice and gain needed driving experience in low risk situations, under the supervision of a qualified instructor. However, until research has demonstrated the crash reduction benefits of driver education and training, it should not receive special status, such as being allowed to substitute for time in the system.

	Another practice for some jurisdictions is the use of an "L" sign/plate. The beginner may be required to display an "L" sign/plate in/on the vehicle to alert other road users of their learner status and to assist police in enforcing GLP conditions. Some jurisdictions have restrictions on hands free as well as hand-held electronic devices recognizing the need for focused attention on driving while acquiring new skills and experience to drive safely.

Stage 2 – Novice (classes 5 and 6)

Standard	• Successful completion of a road test to demonstrate safe driving skills and behaviours (following stage 1) • 12-month minimum time requirement • Zero BAC • Lower threshold for demerit points
Jurisdictional Practices	Passenger restrictions – some jurisdictions specify that the supervisor must ride in the up-front passenger seat; no passengers except the supervisor; and passengers limited to immediate family members only. Another practice for some jurisdictions is the use of an "N" sign/plate. The requirement to display an "N" sign/plate in/on the vehicle to alert other road users of their driving status and to assist police in enforcing GLP conditions. Some jurisdictions have restrictions on hands free as well as hand-held electronic devices recognizing the need for focused attention on driving while acquiring new skills and experience to drive safely.

Stage 3 - Full Licence (classes 5 and 6)

Standard	• Pass a second, more advanced, road test or complete stage with safe driving record as defined by the jurisdiction.
Jurisdictional Practices	Jurisdictions may consider additional or extended GLP restrictions on new drivers such as zero BAC for a longer period of time (e.g., Manitoba has a 3-year requirement with full licensure post GLP) and not supervising drivers for a specified period of time (e.g. Manitoba specifies 3 years before a new driver can be a GLP supervisor.

Class 6 - Motorcycles

Stage 1 – Learner (motorcycles)

Standard	• Minimum age of application is 16 years • Knowledge test required (see NSC 2 for testing requirements) • Vision test required • 12-month minimum time requirement • Motorcycle skills test required • Zero BAC • No passengers • Lower threshold for demerit points • No use of handheld electronic devices such as cell phones, tablets, etc., while riding.
Jurisdictional Practices	Some jurisdictions reduce the age of application if an applicant is taking approved training or education. Parental consent is required at an age determined by jurisdictions. Many jurisdictions have a requirement for an accompanying rider or supervisor. Persons in this role may be required to hold a valid class of driver licence, with no restrictions, for a minimum period of time, or be of a specified age. Some jurisdictions require that the written and skills test be completed before a learner's licence is issued. Supervising a new rider is somewhat more challenging than a new driver as the supervisor cannot be in or on the same vehicle. Supervisors can be in a separate vehicle or motorcycle, accompanying the new rider. It is advisable that the supervisor maintain the new rider in their line of sight or be able to assist. As with other passenger vehicle GLP restrictions, some jurisdictions will restrict riding to daylight hours and less speeds. Some jurisdictions have restrictions on hands free as well as hand-held electronic devices recognizing the need for focused attention on driving while acquiring new skills and experience to drive safely. In PEI, Stage 1 Learners must where at small "L" decal on helmet. In addition, PEI restricts validity of the permit to 30 days, wherein a road test must be performed.

Stage 2 – Novice (motorcycles)

Standard	• Successful completion of a road test to demonstrate safe riding skills and behaviours • 12-month minimum time requirement • Zero BAC • Lower threshold for demerit points • No use of handheld electronic devices such as cell phones, tablets, etc., while riding.
Jurisdictional Practices	Another practice for some jurisdictions is the use of an "N" sign/plate. The requirement to display a "N" sign/plate in/on the vehicle to alert other road users of their riding status and to assist police in enforcing GLP conditions. Other requirements include prohibiting riding between midnight and 5 am and wearing protective gear. In B.C., a motorcycle licence can be suspended for 12 months if convicted of certain high-risk offences (stunting, excessive speed etc.). In addition, the new rider must start each stage over if any at-fault collisions or traffic convictions occur on a motorcycle. The Yukon specifies that riders in this stage of GLP may not take on passengers under 13 years old. Failure to meet conditions or a penalty is imposed resulting in a restarting of the novice stage. Some jurisdictions have restrictions on hands free as well as hand-held electronic devices recognizing the need for focused attention on driving while acquiring new skills and experience to drive safely. In PEI, stage 2 Learners must where a small "G" on helmet.

Stage 3 - Full Licence (motorcycles)

Standard	• Completion of 2nd, more advanced road test • Demonstrated safe riding behaviour
Jurisdictional Practices	As with the passenger vehicle class, some jurisdictions do not have an exit road test, that is, they do not require a final road test before an individual gets their full licence. Demonstrated safe riding behaviour provides an indicator of this phase of licensing that the rider can graduate from a novice to full licence.

Higher Class Licences (1-4)

Standard	• Minimum age of application is 18 yrs. • Knowledge test • Must hold a full class 5 licence • Compliance with NSC 6 • Pre-trip inspection • Road test
Jurisdictional Practices	With the emergence of new technologies and innovative transportation options such as ride-sharing jurisdictions have been reviewing their requirements. In some cases, taxi requirements are being aligned with ridesharing and in other cases not. Medicals, which include vision tests as per NSC 6, may be done at any time during the process, depending on jurisdictional practices. Most jurisdictions require that all outstanding fines and debt be paid before applying for a higher class licence. For reciprocity, most jurisdictions will require a medical when an individual is looking to exchange their class 4. A number of jurisdictions issue a learner licence for this class however there are no time requirements for learners in any jurisdiction. An individual may take a road test at any time after acquiring their learner status.

Class 3

Standard	• Minimum age of application is 18 yrs. • Knowledge test • Must hold a full class 5 or higher • Compliance with NSC 6 • Pre-trip inspection • Road test
Jurisdictional Practices	Most jurisdictions require that all fines and debt be paid before applying for a higher class licence. Medicals, which include vision tests as per NSC 6, may be done at any time during the process, depending on jurisdictional practices. Some jurisdictions allow for the driving of class 4 vehicles with this class of licence. Some jurisdictions specify a minimum age or amount of driving experience that a supervisor must have before they can accompany a learner. For reciprocity, most jurisdictions will require a medical when an individual is looking to exchange their class 3.

Class 2

Standard	• Minimum age of application is 18 yrs. • Knowledge test • Must hold a full class 5 or higher • Compliance with NSC 6 • Pre-trip inspection • Road test
Jurisdictional Practices	Some jurisdictions specify a minimum age or amount of driving experience that a supervisor must have before they can accompany a learner. In addition, one jurisdiction restricts BAC to zero. Medicals, which include vision tests as per NSC 6, may be done at any time during the process, depending on jurisdictional practices. Most jurisdictions require that all fines and debt be paid before applying for a higher class licence. A common practice is to treat school buses differently than coach or other types of buses by requiring a special endorsement, higher age threshold, separate subcategory of licence, criminal record check, or mandatory training. Two jurisdictions have a penalty point threshold that prohibits an individual from applying for this class of licence. For reciprocity, most jurisdictions will require a medical when an individual is looking to exchange their class 2.

Class 1

Standard	• Minimum age of application is 18 years • Knowledge test • Must hold a full class 5 or higher • Compliance with NSC 6 • Pre-trip inspection • Road test
Jurisdictional Practices	Most jurisdictions require that all fines and debt be paid before applying for a higher class licence. For reciprocity, most jurisdictions will require a medical when an individual is looking to exchange their class 1. Mandatory training is required in Ontario as of July 1, 2017. Ontario also provides for a restricted Class A to address issues with horse trailers. Alberta's introduction of new entrant training requirements is March 1, 2019, followed by Saskatchewan on March 15, 2019. Medicals, which include vision tests as per NSC 6, may be done at any time during the process, depending on jurisdictional practices. Some jurisdictions allow for the driving of long combination vehicles through mechanisms such as permitting or endorsements.

STANDARD 5

SELF-CERTIFICATION STANDARDS AND PROCEDURES

Although this Standard appears in the *National Safety Code for Motor Carriers*, it is important to note that it applies to all drivers, including commercial drivers.

TABLE OF CONTENTS

A. DEFINITIONS

Within the context of this standard, the following definitions apply:

"assessment" (*évaluation*) means any activity designed to establish if a professional driver trainee's knowledge, skills and ability to drive meet precise criteria.

"certification" (*reconnaissance*) means a document attesting that a professional driver trainee has the required knowledge, skills and ability to drive certain types of vehicles.

"authorized agent" (*mandataire*) means a motor carrier or a school duly recognized by the licensing authority, and granted the responsibility of evaluating professional driver trainees' skills, knowledge and ability to drive certain categories of vehicles.

B. OBJECTIVES OF THE PROGRAM

The Self-Certification Program for professional driver trainees will ensure the following objectives are met:

- to enable motor carriers acting as authorized agents to perform quality assessments of the professional driver trainees they employ;
- to enable schools acting as authorized agents to perform quality assessments of the professional drivers they train;
- to facilitate the process for obtaining a higher-class driver licence, while at the same time ensuring that a trainee receives quality training and assessment;
- to monitor the training of professional driver licence applicants;
- to reduce the costs involved in issuing higher-class driver licences through the participation of motor carriers and schools as authorized agents.

Professional driver trainees employed by a motor carrier and students enrolled for training as professional drivers in a recognized school are the target groups for this program.

In addition to holding the appropriate class of driver licence for training purposes, the professional driver trainee shall meet the existing requirements concerning:

- minimum age;
- years of driving experience;
- medical standards;
- payment of prescribed fees.

The professional driver trainee will receive proper training and will thus be able to meet the prescribed criteria for the category of driver licence applied for. The Self-

Certification Program will enable him to obtain the category of driver licence applied for, or even confirm his ability to meet greater responsibilities, and to obtain eventually, if required, a special permit (e.g., transportation of dangerous goods, air brakes).

The driver licence applied for will be granted by the appropriate government licensing authority on the recommendation of the authorized agent.

A jurisdiction is entitled to limit the extent of the powers granted to its authorized agents. It is therefore proposed that, in all cases, jurisdictions retain the right to:
- assess the medical fitness of candidates;
- issue learner/instructional driver licences;
- issue driver licences;
- develop or approve theoretical and practical tests;
- develop or approve the professional driver training program.

C. PROGRAMS AND TRAINERS

1. Training Program

Since there must be formal correspondence between training and assessment, the training programs must meet the following standards.

A training program shall have:
- a stated objective;
- standards of applicability;
- a detailed table of the training modules for both the theoretical and the practical components of the program;
- the detailed contents of each training module.

Subject areas covered by the training program shall include:
- the driver;
- the vehicle;
- driving practices;
- laws and regulations.

2. Development Training

The aims of the training course offered to professional drivers employed by a motor carrier and who already hold a higher-class driver licence are:
- to upgrade their knowledge;
- to strengthen their skills;
- to correct possible weaknesses;
- to ensure acquisition of specific knowledge or skills (e.g., transportation of dangerous goods, air brakes).

3. **Trainer**:

(a) **Instructor Requirements**

– The instructor must meet the requirements referred to in point 3, Section D.

– The instructor must be employed by the firm either as an employee or as a consultant and work in a position directly related to highway safety.

– The instructor must provide proof of five years of relevant experience with a motor carrier, or of two years as a qualified trainer in a recognized school.

– The instructor must have a good teaching record with the firm or the institution where he is employed.

– The instructor must have a good driving record.

(b) **Instructor Training**

The training provided to the instructor should ensure that he has proper knowledge and expertise in, among others, the following subject areas:
– highway safety;
– fleet management;
– adult education.

D. CERTIFICATION OF AUTHORIZED AGENTS

An organization applying to become an authorized agent for the purpose of assessing and certifying professional driver trainees does so on a voluntary basis.

Furthermore, the fact that an organization meets the requirements for qualification as an authorized agent does not preclude the licensing authority exercising, under certain circumstances, discretionary powers.

1. **Application Requirements**

Carriers and schools applying for authorized agent status will have to satisfy certain requirements. It is essential that government licensing authorities ensure that each authorized agent meets the conditions for proper assessment and training of professional drivers.

(a) **Qualification Requirements for Authorized Agents**

The following criteria must be met for qualification as an authorized agent:

- a firm which has been operating as a motor carrier for at least five years or a duly recognized school which has been fully accredited by the licensing authority for at least two years to offer professional driver training;

- a motor carrier that employs a minimum of 50 professional drivers on a full-time basis or a school that provides training to a minimum of 50 driver trainees annually;

- a motor carrier delegating responsibility for highway safety to an employee or a consultant who must be entitled to give instruction to its employees and to assess them; or a school whose instructors are qualified and accredited by the licensing authority to provide instruction to professional driver trainees and who are deemed capable of assessing them;

- a motor carrier with an excellent highway safety record or a school with an excellent professional driver training record.

(b) **Requirements for Acting as Authorized Agents**

The motor carrier or school recognized as an authorized agent, through a memorandum of agreement with the licensing authority, undertakes to respect the terms of the agreement concerning training, assessment, certification, etc.

- The motor carrier agrees to:
  - meet the objectives of the training program duly approved by the licensing authority;
  - respect the terms prescribed for driver testing;
  - offer the approved training program only to the professional driver trainees it employs.

- The school agrees to:
  - meet the objectives of the training program duly approved by the licensing authority;
  - respect the terms prescribed for driver testing;
  - offer the approved training program to professional driver trainees.

- The length of the initial agreement is of two years. An agreement may be renewed for maximum periods of five years or may lapse or be revoked if its terms are not respected by the authorized agent. If the agreement with a motor carrier or school is revoked, this

motor carrier or school will not be allowed to apply for qualification as an authorized agent for two years following the date of the revocation.

The agreement between the licensing authority and its authorized agents may also state more specific requirements.

2. **Administrative Procedures**

For an efficient implementation of the Self-Certification Program, certain responsibilities must be shared between the licensing authority and the authorized agents.

(a) **Responsibilities of the Jurisdiction**

Broadly, the jurisdiction must undertake to:

- inform authorized agents of the program for professional driver trainees;
- detail what will be the share of responsibility resting with each party;
- detail the length and terms of the agreement, the grounds for revocation, the frequency of and procedures for evaluation and monitoring of the agent during the period of the agreement, and the rules governing test confidentiality;
- detail the criteria for renewal of the agreement;
- develop the terms of agreement;
- develop or approve theoretical and practical tests for assessing professional driver trainees;
- develop or approve the professional driver training program.

(b) **Responsibilities of the Authorized Agent**

Broadly, the authorized agent must undertake to:

- respect the terms of the agreement concerning his role in the training and assessment of professional driver trainees;
- facilitate his own evaluation and monitoring by the licensing authority during the period of the agreement;
- advise the licensing authority of any change occurring during the period of the agreement (turnover of staff, breaks in the training program, etc.);
- provide the licensing authority with any information required under the terms of the agreement;
- ensure the confidentiality of the tests used in the assessment of professional driver trainees.

3. **Support to Authorized Agents**

As a support measure for authorized agents and to ensure the quality of instruction offered during the training period, the licensing authority, in addition to developing or approving the theoretical and practical tests as well as the training program, may:

– monitor the professional credentials of the instructors/assessors employed by authorized agents and ensure that their driving record qualifies them for this position;

– set the test format to be followed for assessment of professional driver trainees;

– set the requirements to be met by the instructors employed by authorized agents in their training and/or assessing functions;

– comment, if necessary, on the teaching methods used.

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Canadian Council of Motor Transport Administrators
Conseil canadien des administrateurs en transport motorisé

National Safety Code

Standard 6:
Determining Driver Fitness in Canada

Part 1: A Model for the Administration of Driver Fitness Programs

Part 2: CCMTA Medical Standards for Drivers

February 2021
ISBN: 978-1-927993-69-9

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Foreword

Driving a motor vehicle in Canada is a privilege that may be accorded to an individual by the driver licensing authority of the province or territory in which they live. In order to exercise a privilege such as driving, the individual must meet the specified criteria including the demonstration of an acceptable level of competence. To qualify for a driver's licence an individual must, among other requirements, be able to demonstrate medical fitness to drive.

Part 1 of this document explains how Canadian jurisdictions perform their role in assessing the medical fitness of drivers while Part 2 contains the *Canadian Council of Motor Transport Administrators (CCMTA) Medical Standards for Dr*ivers.

This document is the result of a lengthy and intensive process, begun in 2006 and results in the first publication in 2012 that reflects CCMTA's commitment to:

- base its medical standards on the best evidence available,
- focus on functional ability to drive rather than exclusively on medical diagnoses, and to
- respond to case law establishing that Canadian licensing authorities must assess individually each driver's fitness to drive.

These guidelines and standards reflect Canadian jurisdictions' continuing commitment to public safety while allowing drivers to drive as long as they can demonstrate safe driving practices. This version was published in 2020.

Acknowledgements and Thanks

The production of this document was a result of a collaboration of representatives of all of the provinces and territories and many individuals from these jurisdictions with various expertise contributed to the final product.

However, CCMTA would also like to specifically thank the province of British Columbia which provided the model for driver fitness, the scientific framework upon which these standards are based.

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BACKGROUND

Chapter 1: Introduction

1.1 Objective

Many jurisdictions throughout the world publish their medical standards for drivers. For some, their publication is a simple compendium of the standards with little or no explanations. Others provide detailed guidelines on the interpretation of the standards.

The working group that produced this document were unable to identify any jurisdictional publications that examine the procedures used by the driver licensing authority to apply the standards. Consequently, Part 1 of this document is a model for and applied by Canadian driver-licensing authorities in the determination of fitness to drive. Application of the guidelines contained in Part 1 will facilitate a consistent approach to driver fitness decision-making by provincial and territorial government driver licensing authorities across Canada.

Part 2 of this document contains the medical standards themselves as well as the supporting material clarifying the reasons for the standard including background material on the medical conditions and their effects upon driving.

1.2 How this document is organized

This document consists of 4 sections:

Background

Provides the context for the standards outlined in Parts 1 and 2.

Part 1, A Model for the Administration of Driver Fitness Programs.

Provides guidelines and a process model for driver-licensing authorities to follow during the driver fitness determination process.

***Part 2: CCMTA Medical Standards for Drivers*.**

Contains the standards for the different medical conditions that may influence driving fitness and provincial/territorial contact information.

Appendices

- *Appendix 1: Licence classes,* describes the vehicles that may be driven by commercial and non-commercial drivers
- *Appendix 2: Reciprocity Agreement between Canada and the United States* contains information on the letters between Canada and the US that outline the driver fitness expectations for Canadian commercial vehicle drivers that drive in the U.S.
- *Appendix 3: Provincial/Territorial Contact Information*

Chapter 2: The authority for the CCMTA standards

2.1 Canadian Council of Motor Transport Administrators

The Canadian Council of Motor Transport Administrators (CCMTA) coordinates all matters dealing with the administration, regulation and control of motor vehicle transportation and highway safety. Membership includes representation from provincial and territorial governments as well as the federal government of Canada.

CCMTA supports its members' vision to have the safest and most efficient movement of people and goods by road in the world. It is the custodian of the National Safety Code, and as reflected in its mission, provides collaborative leadership in the areas of Road Safety Research and Policy, Drivers and Vehicles and Compliance and Regulatory Affairs.

Through a collective consultative process, CCMTA makes decisions on administration and operational matters dealing with licensing, registration and control of motor vehicle transportation and highway safety.

CCMTA's 14 members are elected from all provincial/territorial governments as well as the federal government. CCMTA is accountable to:

- the Council of Deputy Ministers and Ministers responsible for Transportation and Highway Safety for providing advice and making recommendations on matters relating to transportation and highway safety
- the provinces, territories and the federal government, for promoting a better understanding and cooperation in all matters related to transportation and highway safety among each other, as well as other organizations where there exists a mutual interest
- its stakeholders, for maintaining an ongoing dialogue and consultation to ensure CCMTA is responsive and informative

Reporting to the CCMTA Board, the work of CCMTA is conducted by three program committees. Their mandates are as follows:

The Program Committee on Drivers and Vehicles is responsible for all matters relating to motor vehicles registration and control, light vehicle standards and inspections, and driver licensing and control.

The Program Committee on Compliance and Regulatory Affairs is responsible for compliance activities related to commercial drivers and vehicles, transportation of dangerous goods and motor carrier operations.

The Program Committee on Road Safety Research and Policies is tasked with coordination of federal provincial and territorial road safety efforts, preparation of recommendations in support of road safety programs, and development of overall expertise and actions plan to prevent road accidents and reduce their consequences.

CCMTA maintains a relationship with stakeholders from the private sector and other government departments through its Associate program. These individuals provide expertise and opinions in the development of strategies and programs.

CCM*TA's Vision is to have the safest and most efficient mo*vement of people and goods by road in the world.

2.2 Mandate of the CCMTA Driver Fitness Overview Group (DFOG)

The Driver Fitness Overview Group reports to the *CCMTA Program Committee on Drivers and Vehicles*. Members are a mix of various types of expertise on driver fitness and consist of administrators and health care professionals representing the licensing authorities.

The mandate of the CCMTA DFOG is to derive a set of driver fitness policies for jurisdictional use that incorporate the best ideas and principles included in the literature and to maintain its currency through periodic review. ***Balancing road safety and mobility needs of Canadians through collaborative development and application of world class driver medical fitness standards and operational processes based on best-evidence.***

Specific responsibilities include:

- Recommending uniform medical standards to be used by administrators in assessing medical fitness to operate a motor vehicle
- Coordinating and communicating research that informs the maintenance of the CCMTA guide medical standards
- Sharing operational information, processes, and efficiencies as well as research, and best practice
- Developing strategies for all driver medical fitness assessment using a driver fitness model based on a functional approach to determine the impact on the functions of driving
- Coordinating the work of any specific sub-groups
- Maintaining and managing the CCMTA Medical Standards document
- Act as liaison on behalf of CCMTA with other organizations (e.g.: Canadian Medical Association, U.S. Federal Highway Administration (FMCSA), medical specialty societies). Also liaise with all CCMTA standing committees. Representatives from these committees and organizations may be invited to participate in the proceedings of the group
- Act as a clearing house for all activities under its purview
- Identifying areas of concern and direct activities accordingly

2.3 The relationship between individual Canadian jurisdictions' driver fitness policies and the CCMTA standards

All Canadian provinces and territories have the authority to establish their own driver fitness policies and procedures. All have a medical review board or unit acting in an advisory capacity to the jurisdiction's licensing body on medical matters that may affect a person's fitness to drive. However, in order to support a consistent approach to driver fitness across the country, the provinces and territories have agreed to publish the CCMTA Medical Standards for Drivers.

In 1985, medical standards for drivers were included as part of the National Safety Code (NSC) initiative undertaken to achieve uniformity among the provinces and territories on many aspects relating to the administration of drivers and vehicles. The rationale being that licence transfers upon a change of province of residence should not be complicated by divergent medical requirements.
The classification of driver licences adopted by the provinces and territories as part of the NSC is shown in Appendix 1 and is used by all the Canadian jurisdictions except Ontario.

A Medical Advisory Committee (MAC), comprised of physicians appointed by each jurisdiction, was created to identify and reconcile interprovincial medical standard variances and produce a harmonized standard. The basis for developing the harmonized medical standards was primarily publications from the Canadian Medical Association (CMA) and other medical speciality associations.
In 2000, CCMTA created a Driver Fitness Project Group to carry out a standards review that focused on risk, compensation, accommodation, functional focus and how to apply each medical standard. This approach reflected recent trends relating to evidence-based medicine rather than consensual standards in determining an individual's fitness to drive.

The Driver Fitness Overview Group in 2008 was given a mandate to:

(i) consolidate the work of the MAC and Driver Fitness Project Group to avoid duplicate work, duplicate reporting and record keeping and to house all medical-related issues under the same umbrella, and

(ii) produce one central CCMTA medical document.

In 2011 the Driver Fitness Overview Group developed new driver fitness standards in conjunction with subject-matter experts including researchers, general practitioners, medical specialists and administrators from Canadian driver licensing authorities. The standards are intended as a guide in establishing basic medical qualifications to drive for both commercial and non-commercial drivers and are intended for use by both physicians and driver licensing authorities.

Although no jurisdiction in Canada is legally required to adopt the CCMTA standards, the majority have been adopted by the driver licensing authorities. This achieves a

uniformity of standards across Canada which supports both road safety and inter-provincial harmonization.

All medical standards, and subsequent changes, contained in Part 2 of this document are approved by all the jurisdictions through a balloting process that requires a two thirds majority for approval.

2.4 The relationship between Canadian jurisdictions' driver fitness standards for commercial drivers, the CCMTA standards and the North American Free Trade Agreement

Under the North American Free Trade Agreement (NAFTA), on March 30, 1999, the United States and Canada agreed that the medical provisions for drivers of commercial motor vehicles (CMVs) of U.S. Federal Motor Carrier Safety Regulations (FMCSRs) and the Canadian National Safety Code (NSC) are equivalent (see Appendix 2).

Three exceptions for Canadian drivers were specified by the United States authorities in this reciprocity agreement: those who are (i) insulin-treated diabetics, (ii) hearing impaired at a defined level, or (iii) have a history of epilepsy are not permitted to operate CMVs in the United States although such individuals are allowed to drive commercial vehicles in Canada.

Also, drivers from either country operating under a medical waiver or who are operating under medical grandfather rights are prohibited from operating in the other country.

Because the reciprocity agreement between the United States and Canada identifies the CCMTA standards as the standard for commercial drivers, this means that regardless of individual provincial or territorial standards, drivers of CMVs must conform to the CCMTA standards if they wish to drive a CMV in the United States.

Commencing in January 2012, both countries agreed to adopt a unique identifier code to be displayed on the licence and the driving record to identify a commercial driver who is not qualified to operate a CMV in the other country.

In Canada, the identifier code is "W", and defined as: "restricted commercial class – Canada only". In the United States, the identifier code "V" will indicate the U.S. driver is only allowed to drive in the U.S. and is not medically qualified to drive in Canada.

On September 24, 2019, both Canada and the United States agreed to remove the Code W identifier for Canadian insulin-dependent diabetic drivers who are well controlled. These commercial motor vehicle drivers can now drive in Canada and the United States.

Chapter 3: Roles and responsibilities in driver fitness

All Canadian jurisdictions work in partnership with physicians, health care professionals and other agencies to implement and administer driver fitness programs. The following paragraphs illustrate the roles and responsibilities of key participants in assessing and determining driver fitness.

3.1 Government driver-licensing authorities

On a day-to-day basis, government driver-licensing authorities make the final driver fitness decision as to whether a driver is fit to drive.

3.2 Health professionals

Health professionals play a key role in identifying and assessing drivers who may be unfit to drive. In some jurisdictions they have a legal duty (mandatory reporting) to report certain medical conditions. Even in jurisdictions without mandatory reporting by physicians, ethical guidelines may describe situations in which the physician is required to submit a report to the driver-licensing authority.

Health professionals also conduct assessments and provide information to the driver licensing authority regarding a driver's health and extent of impairment. Sometimes health professionals are asked to comment directly on driving ability.

Medical specialists may be called upon to provide written or oral opinions when a driver asks for a review of the driver fitness decision.

3.3 Allied health professionals

Other allied health professionals such as occupational therapists, driver rehabilitation therapists and physiotherapists may be asked to conduct assessments of drivers and comment on the driver's functional ability to drive. In some jurisdictions, driver licensing authorities may accept reports initiated by allied health professionals because of driver fitness concerns.

Chapter 4: A changing approach to determining driver fitness

Before 2012 the CCMTA medical standards were based on the diagnostic model. That is, the standards were based primarily on the medical condition and the presumed group characteristics of people with that condition rather than on how the medical condition affected the functions necessary for driving on an individual basis. In terms of an evidentiary basis, the standards reflected the consensus opinion of practicing medical specialists.

Three developments have had a significant effect on the procedure for the administration of driver fitness programs and the medical condition guidelines:

1. A Supreme Court of Canada decision established the requirement to individually assess drivers. The '*Grismer*'[1] case held that each driver must be assessed according to the driver's own personal abilities rather than presumed group characteristics.

2. Nationally and internationally, driver licensing authorities are adopting a functional approach to driver fitness. This means assessing the effect of a medical condition on the physical, cognitive and sensory functions necessary for driving.

3. CCMTA has increased its emphasis on using research evidence, where it exists, as the basis of its driver fitness standards. Each medical condition in Part 2 is included because the best available evidence shows that the medical condition causes impairment of one or more of the functions necessary for driving or has been associated with an elevated risk of crash or impaired driving performance.

   The model for this work was drawn from British Columbia's approach to medical conditions and fitness to drive which in turn was based on an integrated review by Dr. B. Dobbs who was contracted by British Columbia.

   The guiding principles articulated on the following pages reflect the CCMTA's changing approach to driver fitness and are the foundation of the new standards in Part 2.

Chapter 5: Guiding principles

The assessment of driver fitness is guided by four principles. By following these principles, Canadian driver licensing authorities will ensure that drivers are given the maximum licensing privilege possible taking into account their medical condition, its effect on the functions necessary for driving, and the driver's ability to compensate for the condition. These principles are the foundation of the *Administration of Driver Fitness Programs* in Part 1 of this document.

5.1 Principle 1 - Risk management

Principle

Driver licensing authorities will administer their driver fitness programs using a risk management approach.

[1] British Columbia (Superintendent of Motor Vehicles) v. British Columbia (Council of Human Rights), [1999] 3 S.C.R. 868

Discussion

Risk is often defined as the likelihood of an uncertain event occurring multiplied by the consequences if the event were to take place. This means that a highly likely event with serious consequences is a greater risk than an unlikely event with minor consequences. Risk management is the process of identifying risks and taking action to minimize either the likelihood or the consequences of an event.

Unfortunately, there is no reliable method of calculating risk as it relates to fitness to drive. The effects of a medical condition may be specific to an individual and the ability to compensate for the medical condition may also vary by individual. As well, because the driving environment is complex and continuously changing, it is difficult to determine exactly what level of impairment means a person is not fit to drive. Because of these limitations, driver licensing authorities cannot precisely calculate the risk presented by a driver with a particular medical condition.

Despite the fact that this risk cannot be precisely calculated, driver licensing authorities can still use a risk management approach when conducting activities associated with their driver fitness programs. In *Grismer*, the Supreme Court of Canada indicated that people with some level of functional impairment may have a driver's licence because society can tolerate a degree of risk in order to permit a wide range of people to drive.

5.2 Principle 2 - Functional approach

Principle

Driver fitness determinations will no longer be based solely on diagnosis but primarily on functional ability to drive.

Discussion

Although there are some exceptions to this general principle, a functional approach to determining driver fitness means that when making driver fitness determinations, the focus is on the effect that a medical condition has on the functions necessary for driving rather than making a decision based solely on the diagnosis. This is because many medical conditions may result in a wide range of impairment – from mild to severe – and drivers may vary in their own ability to compensate for the impairment.

5.3 Principle 3 - Individual assessment

Principle

Driver fitness determinations will be based on the individual driver's characteristics and abilities rather than the presumed group characteristics and abilities of people with that medical condition.

Discussion

The *Grismer* decision held that each driver must be assessed according to the driver's own personal abilities rather than presumed group characteristics.

However, the driver fitness standards outlined in Part 2 are based on presumed group characteristics of individuals with a given medical condition. However, consistent with the decision in *Grismer*, driver licensing authorities must make driver fitness determinations on an individual basis. This means that the standards are the starting point for decision-making, but they may not apply to every individual. This takes into account that in some situations, individuals who would otherwise not be fit to drive have learned strategies, or utilize devices, to compensate for their functional impairment. For example:

- a driver with limited peripheral vision may use the strategy of turning their head (scanning) to the left and right to ensure that they cover the full field of view, or
- a driver who is unable to use their lower limbs may have their vehicle modified for hand controls.

Conversely, an individual who on the face of the standard would be fit to drive may be found unfit. For example:

- a driver with a visual defect may lack insight into the effects that their medical condition has on their driving and therefore cannot compensate properly for this impairment. Because of their lack of insight, this driver would not be fit to drive.

5.4 Principle 4 – Reviewing and considering the best information available

Principle

Driver licensing authorities will review and consider the best information available when making driver fitness determinations.

Discussion

For each driver, driver licensing authorities will gather the available information they require in order to determine fitness. Depending upon the nature and the degree of the functional impairment, the information may include results of specialized functional assessments that clearly indicate whether or not an individual is fit to drive, such as a road test or an occupational therapist's evaluation. For other impairments there may be no assessment tools available that can accurately measure the effects of a medical condition on the functions necessary for driving. For example, in the case of drivers with episodic impairments, driver licensing authorities have to rely on the results of medical assessments that incorporate statistical risk analysis and informed opinion about the risk of a reoccurrence as the best information available for determining fitness to drive.

Driver licensing authorities will generally rely on the medical standards to make driver fitness determinations. However, because each individual is unique, authorities must also review and consider other available and relevant information when making driver fitness determinations.

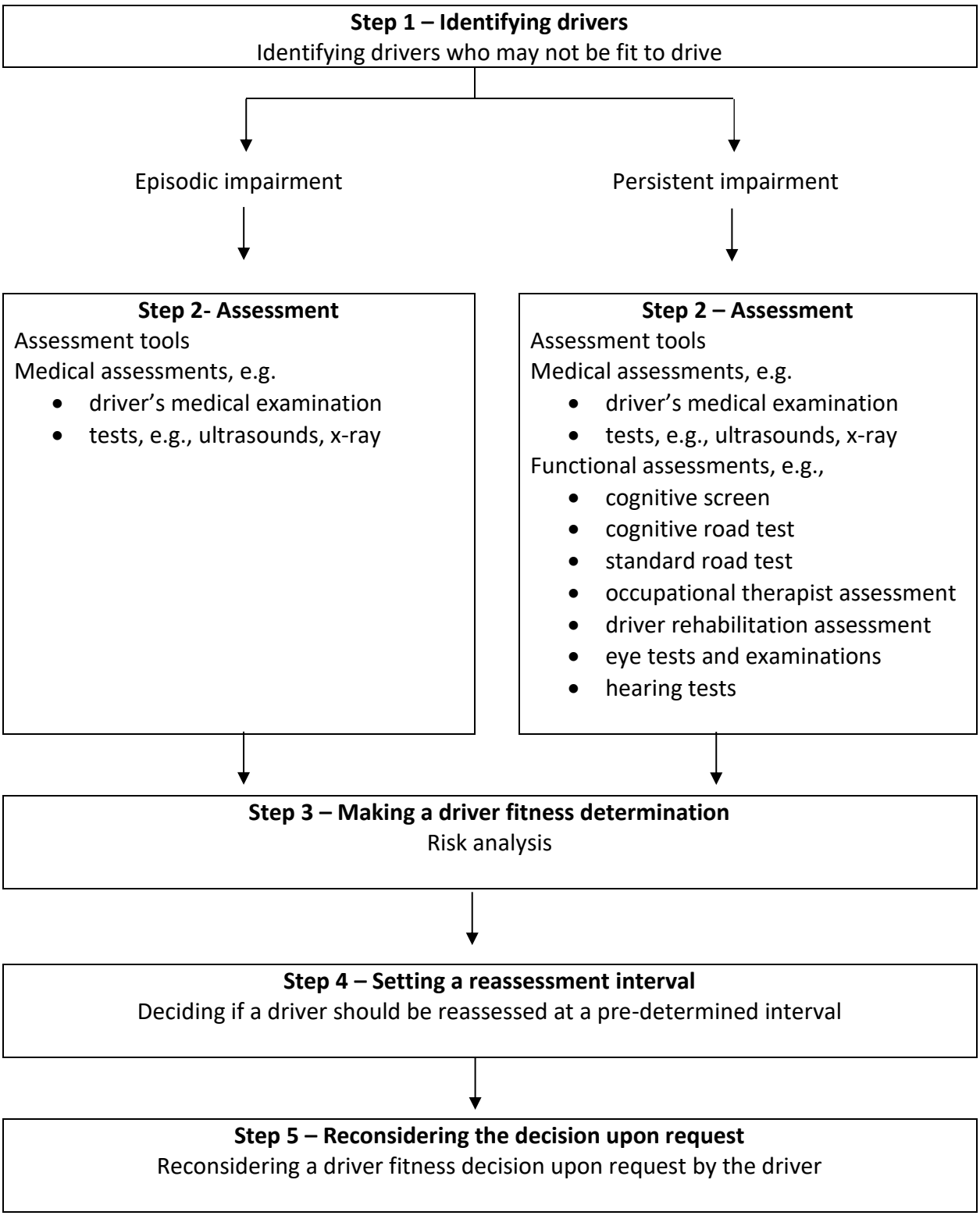
PART 1

A MODEL FOR ADMINISTRATION OF DRIVER FITNESS PROGRAMS

Chapter 1: Introduction

Individual territorial and provincial driver licensing authorities administer their driver fitness programs in a variety of ways. However, to support the consistent use of the medical standards, guidelines for the administration of driver fitness programs have been articulated by DFOG. These guidelines have been organized under five key activities:

1. identifying drivers who may not be fit to drive
2. assessing drivers: assessment tools
3. making a decision regarding driver fitness: risk analysis
4. deciding if a driver should be reassessed at a pre-determined interval, and
5. reconsidering a driver fitness decision upon a request by the driver.


Step 1 – Identifying drivers
Identifying drivers who may not be fit to drive
Episodic impairment
Persistent impairment
Step 2- Assessment
Assessment tools
Medical assessments, e.g.
driver's medical examination
tests, e.g., ultrasounds, x-ray
Step 2 – Assessment
Assessment tools
Medical assessments, e.g.
driver's medical examination
tests, e.g., ultrasounds, x-ray
Functional assessments, e.g.,
cognitive screen
cognitive road test
standard road test
occupational therapist assessment
driver rehabilitation assessment
eye tests and examinations
hearing tests
Step 3 – Making a driver fitness determination
Risk analysis
Step 4 – Setting a reassessment interval
Deciding if a driver should be reassessed at a pre-determined interval
Step 5 – Reconsidering the decision upon request
Reconsidering a driver fitness decision upon request by the driver

Chapter 2: Definitions

Assessment means using any kind of test or examination to gather information about a driver's functional ability to drive. Assessments may be either functional or medical (see definitions of these terms) and lead to a driver fitness determination.

Authority See definition of 'driver licensing authority'

Cognitive assessment means an assessment that has been specifically designed to assess impairment of the cognitive functions needed for driving. A cognitive assessment may include a battery of in-office tests or a functional driving evaluation.

Cognitive screen means the use of a test or tests that have been specifically designed to screen for impairment of the cognitive functions needed for driving. A cognitive screen is the first step in determining cognitive fitness to drive. Depending on the results of a cognitive screen, a complete cognitive evaluation may be required.

Commercial driver means a driver with a commercial class licence (Class 1-4) as determined by the licensing authority, or a driver deemed to be a commercial driver as determined by the licensing authority.

Condition means that a restriction on an individual or an individual's licence has been imposed by the driver licensing authority. The terms 'condition' and 'restriction' are used interchangeably in many Canadian jurisdictions. For the purposes of these guidelines, a licensing 'condition' includes the concept of 'restriction'.

All driver licensing authorities use conditions on a driver licence as part of their driver fitness program. These are generally enforceable at roadside:

> example: 'wear corrective lenses'

Some driver licensing authorities also place conditions on the individual driver. These are not enforceable at roadside:

> example: 'you must not drive if your dialysis treatment is delayed or circumstances do not allow you to maintain your dialysis schedule'

Credible report means a report that provides objective information about a driver's driving ability, e.g., information about observed driving infractions (running a stop sign) or poor driving (failure to notice pedestrians; not staying in lane). A credible report may also be a

	report of damage to a driver's car that a driver cannot explain. Credible reports may come from any source including health care professionals, the police, front-line licensing staff, family members or other concerned members of the public.
Driver	means any person with any class of a valid, suspended or cancelled driver licence or a person applying for any class of driver's licence
Driver licensing authority	means the body within each province or territory that makes driver fitness determinations.
Driving record	includes: • the length of time an individual has been licensed • driving offences • driving sanctions applied • current and past licence conditions • motor vehicle related Canadian Criminal Code convictions • crash history, and • past road test results.
Functional assessment	is any kind of assessment that involves direct observation or measurement of the functions necessary for driving. Functional assessments may include but are not limited to: • paper-pencil cognitive screen • computer-based cognitive assessments • road tests • occupational therapist assessment • driver rehabilitation assessment • vision tests and examinations, and • hearing tests
Medical assessment	is any kind of assessment that provides information regarding an individual's health and/or their response to, or compliance with, treatment. Medical assessments include: • driver fitness assessments completed by health care professionals including specialists • diagnostic imaging • diagnostic tests, and • Medical specialists are physicians who have completed advanced education and clinical training in a specific area of medicine (their specialty area). Examples of medical specialists include neurologists, psychiatrists, internal medicine

Medical condition	is any injury, illness, disease or disorder. Impairment resulting from medications and/or treatment regimes that have been prescribed are considered an integral component of medical conditions. General debility and a lack of stamina are also considered as medical conditions that may impair the functions necessary for driving.
Non-commercial driver	means a driver with a non-commercial class licence (class 5 and/or 6 or 7) as determined by the driver licensing authority.
Incidence	means the annual number of new cases of a medical condition. (i.e., There were 1000 cases in 2016.)
Prevalence	means the global occurrence of a medical condition. (i.e., 9% of the male population over 60 have sleep apnea.)
Reassessment	is the process of making a new fitness determination for a driver with a previously assessed medical condition. Reassessment is at the discretion of the driver licensing authorities at the expiration of a scheduled reassessment interval or at any time in response to a credible report indicating that a driver may not be fit to drive.
Restriction	See definition of 'Condition'.
Road Test	a practical evaluation of driving fitness conducted on public roads. (Does not include driving simulator or closed-circuit evaluations.) Different road tests may be tailored to evaluate specific groups: 1. Novice driver road tests: These tests are designed for novice drives who wish to obtain a driver's licence for the first time. Their objective is to determine if the novice driver has mastered driving techniques and the rules of the road. 2. Competency road tests for experienced drivers: These tests are designed for experienced drivers whose fitness to drive has been put in doubt because of a functional impairment that may be physical, sensorial or cognitive. The tests are administered by occupational therapists, driving instructors or licensing authority evaluators to ascertain if the driver's impairment renders their driving unacceptable for safety reasons.

Chapter 3: Key concepts

The following are explanations of the key concepts underlying these guidelines. An understanding of these concepts is necessary in order to use the guidelines effectively.

3.1 Functional ability and driving outcomes

Cognitive

Individuals with progressive or irreversible declines in cognitive function cannot compensate for an impairment.

Motor

Research on motor functions and driving indicates considerable variability in the association between the different motor functions and driving outcomes. Overall, the research suggests that a significant level of impairment in motor functions is needed before driving performance becomes unsafe.

Sensory – vision

Results from studies investigating the relationship between visual abilities and driving performance are, for the most part, equivocal. It may be, as suggested for motor abilities, that a significant level of visual impairment is needed before driving performance is affected.

Sensory – hearing

Impaired hearing has not been demonstrated to influence driving. Most hearing-impaired drivers are conscious of their impairment and compensate by being more cautious and alert and by making more use of their mirrors than drivers with normal hearing.
However, the ability to hear or communicate is of paramount importance for the operation of certain commercial vehicles including a passenger bus, ambulance and other emergency vehicles or vehicles transporting dangerous material.

3.2 Types of impairments

The types of impairments described below are described as if they existed in isolation from each other. In practice, however, a person may have more than one type of impairment and, under some circumstances, an impairment that was initially identified as transient, may become persistent. As well, some conditions, in particularly, mental illness, can be both persistent and episodic. Finally, episodic impairments, for example epilepsy, may result in sudden incapacitation when an event occurs.

Transient impairment

Transient impairments are a temporary compromise of the functional ability to drive where there is little or no likelihood of a recurring episodic or ongoing persistent impairment. Examples of transient impairments are:

- the after-effects of surgery, e.g., the time to recover from the anaesthetic and the surgery itself
- fractures and casts, post-orthopaedic surgery
- concussion
- conscious sedation (short-term)
- invasive medical tests
- injury
- use of orthopaedic braces (including neck), and
- infections.

Driver fitness programs do not need to know when a driver has experienced a transient impairment and do not assess drivers with transient impairments. In these cases, a doctor may rely on best practices to tell a patient, for example, "don't drive for 6 weeks after your abdominal surgery." The Canadian Medical Association (CMA) Guide for Physicians when Determining Fitness to Drive, 9th edition contains guidelines for physicians for many transient impairments associated with a range of medical conditions.

Persistent impairment

A persistent impairment is an ongoing or continuous impairment to a function necessary for driving. The potential effects of persistent impairments on the functions necessary for driving are generally **measurable**, **testable** and **observable**. Although the condition may be progressive, the progression is usually slow and sudden deterioration is unlikely. Persistent impairments may be stable, e.g., loss of a leg, or progressive, e.g., arthritis.

Episodic impairment

An episodic impairment is the result of a medical condition that does not have any ongoing measurable, testable or observable effects on the functional ability to drive but that may result in an unpredictable sudden or episodic impairment of the functions needed for driving.

For example, the medical condition that gives rise to the impairment may be testable, e.g., the size of an abdominal aortic aneurysm, or known, e.g., epilepsy, but the precipitating event that negatively effects the functional ability to drive, e.g., the rupture of the aneurysm or an epileptic seizure, is not predictable.

Sudden incapacitation

Sudden incapacitation means the abrupt loss of the functions necessary for driving. It may be the result of a total or partial loss of consciousness, overwhelming pain, seizures, syncope, hypoglycemia or another episodic event.

3.3 Important considerations when determining fitness

Insight

For any driver insight, or self-awareness, is an important factor. Deciding not to drive because you are not feeling well is not only a sign of good judgement, it is also a sign that you are aware of the effects that your temporary condition causes for your driving.

In the context of a driver with a medical condition insight means that a driver:

- is aware of their medical condition
- understands how the condition may impair their functional ability to drive, and
- has the judgment and willingness to comply with their treatment regime and any conditions of licensing.

Physicians will often use terms such as “impaired awareness,” or “lack of awareness regarding deficits” on a medical assessment to indicate that an individual lacks insight.

An individual’s level of insight is a critical consideration when assessing the risk of an episodic impairment of functional ability due to a psychiatric disorder. Because of this, there is a specific guideline regarding insight in the Psychiatric Disorders standard.

Compensation

Persistent impairments

Compensation is the use of strategies or devices by a driver to attenuate the functional effects of an impairment caused by a medical condition. Treatment for a condition with medications is not a type of compensation. Possible compensation strategies for many medical conditions are included in Part 2 of this document.

Whether an individual can compensate for a persistent impairment depends upon the function that is impaired. Individuals with impairments in motor function, vision or hearing may be able to compensate for those impairments. Individuals with progressive or irreversible declines in cognitive function are incapable of compensating for an impairment whether it is cognitive, physical or sensorial.

Episodic impairments

An individual cannot compensate for an episodic impairment except by avoiding known precipitating factors.

3.4 Functions needed for driving

The functions necessary for driving can be categorized as either cognitive, motor or sensory (vision and hearing). Sensorimotor functions are a combination of sensory and motor functioning and are considered as a subset of motor functions. Sensorimotor functions are, for the most part, reflexive or automatic, e.g., the response to your hand being placed on a hot stove or the ability to sit upright.

Within each category, the functions that are most relevant to the driving task are described in the tables below. Although the functions necessary for driving are described individually, **driving is a complex perceptual-motor skill that usually takes place in a rapidly changing environment that requires the functions to operate together.**

Cognitive functions needed for driving

Function	Description	Example in the driving context
Divided attention	the ability to attend to two or more stimuli at the same time	responding to the roadway ahead while being able to identify stimuli in the periphery
Selective attention	the ability to attend to one or more important stimuli while ignoring competing distractions	isolating the traffic light from among other environmental stimuli
Sustained attention (vigilance)	the capacity to maintain an attentional activity over an extended period	attending to the roadway ahead for the entire duration of the trip
Short-term or passive memory	the temporary storage of information, or the brief retention of information	remembering roadway sign information such as that related to freeway exits or construction areas; signs related to caution ahead, etc.
Working memory (the active component of short-term memory)	the ability to manipulate information with time constraints/taking in and updating information	processing environmental information related to the driving task on a busy freeway

Cognitive functions needed for driving		
Function	**Description**	**Example in the driving context**
Long-term memory	memory for personal events (autobiographical memory) and general world knowledge (semantic memory)	knowing: • your way from home to the grocery store • the meaning of traffic signs, and • the rules of the road • where you lived as a child
Choice/ complex reaction time	the time taken to respond differentially to two or more stimuli or events	responding when a cat darts onto the edge of the road at the same time a pedestrian steps onto the roadway
Tracking	the ability to visually follow a stimulus that is moving or sequentially appearing in different locations	visually following other cars on the road or a pedestrian crossing the road
Visuospatial abilities	processes dependent on vision such as the recognition of objects, the ability to mentally rotate objects and determinations of relationships between stimuli based on size or color	understanding where a tree and other objects are in relation to the car Parking a car in a crowded parking lot.
Executive functioning (see also central executive functioning below)	those capabilities that enable an individual to successfully engage in independent, purposeful, and self-serving behaviours. Disturbances in executive functioning are characterized by disturbed attention, increased distractibility, deficits in self-awareness, and preservative behaviour.	Deciding when to make an unprotected left-hand turn in traffic

Cognitive functions needed for driving		
Function	**Description**	**Example in the driving context**
Central executive functioning (see also executive functioning above)	that part of working memory that is responsible for 'supervising' many cognitive processes including encoding (inputting information from the external world), storing information in memory, and retrieving information from memory. Central executive (CE) functioning includes abilities such as planning and organization, reasoning and problem solving, conceptual thought, and decision making. CE functioning is critical for the successful completion of tasks that involve planning or decision making and that are complex in nature	making a left turn at an uncontrolled intersection.
Visual information processing	the processing of visual information beyond the perceptual level (e.g., recognizing and identifying objects and decision making related to those objects). Visual information processing involves higher order cognitive processing. However, because of the visual component, references to visual information processing often are included within the visual domain.	Recognizing if an object in the road ahead is a paper bag or a child

Motor functions needed for driving (including sensorimotor)		
Function	**Description**	**Example in the driving context**
Coordination	the ability to execute smooth, accurate, controlled movements	executing a left turn; shifting gears, etc.
Dexterity	readiness and grace in physical activity; especially skill and ease in using the hands	inserting keys into the ignition; operating vehicle controls, etc.
Gross motor abilities	gross range of motion and strength of the upper and lower extremities, grip strength, proprioception, and fine and gross motor coordination	being able to depress the brake or the accelerator, sudden turning of the steering wheel in an emergency
Range of motion	the degree of movement a joint has when it is extended, flexed, and rotated through all of its possible movements	Range of motion of the extremities (e.g., ankle extension and flexion) is needed to reach the gas pedal and brake and upper body range of motion (e.g., shoulder and elbow flexion) is necessary for turning the steering wheel. Range of motion of the head and neck is necessary for looking at the side and rear for vehicles and for identifying obstacles at the side of the road or cars approaching from a side street.
Strength	the amount of strength a muscle can produce	depressing the brake pedal
Flexibility	the ability to move joints and muscles through their full range of motion. Muscle strength and flexibility often go hand in hand.	getting in and out of the car, operating vehicle controls, fastening the seat belt, reversing
Reaction time	the amount of time taken to respond to a stimulus	depressing the brake pedal in response to a child running out on the roadway, swerving to avoid an animal on the road

Sensory functions needed for driving – Vision		
Function	**Description**	**Example in the driving context**
Acuity	acuteness of vision or perception i.e., the capacity to see small objects at a distance	reading directional signs
Visual field	an individual's entire spatial area of vision when fixation is stable, i.e., the extent of the area that an individual can see with their eyes held in a fixated position	seeing cars approaching from the left or right
Contrast sensitivity	the ability to perceive differences between an object and its background, e.g., the ability to detect a gray object on a white background or to see a white object on a light gray background	seeing traffic lights or cars at night
Glare recovery	the process in which the eyes recover visual sensitivity following exposure to a source of glare	adapting to the reflection of the sun from a car dashboard or oncoming headlights when driving at night
Perception	the process of acquiring, interpreting, selecting, and organizing sensory information	

Sensory functions needed for driving – Hearing		
Function	**Description**	**Example in the driving context**
Hearing	Ability to perceive sound	The ability to communicate is of paramount importance for the operation of certain commercial vehicles that transport dangerous cargoes as well as emergency vehicles and those transporting passengers.

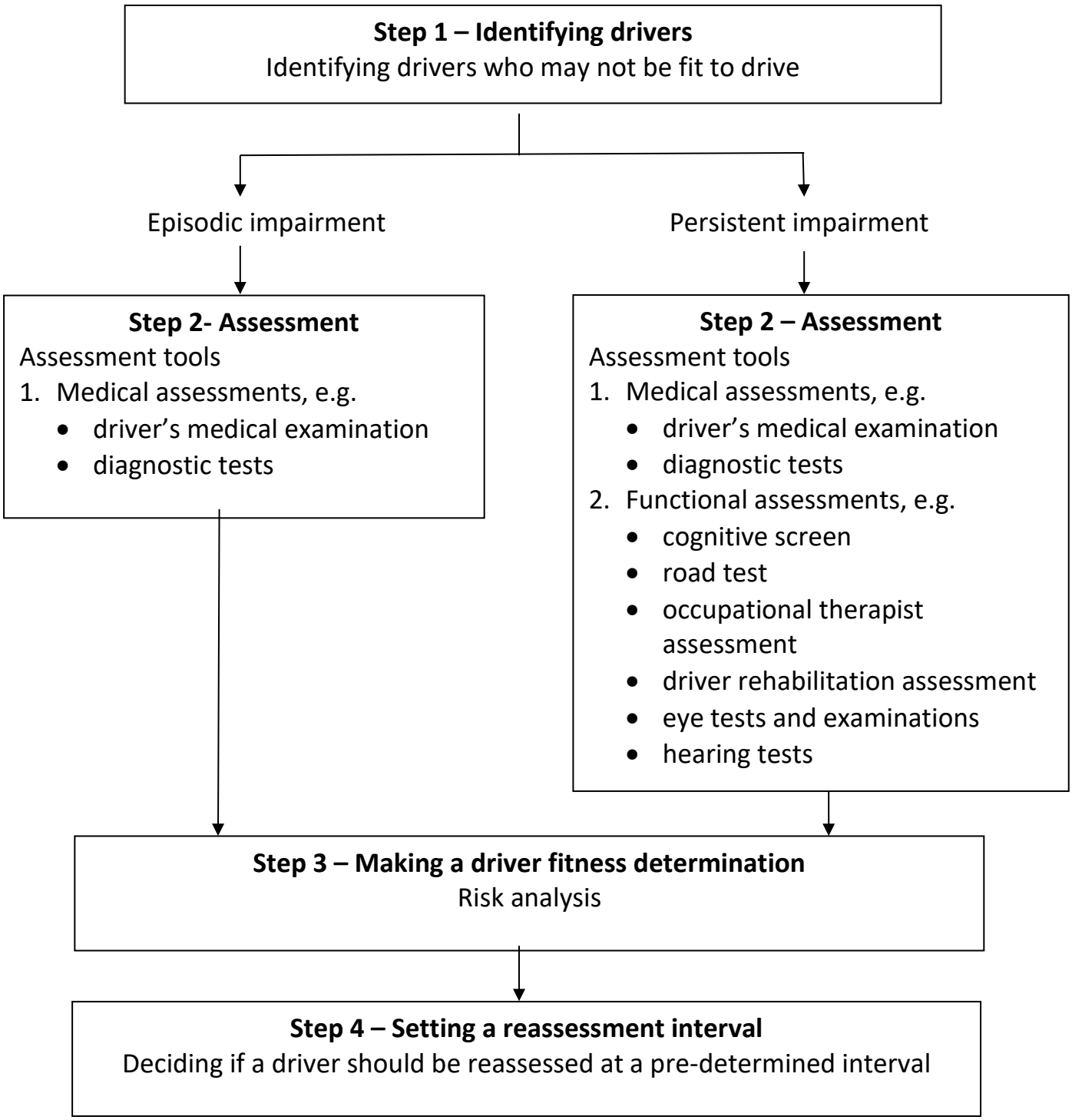
Chapter 4: Identifying drivers who may not be fit to drive

4.1 Overview

Identifying drivers who may not be fit to drive and who therefore pose a risk to public safety is a key function of driver licensing authorities.

The driver fitness medical standards in Part 2 of this document support authorities by identifying the most common medical conditions that are of concern. This model does not include transient impairments because there is little or no likelihood of a recurring episodic or ongoing persistent, impairment. In addition, by the time that the driver-licensing agency learns of a transient impairment it may have resolved.

Model for the Administration of Driver Fitness Programs



4.2 All drivers

Model Standard

Provincial and territorial driver licensing authorities use screening mechanisms to identify individuals whose functional ability to drive may be impaired by a medical condition. This section will use examples to demonstrate the differences between standards for commercial and non-commercial drivers as well as the supporting information that accompanies the standards in Part 2 of this document.

Rationale for a screening standard

All Canadian jurisdictions have the legal authority to examine a driver's fitness and ability to drive. Authorities are specifically concerned with individuals whose fitness and ability to drive may be impaired by medical conditions. This includes individuals who may be impaired by medications or treatment regimes prescribed as treatment for a medical condition, general debility or a lack of stamina.

4.3 Non-commercial drivers (Class 5, 6, 7)

Model Screening Standard

Drivers with Class[2] 5, 6 or 7 licences will be screened for medical conditions that may affect driving as follows:

(a) at age 75
(b) at age 80
(c) every 2 years over age 80
(d) or more frequently at discretion of the driver licensing authority.

Rationale

The functional effects associated with aging are well documented. For most healthy, aging drivers these effects are unlikely to lead to unsafe driving in the short term. However, aging is also associated with increased risk for a broad range of medical conditions, such as visual impairments, musculoskeletal disorders, cardiovascular disease, diabetes, and cognitive impairment and dementia. These medical conditions and the medications used to treat them may affect fitness to drive.

[2] For definitions, see NSC 4 – Driver Licensing Classification System

There is a particularly strong association between cognitive impairment and dementia and impaired driving performance. A large, national population-based study done in Canada in 1991 showed that 25% of the population 65 and older have some form of cognitive impairment or dementia, rising to 70% for those 85 and older.

Because of the association between age and many chronic medical conditions, aging drivers are more likely to have one or more of these conditions. A 2013 study of Quebec drivers demonstrated that 67% of drivers aged between 70 and 79 had at least one of the principal medical conditions recognised to effect driving.[3]. This study also found that the average number of multiple chronic conditions increases with age.

With an increased rate of multiple medical conditions, there is also a greater likelihood that aging drivers will be taking multiple medications. With each additional medication taken there is an increased risk of side effects and adverse interactions between medications which may affect fitness to drive. While in many cases the adverse effects may be temporary or avoidable, there may be a persistent impairment of the functions needed for driving.

As a group, older drivers are less likely to be involved in a crash than other age groups. However, older drivers are at increased risk for at-fault crash or of being seriously injured or dying in a crash.

Statistics from British Columbia show that at about age 70, the ratio of at-fault crashes begins to rise, climbing to 2.5 for drivers who are 81 and older.

An examination of driver fatality rates, adjusted for driving exposure or total distances travelled on an annual basis, indicates that there are two high risk age groups: ages 16 to 19 and 65 and older. Older drivers are also more likely to be injured in a crash and to incur more severe injuries than younger drivers.

Unlike younger driver crashes, most traffic fatalities involving older drivers occur during the daytime, on weekdays, and in safe road conditions, with most the crashes involving another vehicle.

4.4 Commercial drivers

Model Screening Standard

4.4.1 Drivers with Class 1 – 4 licences will be screened for medical conditions that may affect driving as follows:

(a) up to age 45, every 5 years
(b) from age 45 to age 65, every 3 years, and
(c) from age 65, annually
(d) or more frequently at discretion of the driver licensing authority.

Rationale

The rationale under 'non-commercial drivers', in Section 4.3.1 also applies to commercial drivers. In addition, commercial drivers drive a variety of vehicles including large trucks, passenger carrying vehicles such as buses and emergency vehicles. Commercial drivers also spend many more hours at the wheel, often under far more adverse driving conditions, than do the drivers of non-commercial vehicles. They are usually unable to select their hours of work and cannot readily abandon their passengers or cargo should they become unwell when on duty. Drivers operating emergency vehicles are frequently required to drive while under considerable stress by the nature of their work, and often in inclement weather where driving conditions are less than ideal. Should a crash occur, the consequences are much more likely to be serious, particularly where the driver is carrying passengers or dangerous cargo such as propane, chlorine gas, toxic chemicals or radioactive substances.

Because of this greater time spent at the wheel, commercial drivers are routinely screened at regular intervals, even if there is no evidence that the driver has a known or possible medical condition.

4.5 Cancelling or restricting a licence because of an immediate public safety risk

Model Standard

4.5.1 If information obtained at any time reveals an immediate risk to public safety, authorities may direct that a licence be cancelled or restricted without further assessment.

4.5.2 If an authority has cancelled or restricted a licence because of an immediate public safety risk, the program may review the decision once further information is received.

Rationale

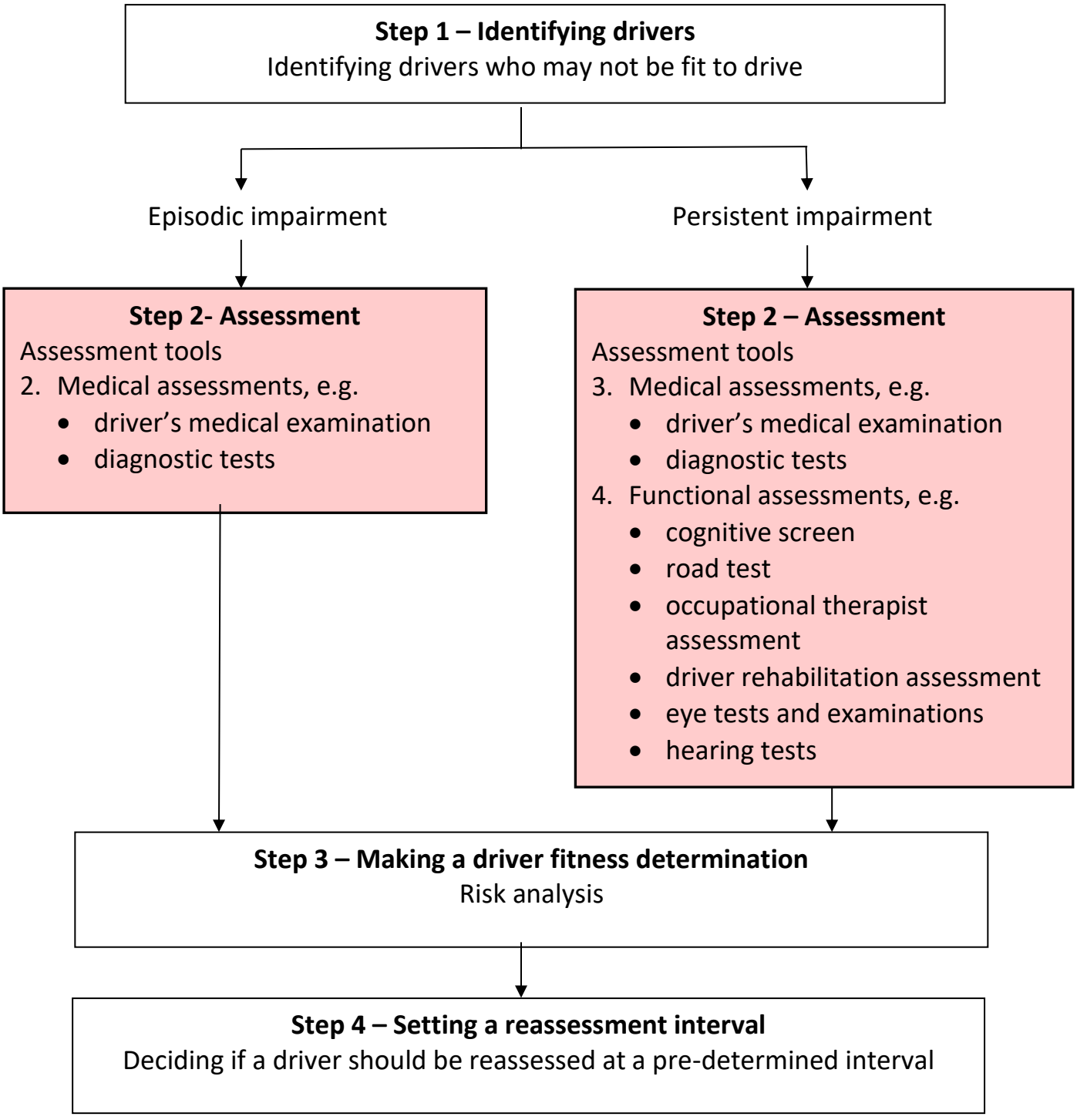
In most cases, authorities will not direct that a licence be restricted or cancelled based only on preliminary information. However, there are times when cancellation or restriction may be warranted prior to further assessment. For example, a credible report may indicate that an individual's functional ability to drive is severely impaired. The authority would cancel the driver's licence for public safety reasons and could review the decision once further information was received.

Chapter 5: Assessing fitness to drive

5.1 Overview

Assessing fitness to drive means using any kind of test or examination to gather information about a driver's functional ability to drive. Driver licensing authorities have a variety of tools at their disposal to assess the effects of medical conditions on the functions necessary for driving. These can be categorized as either medical or functional assessments. The appropriate type of assessment depends both upon the function that is impaired and the nature of the impairment.

Model for the Administration of Driver Fitness Programs



5.2 Requesting functional assessments

Model

5.2.1 If an authority decides further information on a driver's functional ability to drive is necessary in order to make a driver fitness determination, the authority may request a functional assessment.

5.2.2 An authority may request a functional assessment of an individual with a persistent impairment; a functional assessment is not appropriate for a driver who has only episodic impairments.

Rationale

Consistent with the functional approach to driving fitness, a driver licensing authority may request an assessment of an individual's functional ability to drive whenever that information is necessary in order to make a driving fitness determination.

Persistent and episodic impairments

Whether or not a functional assessment is appropriate depends upon the type of impairment. Because persistent impairments are measurable, testable and observable, it is possible to assess an individual's functional ability to drive through observation by a physician or other health care practitioner or an OT or driver rehabilitation specialist. Because episodic impairments are not measurable or testable, there is no way to functionally assess how the impairment affects an individual's ability to drive.

5.3 Requesting medical assessments

Model

5.3.1 If an authority decides that further information on a driver's medical condition(s) or the driver's response to, or compliance with, treatment is required, the authority will request a medical assessment.

Rationale

Since medical conditions may not remain stable, driver licensing authorities must ensure that the medical information that will serve to establish a driver's fitness to drive is current and reflects faithfully driver's health and compliance with treatment at the time the decision on licence status is made.

5.4 Assessing the cognitive functions needed for driving

Model

5.4.1 Generally, further information on an individual's cognitive function will be required when a credible report indicates that:

(a) there may be some loss of cognitive function
(b) there is some loss of cognitive function and it is unknown whether the individual possesses sufficient cognitive function to drive, or
(c) the driver has a medical condition at a stage usually associated with a loss of cognitive function, or that a previously known impairment has become more pronounced.

5.4.2 Authorities may use the results of cognitive screens or cognitive assessments to screen for, or assess, impairment of the cognitive functions needed for driving**.**

5.4.3 When the result of a cognitive screen is indeterminate, authorities may request a cognitive assessment of a driver.

5.4.4 Authorities may use the best available methods to assess possible cognitive impairment of the functions needed for driving.

5.4.5 Notwithstanding standards 5.4.2 to 5.4.4, an authority may request an occupational therapist or driver rehabilitation specialist assessment, or a gerontologist assessment, or a road test for a driver with a persistent cognitive impairment who may not be fit to drive.

Rationale

Cognitive screens

Historically, there has been a lack of reliable screening tools for the identification of individuals whose cognitive impairment or dementia poses a risk for adverse driving outcomes. Scores on mental status tests such as the Mini Mental Status Exam (MMSE) or the Montreal Cognitive Assessment (MoCA) are sometimes used for making decisions about driving competency. However, there is now a significant amount of evidence indicating that, while the MMSE and similar tests are useful as tools for identifying cognitive decline, they are not good predictors of an individual's driving competence, particularly for those whose cognitive impairment is less severe. In addition, the scores of these tools are very sensitive to language ability and education. The *Determining Medical Fitness to Operate Motor Vehicles, CMA Driver's Guide* 9th edition states that no cognitive tests or battery of tests alone have sufficient sensitivity or specificity to be used as a single determinant of driving ability. However, abnormalities on tests

including the MMSE, clock drawing and Trails B should trigger further in-depth testing of driving ability.[4]

Standard neuropsychological or cognitive tests such as Trails A, Trails B, Digit Span, or the MoCA designed to assess cognitive functions (e.g., attention, memory, executive functioning) also are used to identify potentially compromised drivers. However, although these standardized tests sometimes correlate with measures of driving performance (e.g., on-road performance, crash rates), the absence of a strong and consistent relationship, as well as the lack of established cut points for categorizing drivers as 'safe' and 'unsafe', preclude using these tests as the sole determinant of driving competency at this time.

Recent research has focused on the development of useful, simple tools that will permit health care professionals to identify the potentially compromised driver. At this time these efforts are on-going.

Standard road tests

Standard road tests are conducted by provincial and territorial driver examiners who assess whether a novice driver has mastered the skills needed for driving to determine if a licence should be issued. Standard road tests are not designed to measure if the degree of impairment of the functions needed for driving and are not an appropriate tool for the evaluation of drivers who have developed functional impairment. To address this need, several jurisdictions have developed road tests for experienced drivers, often referred to as "competency road tests",

5.5 Assessing motor function

Model

5.5.1 Generally, further information on a driver's motor function will be required when a credible report indicates that there is some loss of motor function and:

(a) it is unknown whether the individual possesses sufficient movement and strength to perform the motor functions necessary for driving the types of motor vehicles permitted under the class of licence held or applied for
(b) it is unknown whether pain associated with a medical condition, or the medications used to treat a medical condition, adversely affect the individual's motor function, and/or
(c) it is unknown whether the individual can safely operate the type of motor vehicles permitted under the class of licence held or applied for using the vehicle

[4] P. 29

modifications and devices that may be required to compensate for their functional impairment.

5.5.2 Authorities may request a road test where the authority needs to confirm that the individual is able to use adaptive driving equipment or vehicle modifications.

5.5.3 Authorities may request an occupational therapist or driver rehabilitation specialist assessment if further information is required on an individual's motor function and a road test alone will not be able to provide the required information.

Rationale

Research on motor functions and driving indicates considerable variability in the association between the different motor functions and driving outcomes. Overall, the research suggests that a significant level of impairment in motor functions is needed before driving performance is affected to an unsafe level.

Occupational therapist or driver rehabilitation specialist assessments
Occupational therapists and other specialists with expertise in driver rehabilitation are trained to perform both in-office and on-road assessments of an individual's functional ability to drive. Driver rehabilitation specialists are trained to evaluate an individual's ability to compensate for motor deficits during simulated and on-road testing and determine requirements for adaptive driving equipment and vehicle modifications.

5.6 Assessing sensory function – vision

Model

5.6.1 Further information on a driver's visual function will be required when a credible report indicates that there is some loss of visual function and:

(a) it is unknown whether the individual possesses sufficient vision necessary for driving the types of motor vehicles permitted under the class of licence held or applied for
(b) it is unknown whether pain associated with the condition, or the medications used to treat the condition, adversely affect the individual's visual function, and/or
(c) it is unknown whether the individual can safely operate the type of motor vehicles permitted under the class of licence held or applied for using the vehicle modifications and devices that may be required to compensate for their functional impairment.

5.6.2 Authorities will request an occupational therapist or driver rehabilitation specialist assessment, which will generally include an on-road assessment if further information is required or whether a driver's vision is such that they are fit to drive.

5.6.3 Authorities may require a functional evaluation for a visually impaired individual that will usually include an on-road assessment. Some jurisdictions have developed their own road tests for the visually impaired while others refer these clients to specialists or occupational therapists.

Rationale

Although there are tools that measure, for example, visual acuity and visual fields, the vision standards for driving are based on consensus opinion of subject matter experts. Research has not identified what level of vision impairment renders a person unable to drive safely.

The loss of certain visual functions can be compensated for adequately, particularly in the case of long-standing or congenital impairments. When a person becomes visually impaired, the capacity to drive safely varies with their ability to compensate. Thus, there are people with visual deficits who do not meet the vision standards for driving but who can drive safely. Because of this, further assessment may be required for drivers who do not meet the stated vision standards.

5.7 Assessing sensory function – hearing

Model

5.7.1 Further information on a driver's hearing function can be obtained when a report indicates that there is some loss of function and the driver's licence includes classes that are affected by the hearing standard.

Rationale

There are several tools that measure hearing performance, for example audiometric tests and the forced whisper test. However, research has shown that loss of hearing does not affect crash risk.

The focus of the hearing standards is the ability to hear or communicate since this capacity is of paramount importance if a vehicle transporting dangerous goods is involved in a crash or a situation that could endanger the public requiring the driver to interact verbally with the authorities, police or the public in an emergency.

5.8 Assessing drivers with multiple functional impairments

Standard

5.8.1 If an authority decides that more than one of the functions necessary for driving needs to be assessed, the authority will request functional assessments in the following order:

(a) assessments of cognitive function
(b) assessments of sensory function, and
(c) assessments of motor function.

5.8.2 If the results of an assessment indicate that an individual's cognitive, motor or sensory function is impaired to the extent that the individual is not fit to drive, the authority may make a driver fitness determination without requesting further assessments of the other functions necessary for driving. Whenever possible, the cumulative effects of multiple functional impairments should be evaluated rather than evaluating each impairment separately.

Rationale

Some drivers may have impairments of more than one of the functions necessary for driving. In this situation, the authority prioritizes requests for functional assessments based on the functions that may be impaired. Because a driver cannot compensate for cognitive impairment, if an individual's cognitive function may be impaired that function will be assessed first. Sensory functions are assessed next, followed by motor functions. If an assessment indicates that a function is impaired, and a driver is not fit to drive there is no need to continue with further assessments of the other functions that may be impaired.

5.9 Assessing drivers with multiple medical conditions

Model

5.9.1 If a driver has multiple medical conditions that result in a cumulative or combined effect on the functions necessary for driving such that the medical conditions cannot be considered individually or independently, the authority may request functional assessments (where applicable) of each function that may be impaired, even if the medical condition standards for each identified medical condition indicate that the individual is fit to drive.

5.9.2 Authorities should request functional assessments of individuals with multiple medical conditions that cannot be considered independently, unless the driver fitness standards for any of the identified medical conditions clearly indicate that the individual is not eligible for a licence.

Rationale

The functional effects of multiple medical conditions on driver fitness is very important. Research results indicate that drivers with multiple medical conditions are, in general, at higher risk for at-fault crashes than those with a single medical condition.

The standards in Part 2 each focus on a single medical condition, e.g., cardiovascular disease, and the standards are written as if an individual only had one medical condition. This is because

the number of combinations of illnesses and medications is simply too large and varied to make possible the development of comprehensive standards that cover every single eventuality.

This means that applying individual standards to the driver with multiple conditions may not permit the authority to adequately evaluate the driver's fitness to drive. While the standards for each individual medical condition may indicate that the individual is eligible for a licence, if the medical conditions have a cumulative effect on the functional ability to drive, the individual may not be eligible.

5.10 Time period during which assessments are valid

Model

5.10.1 Generally, an authority will accept the results of any assessment conducted within the previous one-year period, even if completed for another purpose, if it provides the required information. Longer periods may be accepted by the authority depending upon the type of assessment and the stability of the driver's condition.

Rationale

Assessments may be costly and time-consuming for drivers, authorities and health care providers. If an assessment has already been conducted that provides the information required for a driver fitness determination, there is no need for an individual to be re-assessed, so long as the results of the assessment are still reliable. Because many conditions are progressive, and an individual's abilities may change over time, assessment results generally only continue to be reliable for a limited period after completion of the assessment.

5.11 Time limits for drivers to complete assessments

Model

5.11.1 Whenever a driver licensing authority requests an assessment, it will inform the individual of the time period within which the assessment must be completed.

5.11.2 Upon request, a driver licensing authority may extend the period for an individual to comply with a request for an assessment. In considering whether to extend the time period, the authority will consider information from the driver regarding the circumstances that necessitate an extension, such as

(a) work commitments
(b) the driver's location,
(c) the driver's degree of mobility,

(d) availability of assessors, and/or
(e) known delays for an appointment.

5.11.3 If a driver does not comply with a request for an assessment within the time period or extension:

(a) the authority will direct that the driver's licence be cancelled, in the case of a driver who is already licensed, or
(b) will direct that a licence not be granted, in the case of an individual who has applied for a licence.

Rationale

Both for public safety and administrative fairness reasons, driver fitness determinations must be made as soon as possible after an individual is identified. A driver's licence is a privilege. Where further information is required to make a determination, this means individuals must comply with requests for assessments in a timely fashion. If an individual does not comply with a request for an assessment, jurisdictions have the authority to direct the licence be suspended or cancelled.

Chapter 6: Making a driver fitness determination

6.1 Overview

When making a driver fitness determination, a driver licensing authority will review all the information it has received, will consider the degree of risk presented by a driver and will determine whether that individual should be licensed. In some cases, an individual can only be licensed if they comply with certain conditions that will reduce the level or risk of impairment. Driver licensing authorities may place conditions on an individual's licence if they are necessary to ensure the safe operation of a motor vehicle.

The standards outlined in Part 2 are based, when possible, on the best available evidence regarding degree of risk and identify where the use of conditions may be appropriate to reduce risk; they guide decision-makers in determining the degree of risk presented by individual drivers.

Model for the Administration of Driver Fitness Programs

Step 1 – Identifying drivers
Identifying drivers who may not be fit to drive

Episodic impairment

Persistent impairment

Step 2- Assessment
Assessment tools
3. Medical assessments, e.g.
   - driver's medical examination
   - diagnostic tests

Step 2 – Assessment
Assessment tools
5. Medical assessments, e.g.
   - driver's medical examination
   - diagnostic tests
6. Functional assessments, e.g.
   - cognitive screen
   - road test
   - occupational therapist assessment
   - driver rehabilitation assessment
   - eye tests and examinations
   - hearing tests

Step 3 – Making a driver fitness determination
A risk analysis of all relevant sources of information that considers:
1. whether the driver has a persistent or episodic impairment
2. the function that is impaired – the results of any medical or functional assessments
3. whether imposing conditions may be appropriate
4. individual characteristics and abilities of each driver, e.g.:

- commercial or non-commercial driver
- whether the driver can compensate for any impairment
- whether the driver is compliant with any existing treatment regime
- whether the driver is compliant with any existing conditions
- whether the driver has insight into the impact that their medical condition may have on driving
- the driver's driving record
- other pertinent information

Step 4 – Setting a reassessment interval
Deciding if a driver should be reassessed at a pre-determined interval

6.2 Sources of information to consider for making a driver fitness determination

Model

6.2.1 Driver licensing authorities will make driver fitness determinations based on the medical standards and using a risk assessment analysis that considers:

(a) whether the individual has a persistent or episodic impairment
(b) the function that is impaired – the results of any medical or functional assessments
(c) whether imposing conditions may be appropriate, and
(d) the individual characteristics and abilities of each driver, for example:
    - whether the driver is a commercial or non-commercial driver
    - whether the driver can compensate for any impairment
    - whether the driver has insight into their medical condition and how it may affect their functional ability to drive
    - whether the driver is compliant with any prescribed treatment regime
    - whether the driver is compliant with any existing conditions,
    - the driver's driving record, and
    - any other information relevant to driving privileges.

Rationale

Each driver is unique, and drivers may have multiple medical conditions or medical conditions which are not addressed in the driver fitness standards, authorities also review and consider other available and relevant information when making driver fitness determinations.

6.3 Considering persistent impairments

Model

6.3.1 An authority will make a driver fitness determination for an individual with a persistent impairment based on observable and measurable evidence of functional impairment.

6.3.2 In general, if a review of the information collected during assessment for an individual with a persistent impairment indicates no functional impairment, or a level of functional impairment that does not affect the individual's ability to drive safely, the individual may be licensed.

Rationale

Because drivers with persistent impairments are continuously impaired, authorities can make determinations for drivers with persistent impairments based on observable and measurable evidence of functional impairment.

6.4 Considering episodic impairments

Model

6.4.1 A driver licensing authority will make a driver fitness determination for an individual with an episodic impairment based on the probability and consequences of an event of functional impairment occurring.

Rationale

Because drivers with episodic impairments are not continuously impaired, authorities cannot make determinations for individuals with episodic impairments based on observable and measurable evidence of functional impairment. Instead, they must rely on a risk analysis that considers the probability and consequence of impairment when making a driver fitness determination for an individual with an episodic impairment. To assist authorities in performing this analysis, the driver fitness standards for medical conditions that result in episodic impairments incorporate expert opinion regarding at what level of disease severity the medical condition may result in a functional impairment.

6.5 Considering imposing conditions

Model

6.5.1 If a driver licensing authority determines that an individual must:

(a) stop driving in specific circumstances
(b) take prescribed medications
(c) comply with a specific treatment regime
(d) report a change in their medical condition
(e) attend medical follow-up
(f) only operate vehicles during daylight hours
(g) only operate certain types of vehicles
(h) only operate vehicles in certain geographic areas
(i) only operate vehicles under a certain speed
(j) only carry certain types of cargo
(k) wear specific devices, and/or
(l) use specific vehicle modifications or adaptations to be licensed, the authority will impose those conditions on the individual or the individual's licence.

6.5.2 Without information to the contrary, authorities will assume that a driver will comply with a condition. However, if the information obtained from assessments indicates that the driver is not likely to be compliant with any conditions that are required to be licensed, the individual may not be eligible for licensing.

Rationale

Generally, authorities will refer to the medical standards to determine the conditions that are required. However, because the driver fitness standards may not always apply in individual circumstances, authorities may impose conditions that are not contemplated by the standards.

If the risk associated with a medical condition of a certain severity level is high, and the risk cannot be reduced through the use of conditions, the standards indicate that an individual is not eligible for licensing.

6.6 Considering specific requirements for commercial drivers

Model

6.6.1 When determining whether an individual can be licensed as a commercial driver, a driver licensing authority will consider:

(a) the number of hours an individual with that type of licence typically spends driving
(b) any physical requirements (e.g., load securement) associated with the operation of motor vehicles allowed under that type of licence, and
(c) any information provided by the driver or the driver's employer regarding:
    - the types of vehicles they will be operating, and
    - how many passengers they will carry and for what purpose.

6.6.2 If a driver is not fit to be licensed as a commercial driver, the authority will consider whether the driver is fit as a non-commercial driver.

Rationale

The class of licence held or applied for is a key consideration when making a driver fitness determination. Commercial drivers spend many more hours at the wheel than non-commercial drivers. Commercial drivers may also be called upon to undertake heavy physical work such as loading or unloading their vehicles, realigning shifted loads and putting on and removing chains. Because the physical and endurance requirements for commercial drivers are generally more onerous than for non-commercial drivers, the driver fitness standards often specify different standards for commercial and non-commercial drivers.

6.7 Considering whether the driver can compensate

Model

6.7.1 Driver licensing authorities will consider whether a driver can compensate for their functional impairment when making a driver fitness determination.

6.7.2 A driver cannot compensate for an episodic impairment.

6.7.3 Whether an individual can compensate for a persistent impairment depends upon the functional ability that is impaired. Individuals with impairments in motor function, vision or hearing may be able to compensate for those impairments unless there is a cognitive limitation. Individuals with progressive or irreversible declines in cognitive function cannot compensate for a cognitive impairment.

6.7.4 In general, an individual who can compensate for their functional impairment is fit to drive if their cognitive, sensory and motor functions are acceptable.

Rationale

In some situations, drivers who would otherwise not be fit to drive have learned strategies, or utilize devices, that reduce or eliminate their functional impairment. For example:

- a driver with limited peripheral vision may use the strategy of turning their neck to the left and right to ensure they have a full field of view, or
- a driver who is unable to use their lower limbs may have their vehicle modified for hand controls.

In keeping with the decision in *Grismer*, and CCMTA principles, driver licensing authorities must make driver fitness determinations on an individual basis that are based on the results of individual assessments. In general, if a review of assessment results and the individual's driving record indicates that a driver can compensate for their functional impairment, the driver is fit to drive.

6.8 Considering insight

Model

6.8.1 If a driver licensing authority decides that conditions are required in order for an individual to be fit to drive, it will review:

(a) medical assessments on file that indicate that the driver has, or does not have, insight into their medical condition or its effects on the functions necessary for driving

(b) medical assessments on file that indicate that the driver is non-compliant with their prescribed treatment regime or medications
(c) the driver's driving record indicates the individual has been non-compliant with conditions in the past, and
(d) any credible reports that indicate that the driver has been non-compliant with conditions in the past.

6.8.2 Without information to the contrary, an authority will assume that an individual has insight into their medical condition and its effects on their driving. However, if the information obtained indicates that the driver lacks insight, the individual may not be fit to drive.

Rationale

One key factor for determining whether a driver is fit to drive is the driver's level of insight. This is because drivers with good insight are more likely to be diligent about their treatment regime, to seek medical attention when needed, and to avoid driving when their condition is likely to impair their functional ability to drive.

An individual's level of insight is a critical consideration when assessing the risk of an episodic impairment of functional ability due to a psychiatric disorder. Because of this, there is a specific guideline regarding insight in the Psychiatric Disorders chapter.

6.9 Considering compliance with existing treatment regime

Model

6.9.1 If a driver is currently being treated for a medical condition, the authority will review any medical assessments or other information that indicates that the driver is non-compliant with their prescribed treatment regime or medications. If the information obtained indicates that the driver is not compliant with any existing treatment regime that is required to be fit to drive, the driver is not fit to drive.

6.9.2 Without information to the contrary, a driver licensing authority will assume that a driver is complying with their existing treatment regime.

Rationale

Individuals who are diligent about their treatment regime are more likely to have good insight into their medical condition, to seek medical attention when needed, and to avoid driving when their condition is likely to impair their functional ability to drive. In addition, compliance with the prescribed treatment may be essential for the maintenance of driver fitness.

6.10 Considering compliance with existing conditions of licence

Model

6.10.1 If a driver currently has licence conditions, the authority will review any information that indicates that the driver is non-compliant with the conditions. If the information obtained indicates that the driver is not compliant with any condition that is required to be fit to drive, the driver is not fit to drive.

6.10.2 Without information to the contrary, a driver licensing authority will assume that a driver is in compliance with their existing licence conditions.

Rationale

A key consideration when determining if a driver is fit to drive is compliance with current licence conditions. Because conditions are only imposed if required for driver fitness, if a driver is not in compliance with existing conditions they should not be licensed.

6.11 Considering the driving record

Model

6.11.1 Where driving records are available, authorities will review a driver's driving record for any information that indicates whether the identified medical conditions impair the functions necessary for driving. Authorities will review:

(a) whether there has been a deterioration, improvement or no change in driving safety (i.e., crashes, penalty points and infractions) that can be linked to:
- the date of onset
- the date of diagnosis, and/or
- the date the driver began a new treatment regime, prescribed medication or compensation strategy, and

(b) any evidence on file (e.g., police reports) that indicates that incidents were related to the individual's medical conditions.

Rationale

An individual's driving record may indicate that a medical condition is affecting their functional ability to drive. A lengthy, clean driving record for a driver with a long-standing medical condition may be evidence of:

- a low level of impairment
- an ability to compensate,
- a condition that is well controlled, or
- not driving actively.

A driving record with multiple crashes may indicate functional impairment.

Chapter 7: Reassessment

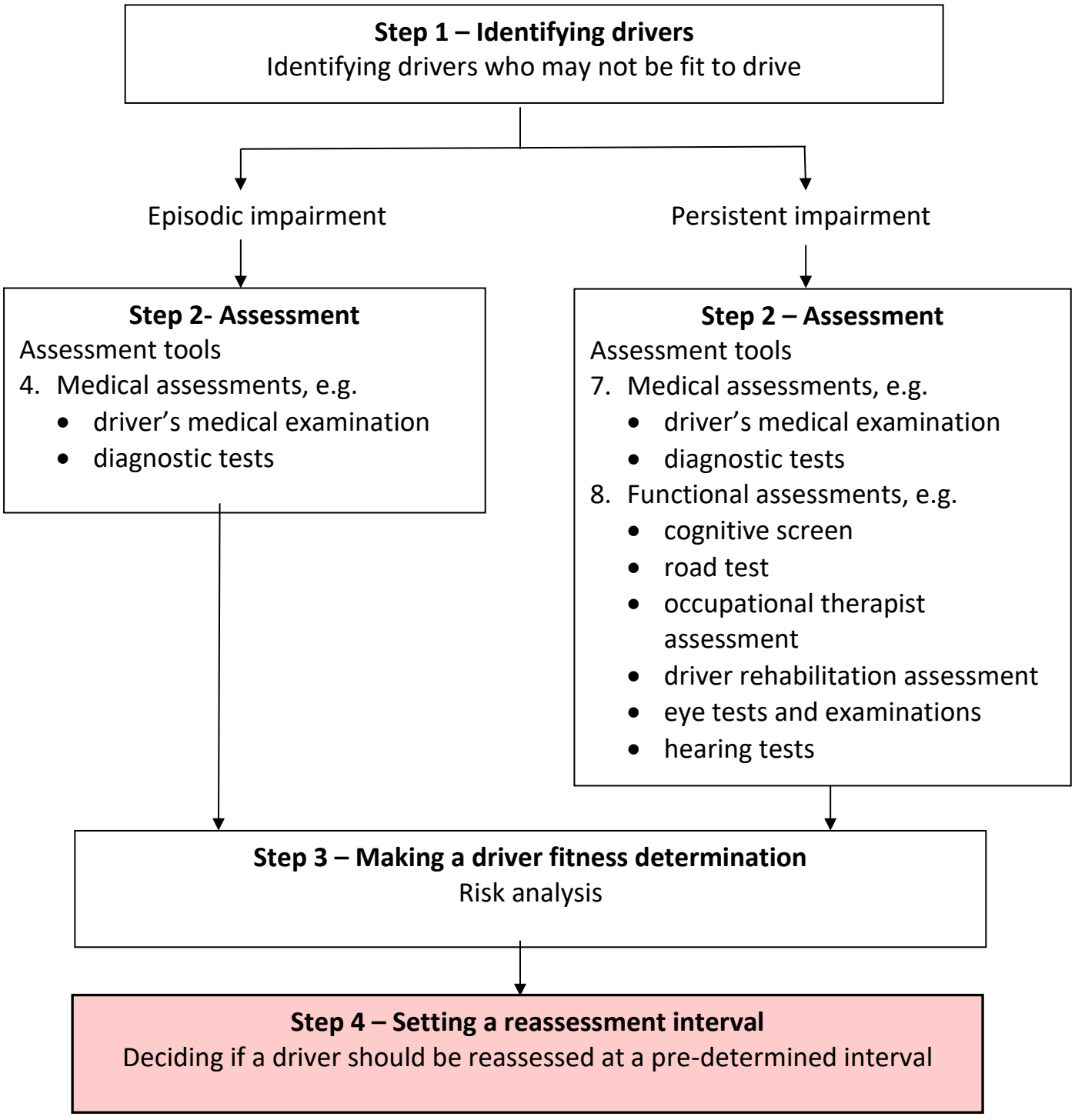
Reassessment is the process of making a new determination of fitness for a driver with a previously reported medical condition. Reassessment is initiated by driver licensing authorities at the expiration of a scheduled reassessment interval or at any other time in the discretion of the authority.

For some medical conditions, a reassessment interval is provided in the standards. In those circumstances where a reassessment interval is not provided, or where individual circumstances may require a different interval, e.g., when the individual has multiple medical conditions, the authority will review the relevant information to determine whether the driver's level or risk of impairment may increase and the times period over which this increase may take place.

Where a reassessment interval is provided in the standards, it is a general guideline. However, if, in the opinion of the treating physician, other medical professional or the driver licensing authority, the driver should be reassessed at a different frequency, then an alternate reassessment interval can be set.

However, commercial drivers must be reassessed at a minimal frequency interval as indicated in Chapter 23.

Model for the Administration of Driver Fitness Programs



7.1 Routine reassessment intervals – commercial drivers

Model

7.1.1 Unless a different reassessment interval is set because of a medical condition, authorities will routinely identify commercial drivers for a review of driver fitness at the time of licence application and then at the following intervals:

(a) up to age 45, every 5 years
(b) from age 45 to age 65, every 3 years, and
(c) from age 65, annually.

Rationale

See Part 2, Chapter 4, section 4.2 'Commercial Drivers'.

7.2 Routine reassessment intervals – non-commercial drivers

Model

7.2.1 Unless a different reassessment interval is set because of a medical condition, authorities will routinely identify non-commercial drivers[5] for a review of driver fitness, for example:

(a) at age 75
(b) at age 80, and
(c) every 2 years over age 80.

Rationale

See Part 1, Chapter 4, section 4.3 'Non-commercial drivers'

7.3 Determining whether reassessment is required (other than routine)

Routine reassessment intervals are a minimum standard for reassessment. There may be instances, however, when drivers should be reassessed more frequently.

Model

7.3.1 To determine whether reassessment is required, the authority will consider:

(a) the driver fitness standard(s) for the relevant medical condition(s)
(b) the date of onset, diagnosis and/or treatment of the medical condition, if known

[5] For definitions, see NSC 4 – Driver Licensing Classification System

(c) the severity of the medical condition
(d) whether the condition is stable and, if so, the period of stability
(e) whether the condition is progressive and, if so, the rate of progression
(f) whether the condition is controlled
(g) where appropriate, the date of the next routine reassessment (i.e., age-related or commercial driver routine)
(h) whether the individual has been compliant with any prescribed treatment regime, conditions or restrictions
(i) the results of any functional assessments
(j) the individual's driving record, and/or
(k) the recommendation of a physician.

7.3.2 Generally, reassessment will be required if:

(a) the driver has a medical condition that is progressive
(b) the driver fitness determination is based upon the effectiveness of a prescribed treatment regime and it is unknown whether the treatment regime is likely to continue to be effective
(c) the driver fitness determination is based upon the effectiveness of a prescribed treatment regime and it is unknown whether the individual is likely to comply with the treatment regime
(d) the medical condition results in episodic impairment, the driver fitness determination is based upon an individual having a period of stability without an episodic event, and it is unknown whether the medical condition is likely to continue to be stable
(e) the medical condition results in an episodic impairment, the driver fitness determination is based upon a pattern of episodes, e.g., nocturnal seizures or auras, and it is unknown whether the pattern of episodes is likely to continue
(f) it is recommended by a physician, and/or
(g) the driver fitness standard for that medical condition indicates that reassessment is required.

Rationale

A driver licensing authority schedules a reassessment when the authority decides an individual can be licensed but may require follow-up assessment in the future to ensure the driver's level or risk of impairment has not increased.

7.4 Setting the reassessment interval

Model

7.4.1 If an authority determines that an individual can be licensed, the authority will also decide whether reassessment is required and, if so, what the reassessment interval should be.

7.4.2 A driver licensing authority will not schedule a reassessment for a commercial driver if the driver's next scheduled routine re-assessment will provide the authority with the necessary opportunity for reassessment.

7.4.3 A driver licensing authority can set any reassessment interval that is appropriate for a particular driver. A driver licensing authority will schedule a reassessment in 1 year if:

(a) a driver's cognitive function is impaired, and the level of cognitive impairment is likely to increase over time

(b) the driver fitness determination is based upon the effectiveness of a prescribed treatment regime and it is unknown whether the treatment regime is likely to continue to be effective

(c) the driver fitness determination is based upon the effectiveness of a prescribed treatment regime and it is unknown whether the individual is likely to comply with the treatment regime

(d) the medical condition results in episodic impairment, the driver fitness determination is based upon an individual having a period of stability without an episodic event, and it is unknown whether the medical condition is likely to continue to be stable

(e) the medical condition results in an episodic impairment, the driver fitness determination is based upon a pattern of episodes, e.g., nocturnal seizures or auras, and it is unknown whether the pattern of episodes is likely to continue.

7.4.4 In most other circumstances where reassessment is required, an authority will schedule a reassessment interval depending upon the likely rate of progression of the medical condition(s).

Rationale

Reassessment intervals of less than 1 year are generally not scheduled, because most medical conditions do not substantially progress in such a short period of time. However, because of the rapid decline in cognitive function associated with many conditions, one year intervals, or less, are usually scheduled for individuals with cognitive impairments. One year intervals are also scheduled for individuals with episodic impairments where it is unknown if the stability of the condition, the pattern of episodes or the effectiveness of treatment is likely to change. This is because a period of one year is usually sufficient to determine whether such a change is likely to occur in the future.

PART 2:

CCMTA
MEDICAL STANDARDS FOR DRIVERS

Summary of Chapters and Medical Conditions

Chapter Number	Chapter Title	Conditions/Contents
1	Introduction	
2	Medical conditions at-a-glance	
3	Cardiovascular disease and disorders	Cardiovascular diseases
4	Cerebrovascular disease	Cerebrovascular diseases
5	Chronic renal disease	Renal diseases
6	Cognitive impairment including dementia	Cognitive impairment Dementia
7	Diabetes – Hypoglycemia	Diabetes, Hypoglycemia
8	General debility and lack of stamina	Chronic fatigue syndrome, malabsorption syndromes, AIDS, malignancies, chronic pain
9	Hearing loss	
10	Intracranial tumours	Intracranial tumours
11	Musculoskeletal conditions	Musculoskeletal
12	Neurological disorders	MS, Cerebral Palsy, Parkinson's
13	Peripheral vascular diseases	Abdominal Aortic Aneurysm Aortic dissection DVT – Pulmonary embolism Peripheral arterial disease - severe claudication
14	Psychiatric disorders	Mood disorders, ADHD, Schizophrenia, Personality disorders
15	Drugs and Driving	Opioids, Antidepressants, Antiepileptics, Antihistamines, Antipsychotics, Sedatives, Stimulants, Alcohol dependence
16	Respiratory diseases	Chronic obstructive pulmonary disease
17	Seizures and epilepsy	Seizures, epilepsy, alcohol induced seizures
18	Sleep disorders	Narcolepsy Sleep Apnea (OSA)
19	Syncope	
20	Traumatic brain injury	Traumatic brain injuries
21	Vestibular disorders	Vertigo, dizziness
22	Vision impairment	Vision impairment
23	Medical Review for Drivers	Frequency of medical review

Chapter 1: Introduction

1.1 Purpose of this part

The medical conditions chapters in this part of the document:

- identify what medical conditions may have an impact on an individual's fitness to drive
- highlight the risk of impairment and crash associated with certain medical conditions
- identify compensation strategies, devices and/or training that may be used to compensate for the effects of a medical condition on driving, and
- include driver fitness standards to assist authorities in determining whether an individual with a medical condition should be licensed and, if so, the appropriate reassessment interval.

1.2 Source of the medical condition chapters

The medical standards in this part used as a starting point documentation originally developed by British Columbia for medical conditions and fitness to drive which in turn was based on an integrated review by Dr. B. Dobbs.

The medical standards were subsequently further developed by medical advisors and administrators from Canadian provincial driver licensing bodies using sources such as the Canadian Medical Association (CMA) publication *Determining Medical Fitness to Operate Motor Vehicles, 9th edition* and the Canadian Cardiovascular Society (CCS) publication on *Assessment of the cardiac patient for fitness to drive and fly.*

The driver licence classes in these standards are based on the CCMTA Classified Driver Licensing System. In general, Classes 1-4 are referring to commercial drivers and classes 5-7 as non-commercial drivers.

1.3 Medical condition chapter template

Below is the template used for the medical condition standards chapters. It is annotated to explain what type of information is found in each section of the template.

NAME OF MEDICAL CONDITION

About the medical condition

Information about the medical condition to assist driver fitness authorities in understanding and applying the guidelines for assessment.

Prevalence

Information about the prevalence of the medical condition, which is relevant to the frequency that it may appear as an issue for licensing.

Medical condition and adverse driving outcomes

Conclusions on the general findings of research on the link between the medical condition and adverse driving outcomes.

Effect on functional ability to drive

Information on the specific effects of the medical condition on the functional abilities needed for driving. This section includes the following table:

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
The medical condition and any distinct presentations or variations of the condition	Whether the functional impairment is persistent or episodic, and whether a medical assessment and/or functional assessment is required	The primary functional abilities affected by the medical condition: cognitive, motor, or sensory	The assessment tool to be used, e.g., cognitive road test.

Compensation

Information about whether or not a driver can compensate for the functional impairment caused by medical conditions through the use of strategies or devices Treatment for a condition, e.g., medication, is not a type of compensation.

Guidelines for assessment

This section names the medical condition and any distinct presentations or variations that require an individual standard. A standard may be for all licence classes (non-commercial classes 5-7 and commercial classes 1-4), for non-commercial drivers only, or for commercial drivers only.

Additional background information about the medical condition may be included here to help provide context for the standard and other information in the following table.

Standard	The requirements that must be met in order to be licensed
Conditions for maintaining licence	Description of any conditions for maintaining a licence. Conditions are ongoing requirements that the driver must meet in order to maintain the licence. For example, 'wear corrective lenses' or 'do not drive if your dialysis regime is delayed'.
Reassessment	Description of a suggested period on how often an individual will be reassessed after being found eligible for a licence. Where a reassessment period is mandatory it is also reflected in the standard. Where there is no particular reassessment period for the medical condition, then reassessment is "routine."
Information from health care providers	Description of any information about the medical condition or functional ability that an authority usually requests when applying the standard. This information will come from medical and functional assessments and is supplied by from physicians, driver rehabilitation specialists or other health care providers. Specific information that may be requested includes a professional's opinion regarding: • whether the individual has insight into the impact their medical condition may have on driving • whether the individual is compliant with their current treatment regime • if known or applicable, whether the individual is compliant with any current conditions for maintaining a licence
Rationale	A brief description of the rationale for the guide.

Chapter 2: Medical conditions at-a-glance

For each major medical condition identified in the medical condition chapters, the following table identifies:

- whether the resulting impairment is persistent or episodic
- the chapter where the specific information is available

Condition	Chapter Reference	Type of Impairment	
		Persistent	**Episodic**
Abdominal Aortic Aneurysm	13		X
Aortic dissection	13		X
Cardiovascular diseases	3	X	X
Cerebrovascular diseases	4	X	X
Cognitive impairment including dementia	6	X	
Diabetes – Hypoglycemia	7		X
DVT – Pulmonary embolism	13		X
Hearing loss	9	X	
Intracranial tumours	10	X	X
MS, Cerebral Palsy, Parkinson's	12	X	X
Musculoskeletal	11	X	
Narcolepsy	18	X	X
Peripheral arterial disease-severe claudication	13	X	
Psychiatric disorders	14	X	X
Renal diseases	5	X	
Respiratory diseases	16	X	
Seizures and epilepsy	17		X
Sleep apnea	18	X	X
Syncope	19		X
Traumatic brain injuries	20	X	X
Vestibular disorders	21	X	X
Vision impairment	22	X	

Chapter 3: Cardiovascular disease and disorders

3.1 About cardiovascular disease

Overview

Cardiovascular disease is an umbrella term used to describe a variety of disorders relating to the heart and blood vessels.

Coronary artery disease

Coronary artery disease, which is also called coronary, ischemic or atherosclerotic heart disease, is characterized by the presence of atherosclerosis in the arteries of the heart. Atherosclerosis is the progressive build-up of fatty deposits called plaque, which narrows the coronary arteries and reduces blood flow to the heart. Complications of coronary artery disease include:

- angina (pain or discomfort due to lack of oxygen to the heart muscle)
- myocardial infarction (heart attack), and
- ischemic cardiomyopathy (permanent damage to the heart muscle).

Disturbances of cardiac rhythm

Disturbances of cardiac rhythm, or arrhythmias, include:

- tachycardia (rapid heart rate)
- bradycardia (slow heart rate)
- fibrillation or flutter (abnormal twitching of the heart muscle), and
- heart block.

These arrhythmias may arise from the heart muscle itself or the conduction system and are often secondary to underlying heart disease.

Valvular heart disease

Disease affecting the heart valves may result in stenosis and regurgitation and is associated with an increased risk of thromboembolism.

In valvular stenosis, the valve opening is smaller than normal due to hardening or fusing of the valve's leaflets. This may cause the heart to have to work harder to pump blood through the valves. In valvular regurgitation or "leaky valve", the valve does not close tightly enough, allowing some blood to leak backwards across the valve. As the leak worsens, the heart has to work harder to make up for the leaky valve, and less blood may flow to the rest of the body. Stenosis and regurgitation may coexist.

Individuals who have undergone valve replacement surgery are subject to a certain irreducible incidence of late complications such as thromboembolism, dehiscence, infection and mechanical malfunction.

Congestive heart failure

Congestive heart failure usually is a chronic, progressive condition in which the heart is unable to pump the quantity of blood required to meet the body's needs. It is generally the result of heart disease but may be secondary to non-cardiac conditions such as fluid overload and anemia.

The severity of congestive heart failure can be assessed by measuring the fraction of blood being pumped out of the left ventricle with each beat. This is expressed as a ratio called the left ventricle ejection fraction (LVEF). Healthy individuals generally have an LVEF greater than 55%.

The New York Heart Association (NYHA) functional classification system provides a simple, clinical measure for assessing the degree of heart failure. This system describes the effect of cardiovascular disease on an individual's general physical activity, according to the categories shown in the following table.

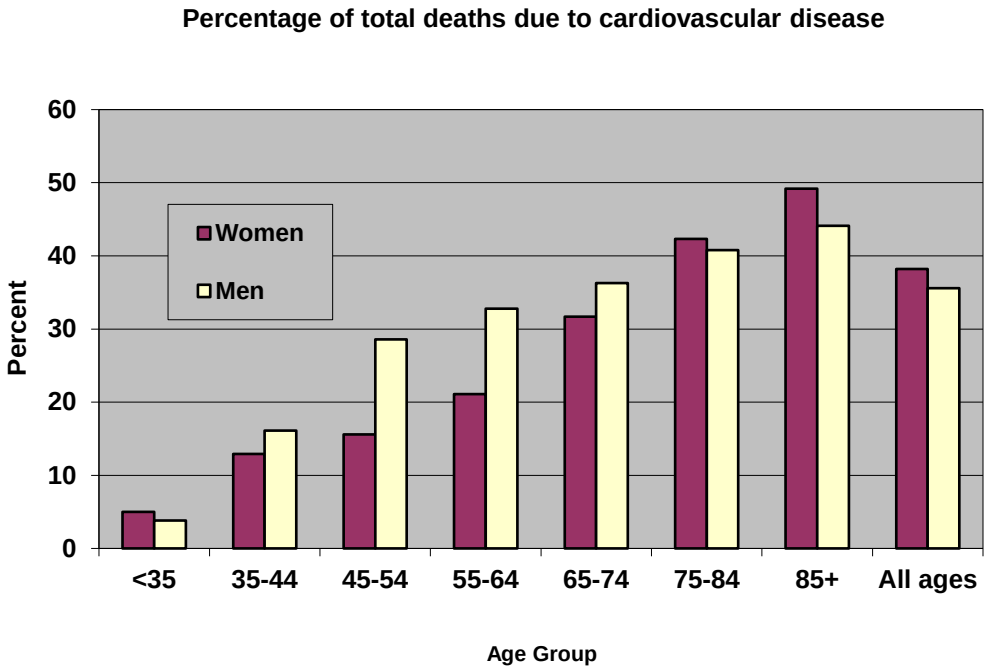
Category	Description
I	No symptoms and no limitation in ordinary physical activity. Comfortable at rest.
II	Mild symptoms and slight limitation during ordinary activity. Comfortable at rest.
III	Marked limitation in activity due to symptoms, even during less-than-ordinary activity. Comfortable only at rest.
IV	Severe limitations. Experiences symptoms even while at rest.

Cardiomyopathy

Cardiomyopathy refers to a change in the size, strength or flexibility in the heart muscle. These changes can reduce the amount of blood being pumped out of the heart and may lead to congestive heart failure. Cardiomyopathy is associated with an increased risk of arrhythmias.

3.2 Prevalence

Cardiovascular disease is a major cause of death, disability and health care costs in Canada. Although cardiovascular disease death rates have been declining since the mid-1960s, statistics from 1997 indicate that cardiovascular disease was still the leading cause of death in Canada, accounting for 36% of all deaths in men and 38% in women. As shown in the graph below, the proportion of deaths caused by cardiovascular disease increases dramatically with age.



3.3 Cardiovascular disease and adverse driving outcomes

Research indicates that drivers with cardiovascular disease as a whole have a higher risk for adverse driving outcomes than those without cardiovascular disease. However, there is relatively little research on the effects of specific cardiovascular disorders and driving outcomes.

3.4 Effect of cardiovascular disease on functional ability to drive

Condition	Type of driving impairment and assessment approach[6]	Primary functional ability affected	Assessment tools
Coronary artery disease Arrhythmias Valvular heart disease Cardiomyopathy	Episodic impairment: Medical assessment – likelihood of impairment	All – sudden incapacitation	Medical assessments
Congestive heart failure	Persistent Impairment Functional assessment	Can affect Motor Sensory and Cognitive function May also result in general debility or lack of stamina	Medical assessments Functional Assessment
	Episodic impairment Medical assessment – likelihood of impairment	All – sudden incapacitation	Medical assessments Specialist's report
Post cardiac arrest Post-operative cognitive decline (POCD)	Persistent Impairment Functional assessment	Can affect Motor Sensory and Cognitive function May also result in general debility	Medical assessments Functional Assessment

[6] See Part 1 for a discussion of the use of functional assessments for driver licensing decisions.

The effect of cardiovascular disease on an individual's functional ability to drive may be episodic or persistent.

Episodic impairment

The potential episodic impairment is a partial or complete loss of consciousness that incapacitates the driver. This may be caused by a variety of cardiovascular events such as:

- bradyarrhythmias
- tachyarrhythmias
- myocardial disease (massive myocardial infarction)
- left ventricular myocardial restriction or constriction
- pericardial constriction or tamponade
- aortic outflow tract obstruction
- aortic valvular stenosis, or
- hypertrophic obstructive cardiomyopathy.

Persistent impairment

Individuals with congestive heart failure may develop persistent cognitive impairment, loss of stamina or general debility as a result of a reduction of oxygen to the brain, organs and tissues. Cardiac arrest also may cause persistent cognitive impairment where a loss of blood to the brain causes brain damage.

Neurocognitive deficits can occur in individuals undergoing intracardiac procedures (e.g., valve surgery) or extracardiac procedures (e.g., coronary artery bypass graft (CABG) surgery). However, the majority of studies investigating cognitive decline have focused on individuals undergoing CABG surgery. The results of those studies indicate that a significant number of individuals experience post-operative cognitive decline (POCD) for several months after surgery, with documented declines in memory, attention, speed of processing, and executive functioning. Studies indicate that between 20% and 79% of individuals experience POCD between 6 weeks and 6 months of CABG surgery, with a majority of the studies showing a rate of 45% or higher. In those studies that have followed individuals for more than 6 months post-surgery, the results indicate that up to 35% of individuals will show POCD one year after surgery. The current understanding is that POCD is the result of a number of factors associated with cardiac treatment, rather than a single factor such as the use of cardiopulmonary bypass.

3.5 Compensation

Individuals with cardiovascular disease are not able to compensate for their functional impairment.

3.6 Guidelines for assessment

These guidelines are based primarily on recommendations contained in the final report of the 2003 Canadian Cardiovascular Society (CCS) Consensus Conference Assessment of

the Cardiac Patient for Fitness to Drive and Fly. The CCS recommendations focus exclusively on the potential for episodic impairment associated with cardiovascular diseases. The guidelines are based on an acceptable threshold for annual risk of sudden incapacitation of one percent or less for commercial drivers. It is recognized that exceptions can be made to the recommended standards if the treating cardiologist estimates the annual risk of sudden incapacitation to less that one percent.

Additional guidelines have been added to address potential persistent cognitive impairment caused by congestive heart failure, and the potential for co-morbid cognitive impairment in relation to cardiac arrest, and post-operative cognitive decline (POCD) following coronary artery bypass graft (CABG) surgery. Where the standards differ from the CCS recommendations, the rationale is included in the table.

For CCS recommendations for transient conditions (waiting periods) see Section 3.6.50 which forms part of the standards.

3.6.1 Congenital heart defects

STANDARD	**All drivers eligible for a licence if** • **they meet any standards related to a specific cardiovascular condition or event**
Conditions for maintaining licence	None
Reassessment	• Where the defect has been repaired and the treating physician does not indicate any concerns, as per routine • Where the defect has not been repaired, every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Whether or not the defect has been repaired • Presence of any specific cardiovascular condition or event or risk of condition or event that may impair functional ability to drive
Rationale	Congenital heart defects are not specifically addressed in the CCS recommendations. This standard is included here to assist where a congenital heart defect is reported to an authority. The nature of congenital heart defects and their treatment is variable; therefore, there are no driver fitness standards specifically for them.

3.6.2 *Acute Coronary Syndromes – Non-commercial drivers*

STANDARD	**Non-commercial drivers eligible for a licence if** • **they have an angiographic demonstration of less than a 70% reduction in the diameter of the left main coronary artery, or** • **where they have a 70% or greater reduction in the diameter of the left main coronary artery, it has been successfully treated with revascularization** • **the waiting periods have been met (Section 3.6.50)**
Conditions for maintaining licence	None
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Extent of reduction in the left main coronary artery • Where applicable, result of treatment with revascularization
Rationale	CCS recommendation

3.6.3 Acute Coronary Syndromes – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **they have an angiographic demonstration of less than a 50% reduction in the diameter of the left main coronary artery, or** • **where they have a 50% or greater reduction in the diameter of the left main coronary artery, it has been successfully treated with revascularization** • **providing the applicable waiting periods are met (3.6. 50)**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Extent of reduction in the left main coronary artery • Where applicable, result of treatment with revascularization
Rationale	CCS recommendation

3.6.4 Asymptomatic coronary artery disease or stable angina

STANDARD	**All drivers eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Confirmation that coronary artery disease is asymptomatic, or angina is stable
Rationale	CCS recommendation

3.6.5 CABG surgery – Non-commercial drivers

Guidelines	**Non-commercial drivers eligible for a licence if** • **it has been 1 month or more since CABG surgery**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Date of CABG surgery
Rationale	CSS recommendations

3.6.6 CABG surgery – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **it has been 3 months or more since CABG surgery**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Date of CABG surgery
Rationale	CSS recommendations

3.6.7 Premature atrial or ventricular contractions

STANDARD	**All drivers eligible for a licence if** • **they have no associated impaired level of consciousness caused by cerebral ischemia**
Conditions for maintaining licence	None
Reassessment	• Where there is no underlying cardiovascular disease, as per routine • More frequently at the discretion of the authority
Information from health care providers	• Confirmation that there is no impaired level of consciousness caused by cerebral ischemia
Rationale	CCS recommendation

3.6.8 Ventricular fibrillation with no reversible cause – Non-commercial drivers

This standard applies to non-commercial drivers who have ventricular fibrillation (VF) with no reversible cause. It does not apply to drivers who have VF due to any of the following reversible causes:

- VF within 24 hours of myocardial infarction
- VF during coronary angiography
- VF with electrocution, or
- VF secondary to drug toxicity.

If VF has a reversible cause, it is considered a transient condition, see 3.6.10.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 6 months or more since their last episode of ventricular fibrillation**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Date of last episode of ventricular fibrillation
Rationale	CCS recommendation

3.6.9 Ventricular fibrillation with no reversible cause – Commercial drivers

This standard applies to commercial drivers who have ventricular fibrillation (VF) with no reversible cause. It does not apply to drivers who have VF due to any of the following reversible causes:

- VF within 24 hours of myocardial infarction
- VF during coronary angiography
- VF with electrocution, or
- VF secondary to drug toxicity.

If VF has a reversible cause, it is considered a transient condition. The CCS recommendation for VF with a reversible cause is included in 3.6.11.

STANDARD	**Commercial drivers not eligible for a licence**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	CCS recommendation

3.6.10 Hemodynamically unstable VT – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **It has been 6 months since the last episode, and** • **the underlying condition has been successfully treated**
Conditions for maintaining licence	None
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Whether the underlying condition causing VT has been successfully treated
Rationale	CCS recommendation

3.6.11 Hemodynamically unstable VT – Commercial drivers

STANDARD	**Commercial drivers not eligible for a licence**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	CCS recommendation

3.6.12 Sustained VT and an LVEF of < 35% – Non-commercial drivers

This standard applies to non-commercial drivers who have sustained ventricular tachycardia (VT) with:

- a left ventricular ejection fraction (LVEF) of < 35%, and
- no associated impaired level of consciousness.

Sustained VT means VT having a cycle length of 500 msec or less, and lasting 30 seconds or more or causing hemodynamic collapse.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 3 months or more since their last episode of sustained VT**
Conditions for maintaining licence	None
Reassessment	• Where the driver's condition is controlled and stable, every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Date of last episode of sustained VT
Rationale	CSS recommendations

3.6.13 Sustained VT and an LVEF of <35% – Commercial drivers

This standard applies to commercial drivers who have sustained ventricular tachycardia (VT) with:

- a left ventricular ejection fraction (LVEF) of <35%, and
- no associated impaired level of consciousness.

Sustained VT means VT having a cycle length of 500 msec or less, and lasting 30 seconds or more or causing hemodynamic collapse.

STANDARD	Commercial drivers not eligible for a licence
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	CCS recommendation

3.6.14 Sustained VT and an LVEF of ≥ 35% – Non-commercial drivers

This standard applies to non-commercial drivers who have sustained ventricular tachycardia (VT):

- with a left ventricular ejection fraction (LVEF) of ≥ 35%
- with no associated impaired level of consciousness, and
- for whom an implantable cardioverter defibrillator (ICD) has not been recommended.

Sustained VT means VT having a cycle length of 500 msec or less, and lasting 30 seconds or more or causing hemodynamic collapse.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 4 weeks or more since their last episode of sustained VT, and** • **they have been successfully treated with radiofrequency ablation plus a 1 week waiting period or successful pharmacological treatment**
Conditions for maintaining licence	None
Reassessment	• Annually or more frequently at the discretion of the authority
Information from health care providers	• Date of last episode of sustained VT • Whether the driver has been successfully treated
Rationale	CCS recommendation

3.6.15 Sustained VT and an LVEF of >35% – Commercial drivers

This standard applies to commercial drivers who have sustained ventricular tachycardia (VT):

- with a left ventricular ejection fraction (LVEF) of $\geq$ 35%
- with no associated impaired level of consciousness, and
- for whom an implantable cardioverter defibrillator (ICD) has not been recommended.

Sustained VT means VT having a cycle length of 500 msec or less and lasting 30 seconds or more or causing hemodynamic collapse.

STANDARD	**Commercial drivers eligible for a licence if** • **it has been 3 months or more since their last episode of sustained VT, and** • **they have been successfully treated with radiofrequency ablation plus a 1 week waiting period or successful pharmacological treatment**
Conditions for maintaining licence	None
Reassessment	• Annually or more frequently at the discretion of the authority
Information from health care providers	• Date of last episode of sustained VT • Whether the driver has been successfully treated
Rationale	CCS recommendation

3.6.16 Non-sustained VT

This standard applies to all drivers who have non-sustained ventricular tachycardia (VT).

Non-sustained VT means VT having a cycle length of 500 msec or less and lasting less than 30 seconds without hemodynamic collapse.

STANDARD	**All drivers eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	None
Rationale	CCS recommendation

3.6.17 Paroxysmal SVT, AF or AFL with no impaired consciousness

This standard applies to all drivers who have had paroxysmal:

- supraventricular tachycardia (SVT)
- atrial fibrillation (AF), or
- atrial flutter (AFL)

with no associated impaired level of consciousness.

STANDARD	**All drivers eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Initial reassessment at 5 years or as per routine, whichever is more frequent. If no further recurrences after 5 years, then as per routine • More frequently at the discretion of the authority
Information from health care providers	None
Rationale	CCS recommendation

3.6.18 Paroxysmal SVT, AF or AFL with impaired consciousness

This standard applies to all drivers who have had paroxysmal:

- supraventricular tachycardia (SVT)
- atrial fibrillation (AF), or
- atrial flutter (AFL)

with an associated impaired level of consciousness.

STANDARD	**All drivers eligible for a licence if** • **they have been on medical therapy for a minimum of 3 months with no recurrence of paroxysmal SVT, AF, or AFL with impaired level of consciousness** • **for drivers with paroxysmal SVT, it has been successfully treated with radiofrequency ablation** • **for drivers with paroxysmal AF, they have had AV node ablation and pacemaker implantation and meet the standard for pacemaker treatment, and** • **for drivers with paroxysmal AFL, they have had a successful isthmus ablation with proven establishment of bidirectional isthmus block**
Conditions for maintaining licence	None
Reassessment	• Initial reassessment at 5 years or as per routine, whichever is more frequent. If no further recurrences after 5 years, then routine • More frequently at the discretion of the authority
Information from health care providers	• Date of last occurrence of paroxysmal SVT, AF, or AFL with impaired level of consciousness • For drivers with paroxysmal SVT, whether it has been successfully treated with radiofrequency ablation • For drivers with paroxysmal AF, whether they have had AV node ablation and pacemaker implantation • For drivers with paroxysmal AFL, whether they have had a successful isthmus ablation with proven establishment of bidirectional isthmus block
Rationale	CCS recommendation

3.6.19 Persistent or permanent paroxysmal SVT, AF or AFL

This standard applies to all drivers who have persistent or permanent paroxysmal:

- supraventricular tachycardia (SVT)
- atrial fibrillation (AF), or atrial flutter (AFL).

STANDARD	**All drivers eligible for a licence if** • **they have adequate ventricular rate control, and** • **they do not experience an impaired level of consciousness**
Conditions for maintaining licence	None
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Whether the driver has adequate ventricular rate control • Whether the driver experiences an impaired level of consciousness
Rationale	CCS recommendation

3.6.20 Sinus node dysfunction

STANDARD	**All drivers eligible for a licence if** • **they have no associated symptoms, or** • **where they have associated symptoms, the sinus node dysfunction has been successfully treated with a pacemaker and they meet the standard for pacemaker treatment**
Conditions for maintaining licence	None
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Whether the driver has associated symptoms • Where the driver has associated symptoms, whether they have been successfully treated with a pacemaker
Rationale	CCS recommendation

3.6.21 Atrioventricular (AV) or intraventricular block – Non-commercial drivers

If a permanent pacemaker is implanted, the recommendations in 3.6.23 prevail.

STANDARD	**(a) Non-commercial drivers with** **(i) isolated first degree AV block** **(ii) isolated right bundle branch block (RBBB), or** **(iii) isolated left anterior or posterior fascicular block** **are eligible for a licence** **(b) Non-commercial drivers with** **(i) left bundle branch block (LBBB)** **(ii) bifascicular block** **(iii) second degree AV block/Mobitz I** **(iv) first degree AV block + bifascicular block, or** **(v) congenital third degree AV block** **are eligible for a licence if** • **they have had no associated impaired level of consciousness** **(c) Non-commercial drivers with** **(i) second degree AV block; Mobitz II (distal AV block)** **(ii) alternating LBBB and RBBB, or** **(iii) acquired third degree AV block** **are not eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• The specific nature of the atrioventricular or intraventricular block • Where the driver has • left bundle branch block (LBBB) • bifascicular block • second degree AV block/Mobitz I • first degree AV block + bifascicular block, or • congenital third degree AV block

	whether the driver has had any associated impaired level of consciousness
Rationale	CCS recommendation

3.6.22 Atrioventricular (AV) or intraventricular block – Commercial drivers

If a permanent pacemaker is implanted, the recommendations in 3.6.24 prevail.

STANDARD	**(a) Commercial drivers with** **(i) isolated first degree AV block** **(ii) isolated right bundle branch block (RBBB), or** **(iii) isolated left anterior or posterior fascicular block** **are eligible for a licence** **(b) Commercial drivers with** **(i) left bundle branch block (LBBB)** **(ii) bifascicular block** **(iii) second degree AV block/Mobitz I, or** **(iv) first degree AV block + bifascicular block** **eligible for a licence if** • **they have had no associated impaired level of consciousness, and** • **the conditions for maintaining a licence are met** **(c) Commercial drivers with a congenital third degree AV block are eligible for a licence if** • **they have had no associated impaired level of consciousness** • **they have a QRS duration ≤ 110 msec, and** • **they have a Holter showing no documented pauses ≥ 3 seconds** • **the conditions for maintaining a licence are met** **(d) Commercial drivers with** **(i) second degree AV block; Mobitz II (distal AV block)** **(ii) alternating LBBB and RBBB, or** **(iii) acquired third degree AV block** **are not eligible for a licence**

Conditions for maintaining licence	• Drivers with
	  • left bundle branch block (LBBB)
	  • bifascicular block
	  • second degree AV block/Mobitz I, or
	  • first degree AV block + bifascicular block
	  have an annual Holter that shows there is no higher grade AV block
	• Drivers with a congenital third degree AV block have an annual Holter that shows no documented pauses > 3 seconds

Reassessment	• Routine or more frequently at the discretion of the authority

Information from health care providers	• The specific nature of the atrioventricular or intraventricular block
	• Where the driver has
	  • left bundle branch block (LBBB)
	  • bifascicular block
	  • second degree AV block/Mobitz I
	  • first degree AV block + bifascicular block, or
	  • congenital third degree AV block
	  whether the driver has had any associated impaired level of consciousness and the results of Holter confirming no higher grade AV block
	• Where the driver has congenital third degree AV block, whether they have a QRS duration $\leq$ 110 msec and the results of a Holter showing no documented pauses $\geq$ 3 seconds

Rationale	CCS recommendation

3.6.23 Permanent pacemakers – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 1 week or more since pacemaker implant** • **they have not experienced any episodes of impaired level of consciousness since the implant** • **they show normal sensing and capture on a post-implant ECG, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Regularly check pacemaker at a pacemaker clinic and do not drive if there is a pacemaker malfunction
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Whether the driver has experienced any episodes of impaired level of consciousness since the implant • Whether the results of a post-implant ECG show normal sensing and capture
Rationale	CCS recommendation

3.6.24 Permanent pacemakers – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **it has been 1 month or more since pacemaker implant** • **they have not experienced any episodes of impaired level of consciousness since the implant** • **they show normal sensing and capture on a post-implant ECG, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Regularly check pacemaker at a pacemaker clinic and do not drive if there is a pacemaker malfunction
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Date of pacemaker implant • Whether the driver has experienced any episodes of impaired level of consciousness since the implant • Whether the results of a post-implant ECG show normal sensing and capture
Rationale	CCS recommendation

3.6.25 Declined an ICD or have an ICD implanted as primary prophylaxis – Non-commercial drivers

This standard applies to non-commercial drivers who:

- have had an implantable cardioverter defibrillator (ICD) implanted as a primary prophylaxis, or
- have declined an ICD recommended as primary prophylaxis

When implanted as a primary prophylaxis, the ICD is implanted to prevent sudden cardiac death in individuals considered to be at high risk but who have not had an episode of ventricular arrhythmia.

Individuals whose ICD also regulates pacing for bradycardia must also meet the standard for permanent pacemakers in 3.6.23.

STANDARD	**Non-commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I, II, or III** • **it has been 4 weeks or more since ICD implant (if applicable), and** • **the conditions for maintaining a licence are met (if applicable)**
Conditions for maintaining licence	• Regularly check ICD at a device clinic and do not drive if there is an ICD malfunction • Report to the authority if you experience an impaired level of consciousness or disability as a result of ICD therapy
Reassessment	• Where the driver's condition is controlled and stable, every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• NYHA classification • Date of ICD implant (if applicable)
Rationale	CCS recommendation

3.6.26 Declined an ICD or have an ICD implanted as primary prophylaxis – Commercial drivers

This standard applies to commercial drivers who:

- have had an implantable cardioverter defibrillator (ICD) implanted as a primary prophylaxis, or
- have declined an ICD recommended as primary prophylaxis

When implanted as a primary prophylaxis, the ICD is implanted to prevent sudden cardiac death in individuals considered to be at high risk but who have not had an episode of ventricular arrhythmia.

Individuals whose ICD also regulates pacing for bradycardia must also meet the standard for permanent pacemakers in 3.6.24.

STANDARD	**Commercial drivers generally not eligible for a licence. May be eligible if** • **cardiologist assessment indicates that the annual risk of sudden incapacitation is 1% or less, and** • **the driver meets the standard for ICD implanted as a primary prophylaxis in non-commercial drivers 3.6.25**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	CCS recommendation – an ICD may sometimes be implanted in low risk patients. Individual cases may be made for allowing a commercial driver to continue driving with an ICD provided the annual risk of sudden incapacitation is felt to be 1% or less.

3.6.27 ICD implanted as secondary prophylaxis for sustained VT – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I, II, or III** • **it has been 1 week or more since ICD implant** • **it has been 3 months or more since their last episode of sustained VT, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Regularly check ICD at a device clinic and do not drive if there is an ICD malfunction • Report to the authority if you experience an impaired level of consciousness or disability as a result of ICD therapy
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• NYHA classification • Date of ICD implant • Date of last episode of sustained VT • Has driver experienced an impaired level of consciousness since ICD implant
Rationale	CCS recommendation

3.6.28 ICD implanted as secondary prophylaxis for sustained VT – Commercial drivers

STANDARD	**Commercial drivers not eligible for a licence**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	CCS recommendation

3.6.29 ICD therapy (shock or ATP) has been delivered – Non-Commercial drivers

This standard applies to non-commercial drivers where ICD therapy (shock or ATP) has been delivered and there is an associated impaired level of consciousness, or the therapy delivered by the device was disabling.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 6 months or more since the event, and** • **the standard for the underlying cardiovascular condition are met.**
Conditions for maintaining licence	• As per the standard for the underlying cardiovascular condition
Reassessment	• As per the standard for the underlying cardiovascular condition
Information from health care providers	• Date of the event
Rationale	CCS recommendation

3.6.30 ICD therapy (shock or ATP) has been delivered – Commercial drivers

STANDARD	**Commercial drivers are ineligible for a licence**
Conditions for maintaining licence	• n/a
Reassessment	• n/a
Information from health care providers	• n/a
Rationale	CCS recommendation

3.6.31 ICD implanted as secondary prophylaxis for VF or VT – Non-commercial drivers

This standard applies to non-commercial drivers who have had an implantable cardioverter defibrillator (ICD) implanted as a secondary prophylaxis for VF or VT with an impaired level of consciousness.

When implanted as a secondary prophylaxis, the ICD is implanted to prevent sudden cardiac death in individuals who have suffered a cardiac arrest or who suffer from malignant arrhythmias that do not respond readily to medical treatment.

Individuals whose ICD also regulates pacing for bradycardia must also meet the standard for permanent pacemakers in 3.6.23.

STANDARD	**Non-commercial drivers eligible for a licence if** • **assessed as NYHA class I, II, III** • **it has been 6 months or more since their last episode of sustained symptomatic VT or syncope judged to be likely due to VT or cardiac arrest, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Regularly check ICD at a device clinic and do not drive if there is an ICD malfunction • Report to the authority if you experience an impaired level of consciousness or disability as a result of ICD therapy
Reassessment	• Where the driver's condition is controlled and stable, every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Date of last episode of sustained symptomatic VT or syncope judged to be likely due to VT or cardiac arrest
Rationale	CCS recommendation

3.6.32 ICD implanted as secondary prophylaxis for VF or VT – Commercial drivers

STANDARD	**Commercial drivers not eligible for a licence**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	CCS recommendation

3.6.33 Inherited heart disease – Non-commercial drivers

This standard applies to non-commercial drivers with the following inherited heart diseases:

- Brugada's Syndrome
- Long QT Syndrome, and
- arrhythmogenic right ventricular cardiomyopathy.

STANDARD	**<u>Non-commercial drivers</u> eligible for a licence if** • **their condition has been investigated and treated by a cardiologist, and** • **it has been 6 months or more since they have experienced any event causing an impaired level of consciousness**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Confirmation that the condition has been investigated and treated by a cardiologist • Date of last event causing an impaired level of consciousness (if applicable)
Rationale	CCS recommendation

3.6.34 Inherited heart disease – Commercial drivers

This standard applies to commercial drivers with the following inherited heart diseases:

- Brugada's Syndrome
- Long QT Syndrome, and
- arrhythmogenic right ventricular cardiomyopathy.

STANDARD	**<u>Commercial drivers</u> generally not eligible for a licence. May be eligible if** • **an assessment by a cardiologist indicates that the annual risk of sudden incapacitation is 1% or less, and** • **the driver meets the standard for inherited heart disease in non-commercial drivers**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	CCS recommendation – Inherited heart diseases may sometimes be identified to pose a very low risk to patients. Individual cases can sometimes be made to allow a commercial driver to continue to drive despite the diagnosis of one of these diseases, provided the annual risk of sudden incapacitation is believed to be less than one percent.

3.6.35 Medically treated valvular heart disease – Non-commercial drivers

This standard applies to non-commercial drivers with medically treated:

- aortic stenosis
- aortic regurgitation
- mitral stenosis, or
- mitral regurgitation.

STANDARD	**Non-commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I or II, and** • **they have had no episodes of impaired level of consciousness**
Conditions for maintaining licence	None
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• NYHA classification • Whether the driver has had an episode of impaired level of consciousness
Rationale	CCS recommendation

3.6.36 Medically treated aortic stenosis or aortic sclerosis – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I** • **their condition is asymptomatic** • **they have an aortic valve area (AVA)) ≥ 1.0 cm^2** • **they have a left ventricle ejection fraction (LVEF) ≥ 35%** • **they have had a detailed assessment by a cardiologist, including an assessment for risk of syncope, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Have an annual medical follow-up
Reassessment	• Annually or more frequently at the discretion of the authority
Information from health care providers	• NYHA classification • Whether condition is asymptomatic • Aortic Valve Area (AVA) • Left ventricle ejection fraction (LVEF) • Confirmation of cardiologist assessment including risk of syncope
Rationale	CCS recommendation

3.6.37 Medically treated aortic or mitral regurgitation or mitral stenosis – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I** • **they have a left ventricle ejection fraction (LVEF) ≥ 35%** • **they have had no episodes of impaired level of consciousness**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• NYHA classification • Left ventricle ejection fraction (LVEF) • Whether the driver has had an episode of impaired level of consciousness
Rationale	CCS recommendation

3.6.38 Surgically treated valvular heart disease – Non-commercial drivers

This standard applies to non-commercial drivers with:

- mechanical prostheses
- mitral bioprostheses with non-sinus rhythm
- mitral valve repair with non-sinus rhythm
- aortic bioprostheses
- mitral bioprostheses with sinus rhythm, or
- mitral valve repair with sinus rhythm.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 6 weeks or more since their discharge following treatment** • **they have no thromboembolic complications, and** • **for drivers with mechanical prostheses, mitral bioprostheses with non-sinus rhythm or mitral valve repair with non-sinus rhythm, they are on anti-coagulant therapy**
Conditions for maintaining licence	None
Reassessment	• Every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Type of surgical treatment • Date of their discharge following treatment • Whether there are thromboembolic complications • Where applicable, whether the driver is on anti-coagulant therapy
Rationale	CCS recommendation

3.6.39 Surgically treated valvular heart disease – Commercial drivers

This standard applies to commercial drivers with:

- mechanical prostheses
- mitral bioprostheses with non-sinus rhythm
- mitral valve repair with non-sinus rhythm
- aortic bioprostheses
- mitral bioprostheses with sinus rhythm, or
- mitral valve repair with sinus rhythm.

STANDARD	**Commercial drivers eligible for a licence if** • **it has been 3 months or more since their discharge following treatment** • **they have no thromboembolic complications** • **they are assessed as NYHA Class I** • **they have an LVEF ≥ 35%, and** • **for drivers with mechanical prostheses, mitral bioprostheses with non-sinus rhythm or mitral valve repair with non-sinus rhythm, they are on anti-coagulant therapy**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Type of surgical treatment • Date of their discharge following treatment • Whether there are thromboembolic complications • NYHA classification • Left ventricle ejection fraction (LVEF) • Where applicable, whether the driver is on anti-coagulant therapy
Rationale	CCS recommendation

3.6.40 Mitral valve prolapse – All drivers

STANDARD	**All drivers eligible for a licence if** • **they are asymptomatic, or** • **where they are symptomatic they have been assessed for arrhythmia and they meet any applicable standard for arrhythmia**
Conditions for maintaining licence	None
Reassessment	• Where the condition is longstanding and asymptomatic, then routine; otherwise every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Whether the driver is asymptomatic
Rationale	CCS recommendation

3.6.41 Congestive heart failure – Non-commercial drivers

If using left ventricular assist device (LVAD), see 3.6.43

STANDARD	**Non-commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I, II, or III** • **they are not receiving intermittent inotropes**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• NYHA Classification • Whether the driver is receiving intermittent inotropes or using a left ventricle assist device
Rationale	CCS recommendations

3.6.42 Congestive heart failure – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I or II** • **they have an LVEF of ≥ 35%** • **they are not receiving intermittent inotropes**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• NYHA Classification • LVEF • Whether the driver is receiving intermittent inotropes or using a left ventricle assist device
Rationale	CSS recommendations

3.6.43 Left ventricular dysfunction or cardiomyopathy – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I, II, or III** • **they are not receiving intermittent inotropes, and** • if has left ventricular assist device (LVAD) and cardiologist report indicates is stable for 2 months post implantation
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• NYHA Classification • Whether the driver is receiving intermittent inotropes or using an LVAD • Date of LVAD implant
Rationale	CCS recommendation

3.6.44 Left ventricular dysfunction or cardiomyopathy – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **they are assessed as NYHA Class I or II** • **they have an LVEF of ≥ 35%** • **they are not receiving intermittent inotropes, and** • **they are not using a left ventricle assist device**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• NYHA Classification • Left ventricle ejection fraction (LVEF) • Whether the driver is receiving intermittent inotropes or using a left ventricle assist device
Rationale	CCS recommendation

3.6.45 Heart transplant – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 6 weeks or more since their discharge following transplant** • **they are assessed as NYHA Class I or II** • **they are on stable immunotherapy, and** • **they meet the conditions for maintaining a licence**
Conditions for maintaining licence	• Have an annual medical follow-up
Reassessment	• Where the driver's condition is controlled, stable and asymptomatic, then every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Date of the driver's discharge following transplant • NYHA Classification • Whether the driver is on stable immunotherapy
Rationale	CCS recommendation

3.6.46 Heart transplant – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **it has been 6 months or more since their discharge following transplant** • **they are assessed as NYHA Class I** • **they have an LVEF of ≥ 35%** • **they are on stable immunotherapy** • **they have no active ischemia, and** • **they meet the conditions for maintaining a licence**
Conditions for maintaining licence	• Have an annual medical follow-up, including a non-invasive test of ischemic burden
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Date of the driver's discharge following transplant • NYHA Classification • Left ventricle ejection fraction (LVEF) • Whether the driver is on stable immunotherapy • Whether the driver has active ischemia
Rationale	CCS recommendation

3.6.47 Hypertrophic cardiomyopathy – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **they have had no episodes of impaired level of consciousness**
Conditions for maintaining licence	None
Reassessment	• Where the driver's condition is controlled, stable and asymptomatic, then every 5 years or as per routine, whichever is more frequent • More frequently at the discretion of the authority
Information from health care providers	• Whether the driver has had an episode of impaired level of consciousness
Rationale	CCS recommendation

3.6.48 Hypertrophic cardiomyopathy – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **they have had no episodes of impaired level of consciousness** • **they have no family history of sudden death at a young age** • **they have left ventricle wall thickness of < 30 mm** • **they show no increase in blood pressure with exercise, and** • **they have no nonsustained VT, and** • **they meet the conditions for maintaining a licence**
Conditions for maintaining licence	• Have an annual Holter to test for nonsustained VT
Reassessment	• Annually until the condition is controlled and stable, then routine • More frequently at the discretion of the authority
Information from health care providers	• Whether the driver has had an episode of impaired level of consciousness • Whether the driver has a family history of sudden death at a young age • Whether the driver's left ventricle wall thickness is < 30 mm • Whether the driver shows a decrease in blood pressure with exercise • Whether the driver has any nonsustained VT on a Holter
Rationale	CCS recommendation

3.6.49 Syncope

The standards for syncope are included in Chapter 19.

CCS recommendations regarding transient conditions (Waiting Periods)

The **waiting periods in these recommendations form part of the standard** and refer to the time interval following onset of the referenced cardiac condition or event during which it is recommended that an individual does not drive. These standards are intended to mitigate the risk of an episodic impairment of functional ability to drive.

- Recurrence of the referenced cardiac condition or event during a waiting period resets the waiting period.
- If more than one waiting period applies (because of multiple conditions/events) the longer waiting period should be applied, unless otherwise stated.

A. Coronary artery disease

Acute coronary syndromes – waiting periods

Condition	Classes 5-7 Non-commercial	Classes 1-4 Commercial
ST elevation MI	• **1 month after discharge**	• **3 months after discharge**
Non-ST elevation MI with significant LV damage		
Non-ST elevation MI with minor LV damage		
If PCI performed during initial hospital stay	• **48 hours after PCI**	• **7 days after PCI**
If PCI not performed during initial hospital stay	• **7 days after discharge**	• **30 days after discharge**
Acute coronary syndrome without MI (unstable angina)		
If PCI performed during initial hospital stay	• **48 hours after PCI**	• **7 days after PCI**
If PCI not performed during initial hospital stay	• **7 days after discharge**	• **30 days after discharge**
Notes:		

ST elevation: refers to the appearance of the ST segment of an electrocardiogram (ECG or EKG)

MI: Myocardial infarction (heart attack)

LV: left ventricle

Significant LV damage: any MI which is not classified as minor

Minor LV damage: an MI defined only by elevated troponin + ECG changes and in the absence of a new wall motion abnormality.

Stable coronary syndromes – waiting periods

	Non-commercial	Commercial
Stable angina Asymptomatic coronary artery disease	• No restrictions	
PCI	• **48 hours after PCI**	• **7 days after PCI**
Notes: PCI: Percutaneous coronary intervention (angioplasty)		

Cardiac surgery for coronary artery disease – waiting periods

	Non-commercial	Commercial
Coronary artery bypass graft	• **1 month after discharge**	• **3 months after discharge**

B. Disturbances of cardiac rhythm, arrhythmia devices and procedures

Catheter ablation and EPS

	Non-commercial	Commercial
Catheter ablation procedure EPS with no inducible sustained ventricular arrhythmias	• **48 hours after discharge**	• **1 week after discharge**
Notes: EPS: electrophysiology		

C. Disturbances of cardiac rhythm and arrhythmia devices

Ventricular arrhythmias

	Non-commercial	Commercial
VF with a reversible cause	**No driving until/unless successful treatment of underlying condition**	
Notes: VF: ventricular fibrillation Examples of reversible causes of VF: • VF within 24 hours of myocardial infarction • VF during coronary angiography • VF with electrocution • VF secondary to drug toxicity		

Chapter 4: Cerebrovascular disease

4.1 About cerebrovascular disease

Cerebrovascular disease is disease involving the blood vessels supplying the brain.

Transient ischemic attack (TIA)

A transient ischemic attack (TIA) is a brief episode of neurological dysfunction caused by a temporary state of reduced blood flow to the brain. The symptoms of a TIA are similar to a CVA (described below) but are temporary, typically lasting less than one hour and no more than 24 hours. The most common cause of a TIA is a blood clot. A TIA is considered to be a warning sign that a CVA may be imminent. The risk of having a CVA is 10% in the first 90s day following a TIA, with a cumulative 3 year risk of 25%.
Cerebrovascular accident (CVA)

A cerebrovascular accident (CVA) or stroke is defined as rapidly developing clinical signs of focal or global disturbance of cerebral function, with symptoms lasting 24 hours or longer, or leading to death, with no apparent cause other than of vascular origin. A CVA can be classified as either ischemic or hemorrhagic. Ischemic CVA refers to a CVA caused by thrombosis or embolism, and accounts for 85% of all CVAs. Hemorrhagic CVAs are caused by an intracerebral hemorrhage (bleeding within the brain) or subarachnoid hemorrhage (bleeding between the inner and outer layers of the tissue covering the brain).

The symptoms of a CVA vary depending on what part of the brain is affected. The most common symptom is weakness or paralysis of one side of the body with partial or complete loss of voluntary movement or sensation in a leg or arm. There can be speech problems and weak face muscles. Numbness or tingling is very common. A CVA can affect:

- balance
- vision
- swallowing
- breathing, and
- level of consciousness.

Visual or spatial neglect is a common consequence of a CVA. With neglect, damage to the brain causes an individual to ignore one side of their visual field or their body, even if they retain sensation and function. Neglect is usually a result of a stroke affecting the right hemisphere of the brain, therefore causing neglect of the left side. Visual neglect occurs in 33% to 85% of all strokes affecting the right hemisphere.

The prognosis for recovery following a CVA is related to the severity of the CVA and how much of the brain has been damaged. Most functional recovery occurs within the first two months following a CVA.

The risk of a subsequent CVA is approximately 4% per year, with a 10 year cumulative risk of 43%. In the first six months following a CVA, the risk of a subsequent CVA is approximately 9%.

Cerebral aneurysm

A cerebral aneurysm is the localized dilation or ballooning of a cerebral artery or vein resulting from weakness in the wall of the affected vessel. Most cerebral aneurysms have no associated symptoms until they become large or rupture. The majority (50% to 80%) remain small and do not rupture.

Symptoms associated with larger aneurysms include:

- sudden severe headache
- nausea and vomiting
- visual impairment, and
- loss of consciousness.

The risk of rupture increases with the size of the aneurysm. A rupture results in subarachnoid or intracerebral hemorrhage, leading to alterations in consciousness including:

- syncope
- seizures
- visual impairment, and
- respiratory or cardiovascular instability.

Treatment of unruptured cerebral aneurysms is controversial. Treatment options include observation and surgical procedures to prevent blood from flowing into the aneurysm. Risks of surgery include possible damage to other blood vessels, potential for aneurysm recurrence and rebleeding, and post-operative CVA. Successful surgery reduces the risk of rupture.

4.2 Prevalence

Transient ischemic attack

The results of a survey published in 2000 by the National Stroke Association found that half a million adults (18 years of age and older) in Canada had been diagnosed with a TIA. A population-based study in Alberta found the age-adjusted incidence of TIA to be between .04% and .07% (44 and 68 per 100,000) annually.

The risk factors for a TIA are similar to those for a CVA (see below).

Cerebrovascular accident

CVAs are the 4th leading cause of death in Canada and account for 7% of all deaths in Canada. Of the 40,000 to 50,000 Canadians who have a CVA each year, 14,000 will die. The risk factors for a CVA include:

- high blood pressure
- cigarette smoking
- heart disease
- carotid artery disease
- diabetes, and
- heavy use of alcohol.

The risk for males is three times greater than for females. Risk also increases with age, with those in their 70s and 80s at the greatest risk.

Cerebral aneurysm

Prevalence rates for cerebral aneurysm are unclear because they are often asymptomatic. Autopsy studies indicate a prevalence rate in the adult population between 1% and 5%, with 5% being a widely cited figure.

Under age 40, cerebral aneurysms affect equal numbers of males and females, but are rarely seen in infants and children. Over age 40, more women than men are affected. The peak age for clinical manifestation of cerebral aneurysm is between 55 and 60.

4.3 Cerebrovascular disease and adverse driving outcomes

Transient ischemic attack

There has been little research on the relationship between TIAs and adverse driving outcomes.

Cerebrovascular accident

There has been little research on episodic impairment (sudden incapacitation) of driving ability due to a CVA.

In studies that considered the effects of persistent impairments from CVAs as measured by fitness to drive assessments, 50% or more of the subjects who had a CVA were assessed as unfit to drive. Surveys of drivers who had a CVA indicate that more than half did not resume driving after their CVA.

Cerebral aneurysm

No studies were found that considered the relationship between cerebral aneurysm and adverse driving outcomes.

4.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Transient ischemic attack (TIA)	Episodic impairment (risk for stroke): Medical assessment – likelihood of impairment	Variable – sudden cognitive, motor or sensory impairment	Medical assessments
Cerebrovascular accident (CVA)	Persistent impairment: Functional assessment	Variable – cognitive, motor or sensory	Medical assessments Functional assessment
Cerebral aneurysm	Episodic impairment (risk of rupture): Medical assessment – likelihood of impairment	All – sudden impairment	Medical assessments
	Persistent impairment (where symptomatic): Functional assessment	Variable – cognitive, motor or sensory	Medical assessments Functional assessment

Transient ischemic attack

The primary concern for licensing is the potential for a subsequent CVA. The greatest risk is within the 3 months following the TIA.

Cerebrovascular accident

The primary concern for licensing is the potential for a persistent impairment of functional ability following a CVA. Depending on what part of the brain is affected, cognitive, motor or sensory functions may be impaired.

Cerebral aneurysm

The primary concern for licensing is the risk of an episodic impairment caused by rupture of the aneurysm. Generally, this risk is not considered significant for licensing

purposes unless the aneurysm is symptomatic or has been identified as requiring surgical intervention.

A large or leaking cerebral aneurysm could result in a persistent impairment of cognitive, motor or sensory functions depending on its size and location.

4.5 Compensation

Drivers who have experienced a persistent impairment of motor or sensory function may be able to compensate. An occupational therapist, driver rehabilitation specialist, driver examiner or other medical professional may recommend specific compensatory vehicle modifications or restrictions based on an individual functional assessment. The effectiveness of individual vehicle modifications may be determined through a road test.

Some examples of compensatory mechanisms are shown in the following table.

Motor impairment	**Sensory (vision) impairment**
• Steering wheel spinner knob • Left-foot accelerator pedal • Restriction to automatic transmission or power-assisted brakes • Downgrade from commercial to non-commercial driving	• Scanning horizon more frequently • Turning head 90◦ to maximize area scanned • Large left and right-side mirrors

4.6 Guidelines for assessment

4.6.1 Transient ischemic attack (TIA)

STANDARD	**All drivers eligible for a license if:** • **complete medical assessment shows no residual effects** • **any underlying cause has been addressed with appropriate treatment** • **conditions for maintaining a license are met.**
Conditions for maintaining licence	• Remain under regular medical supervision and follow any prescribed diagnostic or treatment regime • Report any further TIAs to the authority
Reassessment	• Reassess in one year if the TIA occurred within the past 12 months. If TIA occurred more than one year ago, or the medical information indicates no residual effects, any underlying cause has been addressed with treatment, and no post TIA seizure has occurred, re-assessment may occur in accordance with commercial or age-related re-assessment unless a shorter reassessment interval is recommended by the treating physician.
Information from health care providers	• Date of the TIA • Whether the driver remains under regular medical supervision • Opinion of treating physician whether the driver follows any prescribed diagnostic or treatment regime
Rationale	The primary driver concern with a TIA is the risk for a CVA after a TIA. By definition, there are no persistent impairments associated with a TIA. The risk for a CVA is greatest immediately after the TIA and decreases significantly over time. Subject matter experts recommended a minimum no-driving period of two weeks, with appropriate follow-up and treatment.

4.6.2 Cerebrovascular accident (CVA)

STANDARD	**All drivers eligible for a licence if** • **Complete medical assessment shows no residual effects** • **any underlying cause has been addressed with appropriate treatment** • **a post CVA seizure has not occurred** • **the functional abilities necessary for driving are not impaired, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Remain under regular medical supervision and follow your physician's advice regarding treatment • Report any further CVAs to the authority (Note that additional conditions may be required, depending upon the nature of any functional impairment and the ability of the driver to compensate)
Reassessment	• Reassess in one year if the CVA occurred within the past 12 months. If CVA occurred more than one year ago, or the medical information indicates no residual effects, any underlying cause has been addressed with treatment, and no post CVA seizure has occurred, re-assessment may occur in accordance with commercial or age-related re-assessment unless a shorter reassessment interval is recommended by the treating physician.
Information from health care providers	• Date of the CVA • Opinion of treating physician whether any underlying cause has been addressed with appropriate treatment • Whether the driver has experienced a post CVA seizure • Opinion of treating physician whether there may be significant residual loss of the functional abilities necessary for driving, and if yes, the results of any functional assessments the physician carried out, e.g., cognitive screen • Whether the driver remains under regular medical supervision • Opinion of treating physician whether the driver is compliant with the physician's advice regarding treatment
Rationale	The primary driver fitness concern with a CVA is the potential for a persistent impairment. Subject matter experts recommended a minimum no-driving period of one month, with appropriate follow-up and treatment.

4.6.3 Cerebral aneurysm that requires surgical repair

STANDARD	**All drivers not eligible for a licence**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	The primary concern with a cerebral aneurysm is the risk of rupture. Where the risk of rupture is such that surgery is recommended to repair the rupture, a driver is not eligible for a licence.

4.6.4 Surgery to repair a cerebral aneurysm – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been at least 3 months since the surgery, and** • **the driver has no symptoms of the aneurysm, or** • **if the driver continues to have symptoms, the symptoms do not impair the functional abilities necessary for driving**
Conditions for maintaining licence	None
Reassessment	• If the driver has no symptoms of the aneurysm, routine • Otherwise, to be determined on an individual basis
Information from health care providers	• Date of the surgery • Whether the driver experiences any symptoms of the aneurysm, and if yes, a description of the symptoms • Opinion of treating physician if any symptoms impair the functional abilities necessary for driving, and if yes, the results of any functional assessments the physician carried out
Rationale	Successful surgical treatment for a cerebral aneurysm significantly reduces the risk of rupture. A waiting period of 3 months after surgery is imposed to allow for an assessment of the effectiveness of the surgery or any complications of surgery. The impact of any symptoms caused by the aneurysm or by complications from surgery should be assessed.

4.6.5 Surgery to repair a cerebral aneurysm – Commercial drivers

STANDARD	**Commercial driver eligible for a licence if** • **it has been at least 6 months since the surgery, and** • **the driver has no symptoms of the aneurysm, or** • **if the driver continues to have symptoms, the symptoms do not impair the functional abilities necessary for driving**
Conditions for maintaining licence	None
Reassessment	• If the driver has no symptoms of the aneurysm, routine • Otherwise, to be determined on an individual basis
Information from health care providers	• Date of the surgery • Whether the driver experiences any symptoms of the aneurysm, and if yes, a description of the symptoms • Opinion of treating physician whether any symptoms may impair the functional abilities necessary for driving, and if yes, the results of any functional assessments the physician carried out, e.g., cognitive screen
Rationale	The waiting period for commercial drivers is longer than that for non-commercial drivers in order to provide more certainty about the success of surgery prior to a return to driving.

Chapter 5: Chronic renal disease

5.1 About chronic renal disease

Overview

Chronic renal (kidney) disease is a progressive disease involving deterioration and destruction of renal nephrons, with a progressive and usually permanent loss of renal function. Diabetes, hypertension and glomerulonephritis are leading causes of chronic renal disease. It is divided into five stages of increasing severity, as shown in the table below. The stages are based on a measurement of kidney function called the glomerular filtration rate (GFR).

Stages of Chronic Renal Disease

Stage	Description	GFR mL/min/1.73m^2
1	Slight kidney damage – normal or elevated GFR	More than 90
2	Kidney damage – mild decrease in GFR	60 to 89
3	Kidney damage – moderate decrease in GFR	30 to 59
4	Kidney damage – severe decrease in GFR	15 to 29
5	Kidney failure – dialysis or transplant required	Less than 15

5.2 Prevalence

The prevalence of chronic renal disease in the adult population in the United States is estimated to be 11% and it is assumed that the prevalence in Canada would be approximately the same. It is more prevalent in the elderly population.

Stage 5 of chronic renal disease (kidney failure) is also referred to as end–stage renal disease (ESRD) and is characterized by a total or near–total loss of kidney function where an individual requires dialysis or transplantation to stay alive. The prevalence rates for ESRD have increased substantially since 1997, most likely because of improved survival rates among high-risk populations, e.g., people with diabetes and hypertension, as well as improvements in management of ESRD, and the aging of the population.

5.3 Chronic renal disease and adverse driving outcomes

The evidence linking chronic renal disease with adverse driving outcomes is weak because there has been limited research in this area and the research that is available is either dated or has methodological limitations.

5.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach[7]	Primary functional ability affected	Assessment tools
Chronic renal disease (Stage 3 and 4) End-stage renal disease	Persistent impairment: Functional assessment	Variable - Cognitive and Motor May also result in general debility	Medical assessments Functional Assessment
Renal transplant	Persistent impairment: Functional assessment	Variable - Cognitive and Motor	Medical assessments Functional Assessment

Cognitive impairment

Evidence suggests that cognitive impairment is associated with chronic renal disease and that with increasing disease severity there is also a corresponding decrease in cognitive functioning, which may impair functional ability to drive.

The highest risk of cognitive impairment is for those with ESRD (stage 5). There is a small body of literature indicating that ESRD is associated with diminished perceptual motor-coordination, impairments in intellectual functioning including decreased attention and concentration, and memory impairments. Some studies indicate that individuals with ESRD have a 2 to 7 times higher prevalence of cognitive impairment and dementia compared to the general population.

There is also evidence of a significant risk of cognitive impairment for those in Stage 3 and 4 of chronic renal disease. There is no evidence to suggest that risk of cognitive impairment in the early stages (stage 1 and 2) is significant enough to impair driving.

Research indicates that cognitive impairment ranging from mild to severe is common and often undiagnosed in dialysis patients. In particular, between 30% and 47% of older patients undergoing treatment by hemodialysis or peritoneal dialysis were classified as cognitively impaired. In the general population, 8% of Canadians 65 and over have dementia and another 17% have some form of cognitive impairment. One study also

[7] See Part 1 for a discussion of the use of functional assessments for driver licensing decisions.

indicated that physicians had a tendency to underestimate cognitive impairment in patients undergoing dialysis.

Improvement in cognitive performance has been reported in individuals who have undergone a kidney transplant.

General debility

Drivers with chronic renal disease, particularly end-stage renal disease, may develop general debility resulting in a loss of stamina required to support the functions necessary for driving.

5.5 Compensation

Drivers with chronic renal disease are not able to compensate for their functional impairment.

5.6 Guidelines for Assessment

5.6.1 Renal disease - All Drivers

STANDARD	**All drivers are eligible for a licence**
Conditions for maintaining licence	None
Reassessment	None
Information from health care providers	None
Rationale	

Chapter 6: Cognitive impairment including dementia

6.1 About cognitive impairment and dementia

Cognitive impairment, also called cognitive dysfunction, neuropsychological impairment or neurocognitive disorder, refers to any impairment of a cognitive function such as:

- memory
- attention
- language
- problem solving, or
- judgment.

Cognitive impairment may have any number of causes including:

- brain trauma
- anoxia (lack of oxygen to the brain)
- infection
- toxicities, or
- degenerative, metabolic or nutritional diseases.

The presentation of cognitive impairment is variable depending on the cognitive functions affected and the degree of impairment. Cognitive impairment may progress to dementia, it may remain stable, or there may be a recovery of normal cognitive function.

Dementia

Dementia refers to a disorder characterized by memory impairment in conjunction with one or more other cognitive deficits. In North America, the most commonly used criteria for the diagnosis of a dementia are those articulated by the American Psychiatric Association

DSM-5 retained the term “dementia” from the previous edition for continuity but replaced it officially with “major neurocognitive disorder”. It points out that dementia is generally associated with the older individual while a neurocognitive disorder was the term used for younger individuals with the same symptoms. Therefore DSM-5 advocates using the same term for individuals of all ages who manifest major cognitive limitations. However, since dementia is still an accepted term according to DSM-5 and is the term most commonly used by researchers and licensing authorities in referring to this condition, for simplicity it will continue to be used in this chapter. Neurocognitive disorders will be used when referring to all types of cognitive limitations.

The defining features of dementia are:

A. Evidence of significant cognitive decline from a previous level of performance in one or more cognitive domains (complex attention, executive function, learning and memory, language, perceptual-motor, or social cognition) based on:

    1. Concern of the individual, a knowledgeable informant, or the clinician that there has been a significant decline in cognitive function; and
    2. A substantial impairment in cognitive performance, preferably documented by standardized neuropsychological testing or, in its absence, another quantified clinical assessment.

B. Cognitive deficits interfere with independence in everyday activities (i.e., at a minimum, requiring assistance with complex instrumental activities of daily living such as paying bills or managing medications).

C. The cognitive deficits do not occur exclusively during the context of a delirium.

D. The cognitive deficits are not better accounted for by another mental disorder (e.g., major depressive disorder, Schizophrenia).[8]

Dementia has many causes and more than 100 types of dementia have been documented. The five most common types of dementia are:

- Alzheimer's disease
- vascular dementia (multi-infarct dementia)
- mixed Alzheimer's and vascular dementia
- major or minor neurocognitive disorders with Lewy bodies (Lewy body dementia), and
- frontotemporal dementia (Pick's disease or Pick's complex). Frontotemporal dementia may not meet all of the criteria noted for dementia, especially in the early stages, but may still result in significant functional impairment.

These types of dementia are all progressive and irreversible, and are characterized by impairments in multiple cognitive functions.

[8] DSM-5, p 591-645

In Alzheimer's disease, the most common form of dementia, the earliest cognitive symptoms include difficulties in:

- recent memory
- word finding
- confrontation naming
- orientation, and
- concentration.

Characteristics of later stages include:

- slowed rates of information processing
- attentional deficits
- disturbances in executive functions, and
- impairments in language, perception and praxis.

Less commonly, neurocognitive disorders can result from:

- head injury and trauma
- brain tumours
- depression
- hydrocephalus (excessive accumulation of cerebrospinal fluid (CFS) in the brain)
- bacterial and viral infections
- toxic, endocrine and metabolic causes, or
- anoxia.

Some of these neurocognitive disorders may be reversible. Specific examples of reversible causes of dementia include:

- thyroid deficiency or excess
- vitamin B12 deficiency
- chronic alcoholism
- abnormal calcium levels
- dementia associated with celiac disease, and
- intracranial space-occupying lesions.

Treatment for dementia has become available over the last decade with cognition enhancing drugs such as donepezil (Aricept™), galantamine (Reminyl™) and rivastigmine (Exelon™). These drugs seem to improve symptoms of the disease in some stages of dementia, but their therapeutic effect is variable. It is generally considered not likely that treatment with medication would improve cognition to a degree that would enable driving in those whose driving skills had declined to an unsafe level or those who had previously failed a driving assessment due to cognitive impairment.

Mild cognitive impairment

Mild cognitive impairment (MCI) (mild neurocognitive disorder according to DSM-5) is a term that usually refers to the transitional state between the cognitive changes associated with normal aging and the fully developed clinical features of dementia. The diagnostic criteria for MCI are evolving but in general it describes a cognitive decline that presents no significant functional impairment.

A simple summary of factors in determining degree of Dementia and Mild Cognitive Impairment include:

Mild Cognitive Impairment (MCI) *(Some memory impairment but dementia not definitively diagnosed)*	**Mild Dementia** (Mild neurocognitive disorder)	**Moderate Dementia** (Major neurocognitive disorder)	**Severe Dementia** (Major neurocognitive disorder)
Forgets name, location of objects May have trouble finding words May have difficulty traveling to new locations May have difficulty with problems at work	Has difficulty with complex tasks or instrumental activities of daily living (e.g., finances, shopping, planning dinner, cooking, taking medication, telephoning etc.)	Has difficulty with basics activities of daily living (e.g., eating, dressing hygiene) Needs help choosing and putting on clothing Requires prompting and assistance when bathing	Decreased ability to use toilet and is incontinent Vocabulary limited Loses ability to walk and sit Unable to smile

Delirium

Delirium is a condition characterized by a disturbance of consciousness and a change in cognition that occurs over a relatively short period of time, usually hours to days.

Common causes of delirium include:

- vascular disorders (e.g., stroke, myocardial infarct)
- infections (e.g., urinary tract, chest)
- drugs (e.g., analgesics, sedatives, alcohol, illicit drugs), and
- metabolic disorders (e.g., renal failure, hepatic failure, endocrine disorders).

Although the symptoms of delirium may be similar to dementia, delirium is temporary and therefore considered a transient impairment for licensing purposes.

6.2 Prevalence

Estimates from the Canadian Study on Health and Aging (1991) suggest that 8% of all Canadians aged 65 and older meet the criteria for dementia, increasing to 34.5% for those 85 and older. A 2004 study projected that, in 2007, there would be 65,780 individuals with dementia in British Columbia, 44,130 of whom would have Alzheimer's disease.

In relation to cognitive impairment from any cause that has not been diagnosed as dementia, research indicates that the prevalence is from 2% to 10% at age 65, and 2% to 25% by age 85.[9]

The prevalence of cognitive impairment (all causes – not dementia) increases with age. When combined, the prevalence of mild and major neurocognitive disorders is 3% to 12% at age 65 and 35% to 55% by age 85.[10]

6.3 Cognitive impairment, dementia and adverse driving outcomes

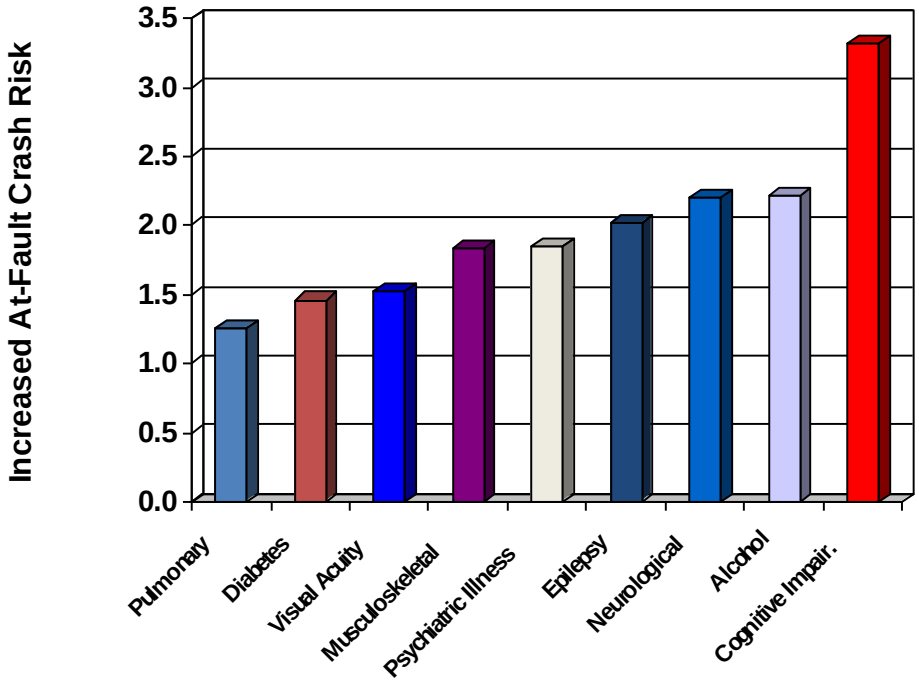
Research clearly indicates that, as a group, those with dementia are at higher risk for adverse driving outcomes. In particular, individuals with dementia who experience behavioural disturbances and who are treated with psychotropic medications (e.g., antipsychotics, antidepressants) may be at increased risk. It is important to note that studies also indicate that many individuals with cognitive limitations show no evidence of deterioration of driving skills in the early stages of their illness.

The significance of cognitive impairment and dementia in relation to driving was the subject of a study of a panel of experts in the context of the revision of the CMA medical guide.[11] Following an extensive review of the scientific literature, the study's principal conclusions are:

1. Cognitive problems often have a direct effect upon fitness to drive and any indications of possible cognitive compromises of fitness to drive must not be neglected by clinicians.
2. Diagnosis of dementia alone is not sufficient to withdraw driving privileges.
3. Severe dementia is an absolute contraindication to driving.
4. No in-office test or battery of tests, including global cognitive screens such as MMSE or MoCA have sufficient sensitivity or specificity to be used as the sole determinant of driving fitness in all cases. However, abnormalities in these tests indicate a requirement for further testing.

[9] DSM-5, p. 608
[10] DSM-5, p 608
[11] Report, 2016.

5. Patients with dementia who are deemed fit to drive should be re-evaluated every 6 to 12 months or sooner, if indicated.
6. A clinician with doubts about a patient's cognitive functioning and its effects upon driving should refer the patient for a functional driving assessment by an occupational therapist or directly to the licensing authority.
7. As with many disabling progressive diseases that lead to driving cessation, conversations regarding eventual retirement from driving should be held as early as possible.



6.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Cognitive impairment of all types including Dementia	Persistent impairment: Functional assessment	Cognitive	Medical assessments Functional Assessment

Cognitive impairments of any nature may, or may not, affect driver fitness since there is no uniform range of effects. There is no standard set of limitations, and they can vary greatly from one person to the other.

In the case of MCI the effects may be subtle and difficult to assess in an office setting. Judgement and insight are important for driving yet the usual battery of tests used to

assess the extent of cognitive limitations do not evaluate these functions. Hence, a functional driving assessment is usually the most appropriate means of assessing the effects of the cognitive limitations upon driving unless severe dementia has been demonstrated.

6.5 Compensation

Drivers with cognitive impairment or dementia are not able to compensate for their functional impairment.

Requiring the cognitively-impaired driver to be accompanied by another person (co-pilot) or the imposition of geographical or any other restrictions (conditional licences) are not permitted.

6.6 Guidelines for assessment

6.6.1 Cognitive impairment or dementia

STANDARD	**Eligible for any class licence if** • **Complete medical assessment indicates cognitive functions necessary for driving are not impaired, or** • **where required, functional driving assessment shows condition does not affect ability to drive** • **Conditions for maintaining a licence are met**
Conditions for maintaining licence	Reassessment annually or as required Requiring the cognitively-impaired driver to be accompanied by another person (co-pilot) or the imposition of geographical or any other restrictions (conditional licences) are not permitted.
Reassessment	• Reassess annually if a driver has dementia or a progressive cognitive impairment • Otherwise, routine
Information from health care providers	• Nature or cause of the cognitive impairment • Opinion of treating physician whether the cognitive impairment may be progressive • Various tools such as OT driving assessments, cognitive screens and road tests may be helpful in assessing whether an individual with cognitive impairment is eligible to hold licence.

Rationale	Functional assessment is required to determine if individual can drive safely.

6.6.2 Severe Dementia

STANDARD	**Ineligible for any class of licence**

Chapter 7: Diabetes - Hypoglycemia

7.1 About diabetes and hypoglycemia

Diabetes

Diabetes is a chronic and progressive disease characterized by hyperglycemia (high blood glucose). It appears in two principal forms[12]:

- type 1 diabetes, formerly called insulin-dependent diabetes mellitus (IDDM) or juvenile diabetes, and
- type 2 diabetes, formerly called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes.

Type 1 and type 2 also differ in the underlying defect, and type of therapeutic control.

Type 1 diabetes

Type 1 diabetes can occur at any age, but it primarily appears before age 30. It is characterized by the inability to produce insulin and often more marked fluctuations in blood glucose. Daily insulin injections are always required to manage type 1 diabetes.

Type 2 diabetes

Type 2 diabetes usually occurs in individuals over the age of 40. It is characterized by an impaired ability to recognize and utilize insulin, and eventually diminished insulin production. Therapeutic control often is achieved by diet alone or in combination with oral antihyperglycemic agents[13], but people with type 2 diabetes whose blood glucose cannot be controlled in this way require treatment with insulin.

Hypoglycemia

Anyone who requires treatment with insulin is at risk of hypoglycemia. Those with type 2 diabetes treated with insulin secretagogues (medications that stimulate the secretion of insulin) or metformin (an oral medication that enhances the effect of insulin) also may experience hypoglycemia, although the frequency with this treatment is lower than with insulin.

[12] Other types of diabetes include gestational diabetes, other specific types (those due to genetic defects in β-cell function, genetic defects in insulin action, diseases of the exocrine pancreas, drug or chemical induced diabetes, etc.), and pre-diabetes. These types of diabetes are less common than type 1 and type 2 diabetes and are not discussed in this chapter.
[13] Oral antihyperglycemics also may be referred to as oral hypoglycemics.

Hypoglycemia may occur for a number of reasons, including reduced food intake, unusual level of physical exertion, and alteration of insulin dose.

Hypoglycemia can result in two types of symptoms, neurogenic (autonomic) and neuroglycopenic.

Neurogenic symptoms of hypoglycemia

The body's immediate response to low blood sugar is to secrete hormones that counteract insulin, including adrenaline. The presence of adrenaline causes neurogenic (or autonomic) symptoms such as tremulousness, palpitations, anxiety, sweating, hunger and paresthesias (tingling and numbness). People with diabetes learn to recognize these symptoms as evidence of hypoglycemia and respond by consuming sugary liquids or starchy foods to increase their blood glucose level.

Neuroglycopenic symptoms of hypoglycemia

Neuroglycopenic symptoms are the direct result of impaired brain function due to low glucose levels. These symptoms include confusion, weakness or fatigue, severe cognitive failure, seizure and coma. As the blood glucose level falls, higher cortical function (insight, judgment, calculation, speech and memory) is the first to be affected. Next, a person will experience stupor, characterized by confusion, slurred speech, slow reaction times, poor judgment and lack of coordination. If the level continues to fall, there will be loss of consciousness, seizures and potentially brain damage or death.

Hypoglycemia unawareness

Another complicating factor is hypoglycemia unawareness, which is the inability to recognize the autonomic symptoms of hypoglycemia or a failure of such warning signs to occur prior to impaired brain function. If the initial autonomic symptoms caused by the release of adrenaline are missed, a person experiencing hypoglycemia can only rely on the neuroglycopenic symptoms as an indicator of low blood glucose. Because these symptoms appear in the context of cognitive impairment, they are not easily recognized by the hypoglycemic individual and may delay or prevent self-treatment.

Severe hypoglycemia

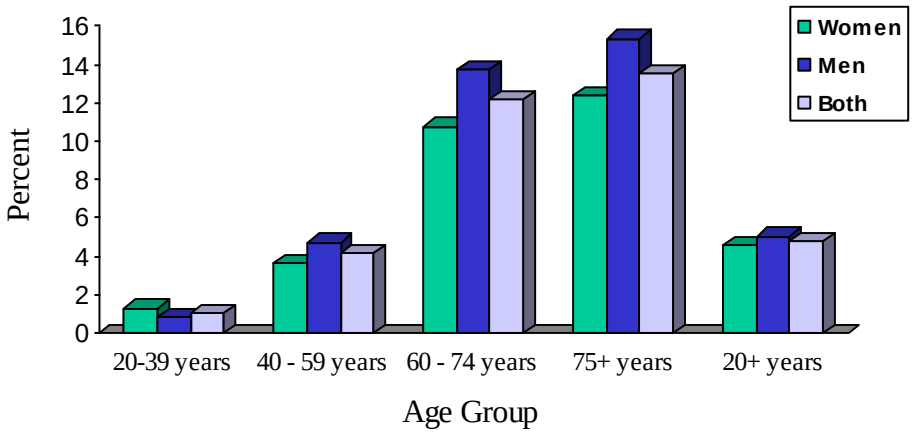
Severe hypoglycemia is commonly defined as hypoglycemia that requires outside intervention to abort, or that produces an alteration in level of consciousness or loss of consciousness. The altered or reduced level of consciousness prevents a person experiencing severe hypoglycemia from taking appropriate action.

7.2 Prevalence

Diabetes

Based on research conducted by the National Diabetes Surveillance System, it is estimated that approximately 5% of Canadians aged 20 years and older have been diagnosed with diabetes. Diabetes is somewhat more prevalent in males, and the overall prevalence of diabetes increases with age, as shown in the figure below. It is estimated that 5 to 10% of diagnosed diabetes is type 1, and 90 to 95% is type 2.

Figure 1 - Prevalence of Diabetes in Canada



Hypoglycemia

A study of people with type 1 diabetes conducted in 1993 estimated that the incidence of mild hypoglycemia (hypoglycemia for which a person is able to treat themselves) to be 28 episodes per person per year. The incidence of severe hypoglycemia was estimated to be 0.31 episodes per person, per year. Since the mid 1990's there has been an increased therapeutic emphasis on tight glycemic control, which has been shown to significantly reduce the complications of diabetes. Unfortunately, the use of more intensive treatment to maintain glycemic control has increased the risk of hypoglycemia by as much as two or three times. This suggests that these estimates on the prevalence of hypoglycemia in type 1 diabetes may be low.

While people with type 2 diabetes who are treated with insulin are at risk of hypoglycemia, the frequency is lower than for those with type 1 diabetes. The incidence of severe hypoglycemia for type 2 diabetes treated with insulin secretagogues is about 1 to 2% per year, with higher risk for longer use, older age, and the use of chlorpropamide and other long-acting secretagogues. The concomitant use of beta blockers and insulin previously has been thought to increase the risk of hypoglycemia; however, this theoretical concern is not often seen in practice.

For anyone with diabetes, a history of severe hypoglycemia, hypoglycemia unawareness, and low blood glucose levels are consistent predictors of future hypoglycemia.

Hypoglycemia unawareness

It is estimated that 25% of all those treated with insulin will experience one or more episodes of hypoglycemia unawareness. In type 1 diabetes, hypoglycemia unawareness increases with the duration of diabetes and the likelihood increases if autonomic neuropathy is present. In type 2 diabetes, hypoglycemia unawareness is relatively uncommon.

Factors that may be associated with hypoglycemia unawareness include older age, duration of diabetes, presence of autonomic neuropathy, species of insulin, degree of metabolic control, and number of hypoglycemic events.

7.3 Diabetes and adverse driving outcomes

Over the last twenty years the scientific evidence on the relationship between diabetes and crash risk has evolved, in part as a reflection of better management and control. Although there is some variability in results of research on drivers with diabetes, there is clear evidence to show that both non-commercial and commercial drivers with diabetes are at an increased risk of motor vehicle crashes.

It has been shown that diabetes treatment modality is an important consideration in determination of risk for drivers. Study results consistently indicate that individuals taking insulin have an elevated risk of crashes. Some studies have also shown an elevated risk of crash for drivers with type 2 diabetes who are treated with a combination of oral antihyperglycemics (secretagogues and non-secretagogues). Those treated by diet alone or with a single oral antihyperglycemic agent have shown no elevated risk of crash.

A relationship between hypoglycemia and crashes has also been found. Despite a lack of data from studies of large samples of people with diabetes, a number of small studies have shown a relationship between hypoglycemic reactions and motor vehicle crashes.

While research has established clear links between diabetes, hypoglycemia and motor vehicle crashes, the variable results of these studies indicate that decisions about driving should be based on assessment of individual medical history and circumstances including:

- treatment modality
- incidence of hypoglycemia
- incidence of hypoglycemia unawareness, and
- presence of chronic complications of diabetes.

7.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Severe hypoglycemia	Episodic impairment: Medical assessment – likelihood of impairment	All – sudden incapacitation	Medical assessments

For individuals with diabetes, both acute and chronic complications of the disease may affect fitness to drive.

Hyperglycemia may cause blurred vision, confusion, and eventually diabetic coma. For the purposes of this standard, these are considered transient impairments.

The neuroglycopenic symptoms associated with severe hypoglycemia can significantly impair the sensory, motor and cognitive functions required for driving. There are studies that suggest that mild hypoglycemia may also impair these functions.

While it is clear that the risk of hypoglycemia is an important consideration when assessing the fitness of drivers with diabetes, research indicates that the chronic complications of diabetes are more likely to be responsible for impaired fitness to drive than episodic incidents of hypoglycemia. Over time, people with diabetes often develop co-morbidities caused by their prolonged exposure to hyperglycemia. These complications of diabetes include retinopathy, neuropathy, nephropathy, cardiovascular disease and peripheral vascular disease. Therefore, the effect of chronic complications always must be considered when assessing fitness to drive for people with diabetes.

7.5 Compensation

As severe hypoglycemia is an episodic impairment, a driver cannot compensate.

7.6 Guidelines for assessment

7.7 *Type 2 diabetes – All drivers*

- **treated with diet and exercise alone or**
- **oral medication - non insulin secretagogues medication, i.e. metformin or,**
- **oral medication - insulin secretagogues i.e. glyburide, diamicron**, etc.

STANDARD	**<u>All drivers</u> eligible for any licence class if:** • **has good understanding of their condition** • **routinely follows their physician's instructions about diet, medication, glucose, glucose monitoring and hypoglycaemia prevention** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• remains under regular medical supervision to ensure that any progression in condition or development of chronic complications does not go unattended • stops driving and treat themselves immediately if hypoglycemia is identified or suspected • does not drive until at least 40 minutes after successful treatment if glucose level is between 2.5 and 4.0 mmol/L • report to the authority if begins insulin therapy
Reassessment	• Routine or more frequently at the discretion of the Authority
Information from health care providers	• Description of treatment
Rationale	Drivers with diabetes who are not treated with insulin or insulin secretagogues are at little or no risk for hypoglycemia. Because diabetes is a progressive condition, these drivers must remain under medical supervision and undergo a reassessment at the discretion of the authority. Drivers who begin insulin therapy are required to report because of the significant increase in risk for hypoglycemia associated with insulin therapy. The requirement to report is intended to ensure that drivers on insulin therapy meet the more stringent driver fitness standards and conditions for driving. Although there is some increased risk of hypoglycemia from the use of insulin secretagogues, the risk remains less than the risk from insulin therapy.

7.6.2 Type 1 or type 2 diabetes treated with insulin – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **they understand their diabetic condition and the close interrelationship between insulin and diet and exercise, and** • **Routinely follow their physician's instructions about diet, medication, glucose monitoring, and hypoglycemia prevention and management** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• Remains under regular medical supervision to ensure that any progression in their condition or development of chronic complications does not go unattended • Stops driving immediately if hypoglycemia is identified or suspected • Does not drive when glucose level is below 4.0 mmol/L • Does not drive until at least 40 minutes after successful treatment of hypoglycemia, and blood glucose level has increased to at least 5.0 mmol/L • When driving, tests blood glucose immediately before driving and approximately every 4 hours while driving, and have an available source of rapidly absorbable glucose
Reassessment	• If blood glucose levels and treatment are not stable, reassess more frequently at the discretion of the Authority
Information from health care providers	• Description of treatment • Opinion of treating physician whether the driver understands their diabetic condition and the close interrelationship between insulin and diet and exercise
Rationale	Drivers with diabetes who are treated with insulin therapy are at risk for hypoglycemia. In addition to the conditions regarding how to avoid severe hypoglycemia while driving that apply to drivers treated with insulin secretagogues, there are additional conditions for checking and monitoring blood glucose. These conditions are based on guidelines published by the Diabetes Canada.

7.6.3 Type 1 or type 2 diabetes treated with insulin – Commercial drivers

STANDARD	**Commercial driver eligible for a licence if** • **Has demonstrated good knowledge of the condition and its management and monitoring and assessment indicate effective blood glucose control** • **Annual medical review** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• carries a blood glucose self-monitoring equipment and an available source of rapidly absorbable glucose • Remains under regular medical supervision to ensure that any progression in their condition or development of chronic complications does not go unattended • Stops driving immediately if hypoglycemia is identified or suspected • Does not drive when glucose level is below 4.0 mmol/L • Does not drive until at least 40 minutes after successful treatment of hypoglycemia and blood glucose level has increased to at least 5.0 mmol/L • When driving, tests blood glucose immediately before driving and approximately every 4 hours while driving, and have an available source of rapidly absorbable glucose
Reassessment	• Annually
Information from health care providers	• Description of treatment • Whether the driver has an initial certificate of competency in blood glucose measurement **from a specialist in diabetic care (when required) or a treating physician** • Opinion of treating physician whether the driver's work schedule is compatible with their insulin regimen • Whether blood tests indicate uncontrolled diabetes • Whether there has been a significant change in insulin therapy. If there has been a significant change in insulin therapy, whether

	monitoring and assessment indicate a stable and effective blood glucose control. • Whether there is evidence of inadequate self-monitoring of blood glucose or inadequate knowledge of the causes, symptoms and treatment of hypoglycemic reactions
Rationale	Commercial drivers who are treated with insulin are at increased risk of experiencing hypoglycemia while driving. This is due to both their high level of driving exposure and to the nature of the driving task, which may make it more difficult for them to manage their blood glucose. The standard is focused on ensuring that these drivers have stable blood glucose levels and that they understand their condition and are able to effectively monitor and manage their blood glucose.

7.6.4 Episode of severe hypoglycemia – Non-commercial drivers

Applies also to severe hypoglycemia while sleeping

STANDARD	**Non-commercial drivers eligible for a licence if** • **No further episodes of severe hypoglycemia within the past 6 months** • **Earlier re-licensing can be considered if an appropriate specialist indicates that glycemic control has been re-established** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• must test blood glucose immediately before driving and approximately every hour while driving • Does not drive until at least 40 minutes after successful treatment of hypoglycemia and blood glucose has increased to at least 5.0 mmol/L. • Must refrain from driving immediately, and notify their health-care provider as soon as possible
Reassessment	• Reassess based on opinion of the treating physician or at the discretion of the Authority
Information from health care providers	• Date of the hypoglycemic episode • Opinion of treating physician whether stable glycemic control has been re-established
Rationale	Severe hypoglycemia indicates a lack of glycemic control and the potential for further hypoglycemic episodes. Once control is re-established and driving resumes, more stringent glucose monitoring conditions are required temporarily to mitigate the increased risk of hypoglycemia.

7.6.5 Episode of hypoglycemia unawareness within past year – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **has been 3 months since the episode** • **treating physician indicates glycemic awareness regained and have stable glycemic control** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• must test blood glucose immediately before driving and approximately every hour while driving • Does not drive until at least 40 minutes after successful treatment of hypoglycemia and blood glucose has increased to at least 5.0 mmol/L. • Must refrain from driving immediately, and notify their health-care provider as soon as possible
Reassessment	• Reassess based on opinion of the treating physician or at the discretion of the Authority
Information from health care providers	• Date of the episode • Opinion of treating physician whether glycemic awareness has been regained • Opinion of treating physician whether the driver has stable glycemic control
Rationale	Hypoglycemia unawareness greatly increases the risk for hypoglycemia while driving. This standard requires that glycemic awareness be re-established before driving resumes. Once awareness and glucose stability are re-established, more stringent glucose monitoring guidelines are required temporarily to mitigate the increased risk of hypoglycemia.

7.6.6 Persistent hypoglycemia unawareness – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **has been 3 months since the last episode of hypoglycemia** • **treating physician indicated stable glycemic control and takes steps to ensure they do not become hypoglycemic while driving** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• must test blood glucose immediately before driving and approximately every hour while driving • Does not drive until at least 40 minutes after successful treatment of hypoglycemia and blood glucose has increased to at least 5.0 mmol/L. • Must refrain from driving immediately, and notify their health-care provider as soon as possible
Reassessment	• Reassess based on opinion of the treating physician or at the discretion of the Authority
Information from health care providers	• Date of the last episode • Opinion of treating physician whether stable glycemic control has been re-established • Opinion of treating physician whether driver is willing and able to take steps to ensure they do not become hypoglycemic while driving
Rationale	Persistent hypoglycemia unawareness presents the greatest risk for hypoglycemia while driving. The standard permits non-commercial drivers to continue to drive provided they are able to maintain stable blood glucose levels and follow more stringent glucose monitoring requirements.

7.6.7 Episode of severe hypoglycemia – Commercial drivers

Applies also to severe hypoglycemia while sleeping

STANDARD	**Commercial drivers eligible for a licence if** • **No further episodes of severe hypoglycemia within the past 6 months** • **Earlier re-licensing can be considered if an appropriate specialist indicates that glycemic control has been re-established** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• must test blood glucose immediately before driving and approximately every hour while driving • Does not drive until at least 40 minutes after successful treatment of hypoglycemia and blood glucose has increased to at least 5.0 mmol/L. • Must refrain from driving immediately, and notify their health-care provider as soon as possible
Reassessment	• Reassess based on opinion of the treating physician or at the discretion of the Authority
Information from health care providers	• Date of the hypoglycemic episode • Opinion of treating physician whether stable glycemic control has been re-established • Statement from treating physician that driver has provided a blood glucose log of at least 4 readings per day for 30 days, in which less than 5% of the readings are below 4.0 mmol/L
Rationale	Severe hypoglycemia indicates a lack of glycemic control and the potential for further hypoglycemic episodes. Once control is re-established and driving resumes, more stringent glucose monitoring conditions are required temporarily to mitigate the increased risk of hypoglycemia.

7.6.8 Episode of hypoglycemia unawareness in the last year – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **has been 3 months since the episode** • **treating physician indicates glycemic awareness regained, has stable glycemic control and authority determines are fit to drive** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• must test blood glucose immediately before driving and approximately every hour while driving • Does not drive until at least 40 minutes after successful treatment of hypoglycemia and blood glucose has increased to at least 5.0 mmol/L. • Must refrain from driving immediately, and notify their health-care provider as soon as possible
Reassessment	• Reassess based on opinion of the treating physician or at the discretion of the Authority
Information from health care providers	• Date of the episode • Statement from treating physician that driver has provided a blood glucose log of at least 4 readings per day for 30 days, in which less than 5% of the readings are below 4.0 mmol/L • Opinion of treating physician whether glycemic awareness has been regained • Opinion of treating physician whether the driver has stable glycemic control
Rationale	Hypoglycemia unawareness greatly increases the risk for hypoglycemia while driving. This standard requires that glycemic awareness be re-established before driving resumes. Once awareness and glucose stability are re-established, more stringent glucose monitoring guidelines are required temporarily to mitigate the increased risk of hypoglycemia.

7.6.9 Persistent hypoglycemia unawareness – Commercial drivers

STANDARD	**Commercial drivers not eligible for a licence**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	Persistent hypoglycemia unawareness presents the greatest risk for hypoglycemia while driving. Given the increased driving exposure associated with commercial driving, individuals who have persistent hypoglycemia unawareness are not fit to drive.

7.6.10 Summary Table of Diabetes Conditions and Driver Medical Standards

Type II	Standard
Non-Commercial	Eligible for licence
Commercial	Eligible for licence
Type I or Type II Insulin-Treated	
Non-Commercial	Eligible for licence
Commercial	Eligible for licence • Annual Medical • Treating physician confirms diabetes controlled
Severe Hypoglycemia Episode	
Non-Commercial	Eligible for licence • no episodes within past 6 months, • Treating physician confirms stable glycemic control
Commercial	Eligible for licence • no episodes within past 6 months, • Treating physician confirms stable glycemic control
Episode of Hypoglycemic Unawareness	
Non-Commercial	Eligible for licence • No episode in past 3 months, • Treating physician confirms glycemic awareness regained
Commercial	Eligible for licence • No episode in past 3 months, • Treating physician confirms glycemic awareness regained
Persistent Hypoglycemic Unawareness	
Non-Commercial	Eligible for licence • No episode of hypoglycemia within past 3 months, • Treating physician confirms stable glycemic control
Commercial	**Ineligible to Drive**

Chapter 8: General debility and lack of stamina

8.1 About general debility and lack of stamina

General debility

General debility is a state of general weakness or feebleness that may be a result of one or more medical conditions that produce symptoms such as pain, fatigue, cachexia and physical disability, or deficits in attention, concentration, memory, development and/or learning.

Some of the medical conditions included in this part may be commonly associated with general debility (e.g., end stage renal disease), and in these cases this is noted in the medical condition chapter. However, general debility is more usually associated with multiple medical conditions or extreme old age. Medications used to treat various medical conditions may also produce effects that contribute to general debility.

Common medical conditions not included in this document that may result in general debility are:

- anorexia nervosa or other related eating disorders
- chronic fatigue syndrome
- malabsorption syndromes (e.g., cystic fibrosis, Crohn's disease) and malnutrition
- AIDS
- chronic infections (e.g., TB, HIV)
- malignancies, and
- conditions resulting in chronic pain.
- Metabolic diseases such as: Thyroid Diseases, Pituitary Diseases and Adrenal Diseases.

Lack of stamina

Stamina is the physical or mental strength to resist fatigue and tiredness and maintain functional ability over time. Lack of stamina is not the same as general debility. While drivers with general debility do not have sufficient stamina to drive, drivers suffering from a lack of stamina may not be suffering from general debility.

Generally, concerns about stamina only arise in extreme old age or when a driver has a condition that results in a persistent impairment. For drivers with co-morbidities, stamina may be a particular concern.

Some of the medical conditions in this part may be commonly associated with a lack of stamina (e.g., congestive heart failure), and in these cases this is noted in the medical condition chapter.

8.2 Prevalence

No data are available on the prevalence of general debility or lack of stamina in Canada.

8.3 General debility, lack of stamina and adverse driving outcomes

No research is available on the relationship between general debility or a lack of stamina and driving outcomes.

8.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
General debility Lack of stamina	Persistent impairment: Functional assessment	Cognitive and Motor	Medical assessments Functional assessments

Both a lack of stamina and general debility may impair a driver's motor and/or cognitive functions necessary for driving.

A driver suffering from a lack of stamina may experience:

- fatigue
- physical disability, and/or
- cognitive impairment such as loss of attention, concentration and memory.

A driver suffering from general debility may experience:

- pain
- fatigue/poor stamina
- cachexia - a condition marked by loss of appetite, weight loss, muscular wasting, and general mental and physical debilitation
- physical disability, and/or
- cognitive impairment such as loss of attention, concentration and memory.

8.5 Compensation

A driver cannot compensate for general debility or a lack of stamina that impairs the functions necessary for driving.

8.6 Guidelines for assessment

8.6.1 Frailty, weakness or general debility

STANDARD	**All drivers eligible for a licence if** • **the results of a functional assessment indicate that the functions necessary for driving are not impaired**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the Authority
Information from health care providers	• Description of any cognitive and/or motor impairments • Results of Functional Assessment
Rationale	Frailty, weakness or general debility may include one or more cognitive or motor impairments. Licensing decisions should be based on individual functional assessments.

Chapter 9: Hearing loss

9.1 About hearing loss

Hearing loss is categorized as either conductive or sensorineural. Conductive hearing loss involves abnormalities in the external or middle ear, including the ear canal, eardrum or ossicles. A blockage or other structural problem interferes with how sound gets conducted through the ear, making sound levels seem lower. In many cases, conductive hearing loss can be corrected with medication or surgery.

Sensorineural hearing loss typically results from permanent damage to the inner ear (cochlea) or the auditory nerve. Typically, it is gradual, bilateral, and characterized by the loss of high-frequency hearing. Sensorineural hearing loss is permanent and often is helped with hearing aids. Profound deafness can be treated with cochlear implants. Sensorineural hearing loss accounts for 90% of all hearing loss.

9.2 Prevalence

The 2003 Canadian Community Health Survey (CCHS) indicated that 3% of Canadians 12 years of age and older have some type of hearing difficulty. The prevalence of hearing loss increases with age. In the CCHS, 5% of 65 to 69 year-olds reported hearing problems, with the percentage increasing to 23% of those 80 and older. Hearing loss is more common in men than in women across every age group.

9.3 Hearing loss and adverse driving outcomes

The effects of hearing loss on the ability to safely operate a motor vehicle are not well established. Although the overall body of literature examining the relationship between hearing loss and driving is small, since the 1990's there has been an increasing amount of research in this area. The results are equivocal. Some studies report an association between impairments in hearing and adverse driving outcomes while others have not found an association.

Although variability in methodology makes it difficult to draw conclusions across studies, results from studies indicate that, for the majority (70%) of study measures, no significant relationship was found between hearing loss and adverse driving outcomes (e.g., crashes, violations, convictions).

9.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Hearing loss	Persistent impairment: Functional assessment	Sensory - Hearing	Audiometric assessment

The effect of hearing loss on functional ability to drive has not been established.

9.5 Compensation

Drivers with hearing loss may compensate for this impairment using auditory aids.

9.6 Guidelines for Assessment

9.6.1 Hearing loss – Non-commercial drivers

STANDARD	**All drivers eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	None
Rationale	There is insufficient evidence to support a minimum hearing requirement for non-commercial drivers.

9.6.2 Hearing loss – Commercial drivers

STANDARD	**Eligible for class 2 and 4 driver licence, and classes 1, 3 and 5 when transporting dangerous goods, if either:** • **Perceives a forced whispered voice at not less than 5 (1.5 metres) feet with or without the use of a hearing aid or,** • **Hearing loss no greater than 40dB averaged at 500, 1000, and 2000 Hz in their better ear**
Conditions for maintaining licence	• Wear hearing aid, if the driver must wear a hearing aid in order to meet the hearing standard
Reassessment	• Routine
Information from health care providers	• Results of a recent auditory testing
Rationale	For Classes 5 and 6, hearing loss should not constitute a barrier to driving ability. While the ability to hear or communicate is of paramount importance for the operator of a passenger bus, ambulance or other emergency vehicles (i.e. Classes 2 and 4), there are a number of factors which suggest it is inappropriate to apply the same requirement to the operator of a Class 1 or 3 motor vehicle. Consequently, it is suggested that the holder of a Class 2 or 4 driver licence and the operators of emergency vehicles be required to meet a hearing standard. It is also recommended individuals who hold a Class 1, 3 or 5 licence and are engaged in the transportation of dangerous goods meet the medical requirements corresponding to Classes 2 and 4 as stated above. While it is agreed that a degree of hearing would be beneficial for all motor vehicle operators, in the absence of empirical data, the totally deaf individual who is able to successfully complete the driving tests should be permitted to obtain or hold a Class 1, 3, 5 or 6 licence. The US FMCSA whisper test is described as: - For the whispered voice test, the individual should be stationed at least 5 feet from the examiner with the ear being tested turned toward the examiner. - The other ear is covered. - Using the breath which remains after a normal expiration, the examiner whispers words or random numbers such as 66, 18, 23, etc. - The examiner should not use only sibilants (s-sounding test materials). - The opposite ear should be tested in the same manner.

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Chapter 10: Intracranial tumours

10.1 About intracranial tumours

Intracranial tumours are tumours that develop inside the cranium, the upper portion of the skull that protects the brain. Primary tumours are those which originate from within the cranium and metastatic tumours are those which result from cancers which spread (metastasize) from other parts of the body. Metastatic tumours are by far the more common type of intracranial tumour in adults, 10 times more common than primary tumours.

Primary tumours may be classified as either benign (non-cancerous) or malignant (cancerous). Malignant tumours are graded on a scale of 1 to 4, with grade 4 being the most severe, based on how abnormal they are compared to normal tissue and how quickly they are likely to grow and metastasize.

Typically, the treatment options for intracranial tumours are surgery, radiation and chemotherapy, alone or in combination, regardless of whether the tumour is primary or metastatic, benign or malignant. For primary tumours, the probability of successful treatment depends on a number of factors, including the type of tumour, size and location.

Treatment will rarely cure a metastatic tumour, and the goal of treatment is generally to reduce symptoms, increase length of survival and improve quality of life.
Impairments associated with intracranial tumours vary depending on the tumour type, location and rate of growth, and can affect cognitive, motor or sensory functions.

Examples of possible impairments include:

- cognitive impairment
- epilepsy
- personality changes
- focal weakness, and
- sensory disturbances.

The presentation of impairments may be progressive or variable.

10.2 Prevalence

The overall incidence of intracranial tumours in the United States is between 5 and 14 per 100,000 people (all ages), with the peak incidence in those between 65 and 79 years of age. Canadian data are lacking.

10.3 Intracranial tumours and adverse driving outcomes

No studies on the effects of intracranial tumours on driving were found.

10.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Intracranial tumour	Persistent impairment: Functional assessment	Variable – cognitive, motor or sensory	Medical assessments Functional assessment
	Episodic impairment: Medical assessment – likelihood of impairment	Variable – sudden impairment (epilepsy)	Medical assessments

An intracranial tumour may result in a persistent cognitive, motor or sensory impairment, or an episodic impairment (epilepsy), or both.

10.5 Compensation

Drivers who have experienced a persistent impairment of motor or sensory function may be able to compensate. An occupational therapist, driver rehabilitation specialist, driver examiner or other medical professional may recommend specific compensatory vehicle modifications or restrictions based on an individual functional assessment.

Some examples of compensatory mechanisms are shown in the following table.

Motor impairment	Sensory (vision) impairment
• Steering wheel spinner knob • Restriction to automatic transmission or power-assisted brakes	• Scanning horizon more frequently • Turning head 90◦ to maximize area scanned • Large left and right side mirrors

10.6 Guidelines for assessment

10.6.1 Intracranial tumour

If a driver has epilepsy as a result of an intracranial tumour, also see the standards in Chapter 17.

STANDARD	**All drivers eligible for a licence if** • **movement and strength are sufficient to perform the functions necessary for driving** • **cognitive and visual functions necessary for driving are not impaired** • **any pain associated with the condition, and any treatment for the condition, do not impair the functional abilities necessary for driving** • **where required, a road test or other functional assessment indicates that the driver is able to compensate for any loss of functional ability necessary for driving, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Only drive vehicles that have the permitted modifications and devices required to compensate for functional impairment
Reassessment	• Routine
Information from health care providers	• Whether the driver suffers from epilepsy as a result of the tumour. See the standards under Chapter 17 if epilepsy is present. • Opinion of treating physician on whether the driver has a loss of movement or strength that may affect functional ability to drive • Opinion of treating physician on whether pain or treatment may adversely affect functional ability to drive • Opinion of treating physician on whether the driver suffers from diplopia and/or a visual field deficit that may affect functional ability to drive. See the standards under Chapter 22 if the treating physician indicates that either of these conditions may be present. • Results of cognitive assessment • Where required, the results of a functional assessment
Rationale	The potential functional impairments associated with an intracranial tumour are variable.

Chapter 11: Musculoskeletal conditions

11.1 About musculoskeletal conditions

This chapter is concerned with diseases or injuries that have a persistent impact on the musculoskeletal system. Musculoskeletal refers to the system of muscles, tendons, ligaments, bones, joints, cartilage and other connective tissues. The musculoskeletal system is responsible for body movement and stability. Examples of chronic musculoskeletal conditions that may have a persistent impact on driving are:

- diseases of the joints, e.g., rheumatoid arthritis and osteoarthritis
- disabilities of the spine, e.g., degenerative disc disease or permanent injuries
- deformity, e.g., scoliosis, and
- loss of limb.

Some musculoskeletal conditions, or procedures to treat the conditions, may result in temporary impairment of the functions necessary for driving, including fractures, temporary braces and casts, hip and knee replacements, and various orthopedic surgeries. These are considered transient impairments and authorities do not assess drivers with transient impairments.

11.2 Prevalence

Statistics on the prevalence and incidence of musculoskeletal conditions in general are difficult to obtain because of the broadness of the category and the diversity of conditions within the category. Research suggests that musculoskeletal conditions are a leading cause of pain and physical disability. In Canada, the Ontario Health Survey (1994) found that musculoskeletal conditions are responsible for 54% of all long-term disability, 40% of all chronic conditions, and 24% of all restricted activity days. A study in the United States found that the leading causes of disability included back or spine problems, stiffness or deformity of limbs and arthritis.

Arthritis is an umbrella term referring to a group of more than 100 medical conditions. Two of the most common forms of arthritis are osteoarthritis (OA) and rheumatoid arthritis (RA). It is estimated that 9.6% of males and 18.0% of females 60 years of age and older worldwide have symptomatic OA.
RA also has a worldwide distribution with an estimated prevalence of 1 to 2%. Both the incidence and prevalence of RA increase with age and both are two to three times greater in women than in men.

11.3 Musculoskeletal conditions and adverse driving outcomes

Few studies have specifically examined the relationship between musculoskeletal conditions and impaired driving performance. As well, it is difficult to draw specific

conclusions from this research because of differences in study design, outcome measures and the conditions studied, as well as limited measurement of the degree of impairment of the subjects.

Nonetheless, one broad conclusion that can be drawn is that many musculoskeletal conditions do appear to affect driving performance, often to a significant degree. In those studies that examined crash outcomes, the majority report elevated risk for crashes for those with musculoskeletal impairments. Two studies in particular (one a meta-analysis) identified that drivers with a musculoskeletal condition had crash rates that were 70% higher than those without musculoskeletal conditions.

Another important consideration for drivers with musculoskeletal conditions who are treated with non-steroidal anti-inflammatory drugs (NSAIDS) and/or narcotics is the effect of these drugs on driving performance. The effect of the use of NSAIDS and narcotics is discussed in Chapter 15, Psychotropic Drugs.

11.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach[14]	Primary functional ability affected	Assessment tools
Loss of limb Diseases of the joints Disabilities of the spine Deformity	Persistent impairment: Functional assessment	Motor	Medical assessments Functional assessment

Drivers operating motor vehicles of any class must be able to carry out many complex muscular movements swiftly, accurately and repeatedly in order to control a vehicle properly. Truck and bus drivers must also have good muscular strength and functional range of motion in both their arms and legs in order to handle these heavier vehicles.

Musculoskeletal conditions may cause a persistent impairment of motor functions necessary for driving. The specific impact on functional ability varies by condition and type of impairment. Functional abilities that may be affected include:

- muscular strength

[14] See Part 1 for a discussion of the use of functional assessments for driver licensing decisions.

- range of motion
- flexion and extension of upper and lower extremities
- joint mobility, and
- trunk and neck mobility.

Osteoarthritis has a considerable effect on functional ability, with the extent of the disability associated with the location and severity of the disease. For example, the risk for disability (defined as needing help walking or climbing stairs) attributable to OA of the knee is as great as that attributable to cardiovascular disease, and is greater than that due to any other medical condition in the aged population.

Functional disability is the major consequence of rheumatoid arthritis. Drivers with RA often experience a substantial loss of mobility due to pain and joint destruction. In the few studies that have examined the relationship between RA and driving performance, 25% - 50% of individuals with RA reported difficulties with aspects of the driving task such as steering, cornering, reversing, head turns and shoulder checks.

11.5 Compensation

Drivers with musculoskeletal conditions may be able to compensate for functional impairment through strategies and/or vehicle modifications.

Strategies

For loss of limb, a driver may compensate through the use of a prosthetic device when driving. Other strategies that do not require vehicle modifications may also be used to compensate, for example, rotating the upper body in order to check side view mirrors if the driver's neck lacks sufficient mobility. The effectiveness of individual strategies may be determined through a road test.

Vehicle modifications

Drivers with musculoskeletal conditions may be able to compensate for a functional impairment by driving a vehicle that has been modified to address their impairment. Compensatory vehicle modifications can include modifications to driving controls (e.g., hand controlled throttle and brake) or the use of additional mirrors.

An occupational therapist, driver rehabilitation specialist, driver examiner or medical professional may recommend specific compensatory vehicle modifications based on an individual functional assessment. They are familiar with the full range of possible vehicle modifications and what is appropriate for the type of musculoskeletal condition. Listed below are examples of some possible vehicle modifications.

Musculoskeletal condition	Possible vehicle modifications
Some degree of loss of movement of the head and neck	Left and right outside mirrors Rear view cameras
Missing lower limb	Hand controls Left foot accelerator
Amputation or deformity of either arm	Power assisted steering Mechanical devices to permit all hand controls to be operated by the normal hand

There is little empirical research that considers the relationship between vehicle modifications and adverse driving outcomes. The effectiveness of individual vehicle modifications may be determined through a road test.

11.6 Guidelines for assessment

11.6.1 Loss of upper or lower extremities

STANDARD	**All drivers eligible for a licence if** • **a road test indicates ability to compensate for any loss of functional ability required for driving, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Only drive vehicles that have the permitted modifications and devices required to compensate for functional impairment
Reassessment	• If the loss of limb is due to a progressive medical condition, reassess as per the standards for that condition • Otherwise, routine
Information from health care providers	• Results of a road test in a vehicle with the permitted modifications or devices required • Health professional's opinion as to whether the driver has insight into the impact their loss of limb may have on driving
Rationale	The impact of a loss of limb on fitness to drive is variable and must be determined by an individual functional assessment.

11.6.2 Chronic musculoskeletal condition

Chronic musculoskeletal conditions include diseases of the joints, disabilities of the spine and deformity.

STANDARD	**All drivers eligible for a licence if** • **the driver retains sufficient movement and strength to perform the functions necessary for driving** • **pain associated with the condition, or the drugs used to treat the condition, do not adversely affect ability to drive safely** • **where required, a road test or other functional assessment indicates ability to compensate for any loss of functional ability required for driving, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Only drive vehicles that have the permitted modifications and devices required to compensate for any functional impairment
Reassessment	• Routine
Information from health care providers	• Opinion of treating physician on whether the driver has a loss of range of motion or strength that may affect functional ability to drive • Opinion of treating physician on whether pain or drugs may adversely affect functional ability to drive • Where required, the results of a functional assessment • Opinion of treating physicians as to whether the driver has insight into the impact their condition may have on driving • History of compliance with prescribed treatment regime • If known or applicable, whether the driver is compliant with any current conditions of licence related to their condition
Rationale	The impact of a chronic musculoskeletal condition on fitness to drive is variable and must be determined by an individual functional assessment.

Chapter 12: Neurological disorders

12.1 About neurological disorders

Neurological disorders can affect the brain, spinal cord, nerves and muscles. They can affect an individual's ability to think, see, communicate, move, and sense and coordinate movements. While any number of conditions fall within the category of neurological disorders, this chapter focuses on three common disorders: multiple sclerosis, Parkinson's disease and cerebral palsy.

Multiple sclerosis

Multiple sclerosis (MS) is believed to be an autoimmune disorder in which the immune system attacks specific structures of the central nervous system (brain and spinal cord), resulting in inflammation, demyelination and axonal damage. Myelin is an essential insulation sheath of the nerve processes (axons). If it is damaged, signal transmission is slowed. Demyelination can ultimately result in permanent axonal damage in the form of scars and is called gliosis.

MS has an unpredictable and chronic course, leading to numerous physical and cognitive impairments. The cause is unknown. There are four clinical types of MS:

- Relapsing – Remitting (RRMS)
- Secondary Progressive (SPMS)
- Primary Progressive (PPMS), and
- Progressive Relapsing (PRMS).

Relapsing – Remitting (RRMS)

It is estimated that 55% of individuals with MS have RRMS. It is characterized by unpredictable attacks (relapses) followed by periods of months to years with no new clinical signs of disease activity (remissions). Impairments suffered during relapses may either resolve or become permanent. Approximately 10% of those with RRMS have "benign MS," where impairments usually completely resolve between relapses and no disability is present after 10 years of disease onset. The longer a person has MS, the greater the probability that the relapses will not completely resolve and they will experience increasing disability.

Parkinson's disease

Parkinson's disease (PD) belongs to a group of conditions called motor system or movement disorders, which result from the slowly progressive loss of dopamine-producing brain cells. The lack of dopamine, a neurotransmitter, interferes with the transmission of messages from the brain to nerve cells that control muscle movement and coordination. It can result in motor impairment (tremor or rigidity), and in later

stages, in cognitive or autonomic dysfunction. PD is chronic and progressive, and while the specific cause is unknown, it is believed that both genetic and environmental factors contribute to the development of the disease.

Cerebral palsy

Cerebral palsy refers to any one of a number of neurological disorders that appear in infancy or early childhood and are the result of damage to, or impaired development of, the motor centres of the brain. It is a non-progressive disorder that permanently affects body movement and muscle coordination.

12.2 Prevalence

Multiple sclerosis

The prevalence of MS in Canada is among the highest in the world, with studies reporting prevalence rates from 55 to 240 per 100,000. A recent study using data from the 2001 Canadian Community Health Survey reported an overall weighted estimate of 240 per 100,000 adults (0.24%).[15]

MS is twice as likely to affect women as men, with the highest incidence occurring in individuals in their late 30s, and the highest prevalence among those in their 40s and 50s.

Parkinson's disease

Estimated prevalence rates for Parkinson's disease vary widely depending on the population sampled and the methodology used. Age-adjusted prevalence rates in Canada have been reported as 125 per 100,000 (1.25%).

Cerebral palsy

The prevalence of cerebral palsy (CP) in Canadian infants is approximately 2 in 1000, with over 50,000 Canadians currently living with the disorder. The number of individuals with CP has risen slightly over the past 30 years due to higher survival rates of affected newborns as care and treatment have improved.

[15] Weighted estimate means that the results from the data are adjusted (weighted) from the sampling design using national population data.

12.3 Neurological disorders and adverse driving outcomes

Multiple sclerosis

The research on MS and driving is limited. The results of this research indicate that driving performance may be impaired by functional deficits, including cognitive impairment, caused by MS.

Parkinson's disease

There is a small but consistent body of research indicating that functional deficits associated with Parkinson's disease or its treatment may impair driving performance.

Cerebral palsy

There has been no research on the effects of cerebral palsy and driving outcomes.

12.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Multiple sclerosis Parkinson's disease Cerebral palsy	Persistent impairment: Functional assessment	Variable – cognitive, motor or sensory	Medical assessments Functional assessment

Multiple sclerosis

MS can affect motor, visual and cognitive functioning. The major symptoms associated with MS that may affect driving are:

- ataxia (wobbliness, incoordination and unsteadiness)
- impaired proprioception (ability to perceive the body's position in space)
- spasticity (involuntary muscle spasms)
- muscle weakness
- fatigue
- chronic pain
- vision problems, and
- cognitive impairment.

Vision problems are common, affecting up to 80% of individuals with MS at some point.

Visual symptoms associated with MS include:

- nystagmus (rapid, involuntary eye movement)
- diplopia (double vision)
- blurred vision
- scotoma (abnormal blind spot), and
- diminished contrast sensitivity.

Cognitive impairment, particularly associated with information processing speed, is also common, affecting between 45% and 65% of those with the disease.

Medications used to treat MS that may affect driving include:

- corticosteroids
- NSAIDS
- antiepileptics
- antidepressants
- antispasticity drugs, and
- opioids.

See Chapter 15, Psychotropic Drugs, for more information on these medications.

Parkinson's disease

PD can affect motor, visual and cognitive functioning. Common motor symptoms include:

- tremor
- rigidity
- bradykinesia/akinesia (slowness or absence of movement/rapid repetitive movements), and
- postural instability.

Visual impairments such as contrast sensitivity, diplopia (double vision) and impaired eye movement are sometimes seen in PD and related movement disorders. Cognitive symptoms may include:

- psychiatric conditions such as depression, impulse control disorders and psychosis
- sleep disturbances
- psychomotor slowing (slow response and reaction time)
- cognitive impairment, and
- dementia.

In addition to the symptoms noted above, fatigue and sleep disturbances are common in those with PD.

The symptoms of PD are often treated with medications including levodopa, dopamine agonists and MAO-B inhibitors. These medications can cause side effects including sleepiness, sleep attacks (sudden, overwhelming sleepiness with little or no warning signs) and visual hallucinations, which may affect driving.
A further consideration for driving is the fluctuation in the effects of medication. Individuals with advanced PD may experience periods of reduced symptom control (wearing off) near the time of their next dose of medication.

Cerebral palsy

CP can affect motor, visual, and cognitive functioning. The primary effects of CP are:

- ataxia (wobbliness, incoordination and unsteadiness)
- weakness and spasticity (involuntary muscle spasms), and
- altered muscle tone that is either too stiff or too floppy.

CP can also cause a loss of visual acuity or slowed visual tracking, as well as cognitive impairments such as impaired judgment and slow processing or reaction times.

12.5 Compensation

Drivers who have experienced a persistent impairment of motor or sensory function may be able to compensate. An occupational therapist, driver rehabilitation specialist, driver examiner or other medical professional may recommend specific compensatory vehicle modifications or restrictions based on an individual functional assessment. Some examples of compensatory mechanisms are shown in the following table.

Motor impairment	**Sensory (vision) impairment**
• Steering wheel spinner knob • Restriction to automatic transmission or power-assisted brakes	• Scanning horizon more frequently • Turning head 90◦ to maximize area scanned • Large left and right side mirrors

12.6 Guidelines for assessment

12.6.1 Neurological disorder

STANDARD	**All drivers eligible for a licence if** • **range of motion, strength and coordination are sufficient to perform the functions necessary for driving** • **cognitive functions necessary for driving are not impaired** • **any pain associated with the condition, and any drugs used to treat the condition, do not impair the functional abilities necessary for driving** • **where required, a road test or other functional assessment indicates that the driver is able to compensate for any loss of functional ability necessary for driving, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Only drive vehicles that have the permitted modifications and devices required to compensate for functional impairment
Reassessment	• Reassess a minimum of every 5 years if the disorder is progressive (e.g., MS or PD) • Routine if the disorder is not progressive (e.g., CP)
Information from health care providers	• Opinion of treating physician on whether the driver has a loss of range of motion, strength or coordination that may affect functional ability to drive • Opinion of treating physician on whether pain or drugs may adversely affect functional ability to drive • Where required, the results of cognitive assessment • Where required, the results of a functional assessment
Rationale	The potential functional impairments associated with neurological disorders are variable.

Chapter 13: Peripheral vascular diseases

13.1 About peripheral vascular diseases

Overview

The term peripheral vascular diseases (PVDs) refers to circulatory disorders involving any of the blood vessels outside the heart, e.g. arteries, veins and lymphatics of the peripheral vasculature. The four subcategories of PVDs that have the greatest relevance for driving are:

- peripheral arterial disease
- aneurysms
- dissections, and
- deep vein thrombosis.

Peripheral arterial disease

Peripheral arterial disease (PAD) is characterized by partial or complete failure of the arterial system to deliver oxygenated blood to peripheral tissue. Atherosclerosis is the primary underlying cause of PAD. Other causes include thrombembolic, inflammatory or aneurismal disease. Although PAD can affect both upper and lower extremities, lower extremity involvement is more common. A large majority (70% to 80%) of individuals with PAD are asymptomatic. For those individuals who are symptomatic, symptoms can progress from intermittent claudication (pain while walking) to rest/nocturnal pain, to necrosis/gangrene. Only 1% to 2%, however, progress to limb amputation within 5 years of the original diagnosis.

Aneurysms

An aneurysm is defined as a localized abnormal dilation of an artery by 50% or more above the normal size. While an aneurysm can form on any blood vessel, aneurysms of the aorta are of greatest concern for driving because of the risk of rupture and resulting sudden incapacitation. Abdominal aortic aneurysm (AAA) is the most common but aneurysms of the thoracic aorta also occur.

Aortic dissection

An aortic dissection occurs when circulating blood enters the aortic wall through a tear in the inner layer of the aorta and then is forced between the layers of the aorta forming a space between the layers occupied by blood. A dissection may proceed to a rupture or may be contained within the aorta. Dissections occur in diseased aortas (existing aneurysms or certain congenital syndromes such as Marfan's syndrome) but also may occur in normal aortas. There is no effective way to predict that a dissection might occur so that it is not possible to develop standards for licensing based on any measurable parameters.

Deep vein thrombosis

Deep vein thrombosis (DVT) occurs when a thrombus (blood clot) forms within a deep vein, most commonly in the calf. Three main factors (known as Virchow's triad) can contribute to deep vein thrombosis: injury to the vein's lining, an increased tendency for blood to clot, and slowing of blood flow.

13.2 Prevalence

Peripheral arterial disease

Estimates of the prevalence of PAD depend on populations studied and study methodology. The general prevalence rate is reported to be 10%. However, because most individuals remain asymptomatic, the true overall prevalence rate is likely to be considerably higher. The prevalence of PAD increases with age and with prolonged exposure to smoking, hypertension and diabetes.

Recent studies indicate that PAD affects approximately 20% of adults 55 years of age and older and an estimated 27 million persons in North America and Europe. Intermittent claudication is the most common symptom associated with PAD. The prevalence of intermittent claudication increases dramatically with age. The incidence in the general population is less than 1% of those under the age of 55, and increases to 5% for those 55 to 74 years of age. At younger ages, the prevalence rate is almost twice as high for males as for females but, at the older ages, the difference between males and females is reduced. Risk factors for lower extremity PAD are:

- age less than 50 years, with diabetes and one other atherosclerosis risk factor (smoking, dyslipidemia, hypertension or hyperhomocysteinemia)
- age 50 to 69 years and history of smoking or diabetes
- age 70 years and older
- leg symptoms with exertion (suggestive of claudication) or ischemic rest pain
- abnormal lower extremity pulse examination, and
- known atherosclerotic coronary, carotid or renal artery disease.

Abdominal aortic aneurysms

Prevalence has decreased in the last 20 years, mostly related to a reduced rate of cigarette use. The current prevalence of abdominal aortic aneurysm (AAA) for individuals aged 50-84 is 1.4%. Ninety percent of individuals with AAA have a history of smoking. The likelihood of an AAA developing in a first degree relative of an individual with an AAA is 20%. Individuals with an AAA invariably have vascular comorbidities, including coronary and cerebrovascular disease and the risk of death from these comorbidities is greater than the risk of death from aneurysm rupture.

Deep vein thrombosis

The prevalence of DVT is estimated to be < 0.005% in individuals less than 15 years of age, and increases to approximately 0.5% for individuals 80 years of age and older. Approximately one-third of patients with symptomatic DVT will develop a pulmonary embolism, which is the obstruction of the pulmonary artery, or a branch of it leading to the lungs, by a blood clot.

13.3 Peripheral vascular diseases and adverse driving outcomes

There are no studies that consider a relationship between peripheral vascular diseases and risk of crash.

13.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Peripheral arterial disease – severe claudication	Persistent impairment: Functional assessment	Sensorimotor Motor	Medical assessments Functional assessment
Abdominal aortic aneurysm	Episodic impairment: Medical assessment – likelihood of impairment	All – sudden incapacitation	Medical assessments
DVT - may result in pulmonary embolism	Episodic impairment: Medical assessment – likelihood of impairment	All – sudden incapacitation	Medical assessments

Peripheral arterial disease

For drivers with peripheral arterial disease, the chronic outcomes of the disease will rarely affect driving ability. The symptoms of lower extremity PAD such as coldness or numbness in the foot or toes and, in the later stages, pain while the extremity is at rest, may affect the sensory and motor functions required for driving.

In general, the degree of impact will be determined by disease severity. For example, drivers who are asymptomatic or have mild to moderate claudication are unlikely to have symptoms that would affect driving. Drivers whose disease has progressed to the severe claudication stage or higher may have functional impairment sufficient to interfere with the lower extremity demands of operating a motor vehicle (e.g., awareness of foot placement, pedal pressure, motor strength, etc.).

Abdominal aortic aneurysm

The concern for drivers with AAA is the risk of rupture which, when it occurs, results in sudden incapacitation in the vast majority of cases. The challenge is to identify those individuals with an unruptured AAA and to offer corrective based on characteristics that suggest that there is a significant risk of rupture. Factors associated with increased risk include:

- Transverse diameter: the risk of rupture increases with increase in transverse diameter.
- Annual risk of rupture is 5.3% for aneurysms 5.5-7.0 cm in diameter. The annual risk has been reported to be >20% for larger aneurysms >7 cm in diameter but more recent studies suggest that the risk in this group may be lower, in the range of 6.3% per year. However, studies of rupture rates in such very large aneurysms are limited by small numbers of subjects. It therefore is difficult to define a threshold for eligibility for non-commercial licensing.
- Sex: the risk of rupture for AAA's 4.5-5.4 cm in transverse diameter is higher in women than men but this is offset by an increase in operative mortality in women so that there is no good evidence for a different diameter threshold for surgery in females. Furthermore, natural history studies suggest that aortic aneurysms have a tendency to rupture at smaller diameters in all smaller stature individuals, regardless of sex. Diameter indexed to body size may be a better predictor of the risk of rupture but there is no published data at this time.
- Shape of the aneurysm: saccular aneurysms are at greater risk of rupture at a lower diameter than fusiform or symmetrical AAAs so that surgery is generally recommended at a lower diameter but there is no specific threshold.
- Presence of symptoms: symptoms such as abdominal or back pain or tenderness on palpation are felt to be associated with an increased risk of rupture but the evidence is weak.
- Rate of growth: it is generally recommended that surgery is indicated if an AAA increases in size by >1 cm per year.

The consensus among experts, based on strong scientific evidence, is that surgery is indicated for any AAA greater than or equal to 5.5 cm in transverse diameter.

References:

Chaikof et al, The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm, J Vascular Surgery 2018: 67, 2-77.

Wanhaiman et al, European Society for Vascular Surgery 2019 Clinical Practice Guidelines on the Management of Abdominal Aorto-iliac Artery Aneurysms, European J Endovascular Surgery 2019: 57, 8-93.

Deep vein thrombosis

For drivers with deep vein thrombosis (DVT), acute complications may affect driving ability. The primary concern with DVT is the risk of sudden incapacitation due to a pulmonary embolism.

13.5 Compensation

Drivers are not able to compensate for the effects of an AAA, aortic dissection or DVT. Drivers with an amputation resulting from PAD may be able to compensate for functional impairment through strategies and/or vehicle modifications. For example:

- for loss of limb, a driver may compensate through the use of a prosthetic device when driving
- drivers with PAD may be able to compensate for a functional impairment by driving a vehicle that has been modified to address their impairment. Compensatory vehicle modifications can include modifications to driving controls (e.g., hand controlled throttle and brake).

An occupational therapist, driver rehabilitation specialist, driver examiner or other medical professional may recommend specific compensatory vehicle modifications based on an individual functional assessment.

13.6 Guidelines for assessment

13.6.1 Peripheral arterial disease

If a driver has lost a limb due to peripheral arterial disease, also see standard 11.6.1.

STANDARD	**All drivers eligible for a licence if** • **the peripheral arterial disease is successfully treated**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the authority
Information from health care providers	• Opinion of treating physician on whether there is severe claudication or foot and leg symptoms that may impair functional ability to drive • Where required, the results of a functional assessment • Opinion of the treating physician regarding whether the driver has insight into the impact their medical condition may have on driving • Whether the driver is compliant with their current treatment regime
Rationale	Where peripheral arterial disease results in a functional impairment, the impact of the impairment on driving should be determined by an individual functional assessment.

13.6.2 Abdominal aortic aneurysm – Non-commercial drivers

STANDARD	**Non-commercial drivers are not eligible for a licence if** • **the diameter of the aneurysm is greater tan or equal to 7 cm, or** • **in the opinion of a vascular surgeon, the aneurysm is at the stage of imminent rupture based on factors such as shape of the aneurysm, rate of growth, and presence of symptoms** **Exceptions can be made if, in the opinion of the vascular surgeon, the annual risk of rupture is acceptable for non-commercial driving (generally less than 20%)**
Conditions for maintaining licence	• Regular review by a physician
Reassessment	Reassessment periods depend on the size of the AAA. Suggested frequencies are: • If the diameter is over 5 cm, reassess annually • If the diameter is between 4 and 5 cm, reassess every 2 years • If the diameter is between 3 and 4 cm, reassess every 5 years
Information from health care providers	• Size of aneurysm or dissection • Whether imminent rupture is suspected
Rationale	The primary concern with AAA's is the risk of rupture resulting in sudden incapacitation. Non-commercial drivers are ineligible for a licence if the annual risk of rupture is estimated to be greater than 20%.

13.6.3 Abdominal aortic aneurysm – Commercial drivers

STANDARD	**Commercial drivers are not eligible for a licence if** • **the diameter of the aneurysm is greater than or equal to 5.5 cm, or** • **in the opinion of a vascular surgeon, the aneurysm is at the state of imminent rupture based on factors such as shape of the aneurysm, rate of growth, and the presence of symptoms** **Exceptions can be made if, in the opinion of a vascular surgeon, the annual risk of rupture is acceptable for commercial drivers (generally less than 1%)**
Conditions for maintaining licence	• Regular review by a physician
Reassessment	Reassessment periods depend on the size of the AAA. Suggested frequencies are: • If the aneurysm is greater than 4 cm, reassess annually • If the aneurysm is between 3 and 4 cm, reassess every 3 years
Information from health care providers	• Size of aneurysm or dissection • Whether condition is regularly reviewed
Rationale	The primary concern with AAA's is the risk of rupture causing sudden incapacitation. Commercial drivers are ineligible for a licence if they annual risk is estimated to be greater than 1%.

13.6.4 Surgically repaired abdominal aortic aneurysm or surgically treated aortic dissection

STANDARD	**All drivers eligible for a licence if** • **the abdominal aortic aneurysm has been surgically repaired, or the aortic dissection has been surgically treated, and** • **the treating physician supports a return to driving**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	• Opinion of the treating physician whether the surgery was successful in repairing the aneurysm or treating the dissection
Rationale	The primary concern with AAA and aortic dissection is the risk of rupture. Successful surgery to repair an aneurysm or dissection will significantly reduce the risk of rupture. Surgical repair is considered where an aneurysm is greater than 5.5 cm. A recent study suggests that women's aneurysms rupture at smaller sizes, leading to the conclusion that the 5.5 cm threshold for surgical repair is likely too large for women and 5 cm has been suggested as the appropriate level.

13.6.5 Deep vein thrombosis

STANDARD	**All drivers eligible for a licence if** • **treated with an anticoagulant, and** • **treating physician states that the treatment is effective**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	• Whether the driver is being treated with an anticoagulant • Treating physician's opinion that the DVT has been successfully treated • Whether the driver has insight into the impact their medical condition may have on driving • Whether the driver is compliant with their current treatment regime
Rationale	The primary concern with DVT is the risk of sudden incapacitation due to a pulmonary embolism

Chapter 14: Psychiatric disorders

14.1 About psychiatric disorders

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5)[16], published by the American Psychiatric Association, contains a standard classification system of psychiatric disorders for health care professionals in the United States and Canada. It classified psychiatric disorders into diagnostic categories. A previous edition (APA, 2000[17]) utilized five axes, but that multi-axial system was removed from the most recent edition.
Delirium, dementia, and other cognitive disorders

The effects of delirium, dementia and other cognitive disorders on driving are covered in Chapter 6, 'Cognitive Impairment including Dementia'. It is worth noting that the DSM-5 has relabeled dementia as "Major Neurocognitive Disorder", and more subtypes (e.g., Lewy Body dementia) are described, organized by the cause, time course, domains affected, and associated symptoms. The DSM-5 retains the term dementia as an alternative to Major Neurocognitive Disorder.

Substance-related disorders

Substance-use disorders refer to the taking of a drug of abuse (including alcohol), despite significant substance-related problems, including medical (e.g., liver disease), physiological (e.g., tolerance and withdrawal), psychological (e.g. cravings), and social (e.g. negative impact on work, school, or home life). Substance-induced disorders refer to a category of apparent behavioral disturbance presumably related to ingestion of a substance (e.g., intoxication or withdrawal), or mental disorder (e.g., substance/medication-induced depressive disorder). Substances include alcohol, amphetamines, cannabis, cocaine, hallucinogens, sedatives, hypnotics and anxiolytics.

Alcohol and illicit drug use disorders are not considered in this document. The effects of drugs commonly prescribed for medical conditions are addressed in Chapter 15, Drugs, alcohol and Driving.

Depressive disorders – Major Depressive Disorder, or Persistent Depressive Disorder (Dysthymia)

[16] American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC
[17] American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC

Major Depressive Disorder is characterized by one or more episodes of depressed mood or loss of interest in usual activities, as well as four additional symptoms of depression, with the episodes lasting for two or more weeks. Additional symptoms of depression include:

- Change in appetite
- Sleep disturbances
- Restlessness or being slowed down
- Decreased energy or fatigue
- Feelings of worthlessness or excessive guilt,
- Suicidal thoughts, and
- Poor concentration or difficulty making decisions.

Persistent depressive disorder (dysthymia) refers to a condition in which mood is persistently depressed for at least 2 years, along with at least two other symptoms such as low self-esteem, hopelessness, appetite or sleep changes, fatigue, difficulty concentrating or making decisions.

Other depressive disorders include:

- Disruptive Mood Dysregulation Disorder
    - a diagnosis characterized by severe and recurrent verbal or physical temper outbursts.
    - Generally, this is a diagnosis made in childhood, and "should not be made for the first time after age 18 years", but is included here since it may persist into adulthood.
- Premenstrual Dysphoric Disorder
    - Characterized by symptoms such as mood instability, irritability, depressed mood, or anxiety occurring in conjunction with the majority of menstrual cycles.
- Depressive disorders induced by substances/medications or medical conditions

Bipolar I Disorder is characterized by one or more manic episodes, with or without a history of major depressive episodes. Bipolar II Disorder is similar, but instead of manic episodes, major depressive episodes alternate with hypomanic episodes. Hypomanic episodes are different from manic episodes, as they are of shorter duration, and are not associated with significant impairment in functioning, psychosis or a need for hospitalization.

Cyclothymia is similar to Bipolar II Disorder except that symptoms of depression have not met full criteria for a major depressive episode.

Other disorders in the bipolar spectrum are those felt to be due to drugs, substances or other medical conditions.

Anxiety disorders

There are a number of anxiety disorders classified in the DSM-5, including:

- Generalized Anxiety Disorder
- Specific phobias
- Social Phobia
- Panic Disorder.

Symptoms include intense and prolonged feelings of fear or distress that occur out of proportion to the actual threat or danger. The feelings of distress also must be sufficient to interfere with normal daily functioning.

Obsessive compulsive disorder, acute stress disorder, and post-traumatic stress disorder are considered in DSM-5 in separate categories from Anxiety Disorders, although it is acknowledged that anxiety is a common feature of these as well.

Obsessive Compulsive Disorder is characterized by recurrent obsessions ("recurrent and persistent thoughts, urges, or images that are experienced as intrusive and unwanted") and/or compulsions ("repetitive behaviors or mental acts that an individual feels driven to perform…").

Acute Stress Disorder and Posttraumatic Stress Disorder (PTSD) refer to the development of symptoms after exposure to a traumatic event. Symptoms include intrusive memories, avoidance of reminders of the trauma, alterations in mood, memory or arousal. The duration of Acute Stress Disorder is up to one month after the trauma, and the duration of PTSD is more than one month after the trauma.

Attention-Deficit/Hyperactivity Disorder

Attention-Deficit/Hyperactivity Disorder (ADHD) is characterized by inappropriate degrees of inattention, impulsivity and hyperactivity that begin in childhood. ADHD is one of the most common neurobehavioral disorders of childhood and can persist through adolescence and into adulthood.

Although many individuals with ADHD show symptoms of both inattention and hyperactivity-impulsivity, there may be a predominance of either inattention or hyperactivity-impulsivity. This variability of presentation is reflected in the three major classifications of the disorder:

- Combined Type (exhibiting both inattention and hyperactivity-impulsivity)
- Predominately Inattentive Type, and
- Predominately Hyperactivity-Impulsivity Type.

The symptoms of hyperactivity and impulsivity tend to diminish over time so that many adults will present with primary symptoms of inattention only.

Schizophrenia

The effects of Schizophrenia on the individual can be profound. Common symptoms include delusions and hallucinations, thought disorders, lack of motivation and social withdrawal. The symptoms of schizophrenia are generally divided into three broad categories:

- Positive or "psychotic" symptoms are characterized by delusions (fixed false beliefs), or hallucinations ("perception-like experiences that occur without an external stimulus").
- Disorganised, illogical or bizarre thoughts, speech or behaviours.
- Negative symptoms are typically characterized by diminished emotional expression or a decrease in motivation and initiation of activities.

The onset of schizophrenia can occur at any age, but most typically appears in early adulthood. Many individuals with schizophrenia have recurring acute positive psychotic symptoms (delusions or hallucinations), or disorganization throughout their life, which are typically separated by intervening periods in which they usually experience residual or negative symptoms.

Personality disorders

There are a number of personality disorders identified in the DSM-5, including:

- Borderline Personality Disorder
- Schizotypal Personality Disorder
- Anti-social Personality Disorder, and
- Narcissistic Personality Disorder.

Onset typically occurs during adolescence or in early adulthood. The disorder affects thought, emotion, interpersonal relationships and impulse control. The disorders are characterized by "an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, (and)…is stable over time…"

Intellectual Disability (Intellectual Developmental Disorder)

The DSM-5 defines intellectual disability as deficits in intelligence and adaptive functioning, with onset during childhood development. Individuals with this disorder must also meet the cognitive impairment standard.

Suicidal ideation

Suicidal ideation is defined as having thoughts of suicide or of taking action to end one's own life, irrespective of whether the thoughts include a plan to commit suicide or an actual attempt. Studies indicate that the majority of all suicides are associated with psychiatric disorders.

14.2 Prevalence

Mood Disorders-Major Depressive Disorder, Bipolar Disorder, Dysthymic Disorder

In Canada, approximately 12.2% of adults will experience major depression at some time in their lives[18] with approximately 0.9% experiencing Bipolar Disorder [19]. Depression is more common among women, but the sex ratio for Bipolar Disorder is approximately equal.

Anxiety disorders

Anxiety disorders are estimated to affect 3.8 – 5.0 % of the Canadian population annually[20].

Attention-Deficit/Hyperactivity Disorder

Prevalence rates of ADHD vary, depending on the diagnostic criteria used, the setting (e.g., general population vs. clinic sample) and the reporter (e.g., parent, teacher, self).

The point prevalence of adult ADHD is estimated at 4.4%, and it is estimated that 36.3% of those with ADHD in childhood continue to meet diagnostic criteria in adulthood.[21] [22]

[18] *Patten, S.B., Wang, J.L., Williams, J.V.A., Currie, S.R., Beck, C.A., Maxwell, C.J., El-Guebaly, N., 2005. Descriptive epidemiology of major depression in Canada. Can. J. Psychiatry 51, 84–90.*

[19] *McDonald, K.C., Bullock, A.G.M., Duffy, A., et al. Prevalence of bipolar I and II disorder in Canada. Canadian Journal of Psychiatry 2015; 60(3): 151-6.*

[20] *Romans, S., Cohen, M., Forte, T. Rates of depression and anxiety in urban and rural Canada. Social Psychiatry Psychiatric Epidemiology 2011; 46: 567-575*.

[21] *Kessler, R.C., Adler, L, Barkley, R. et al The prevalence and correlates of adult ADHD in the United States: Results from the National Comorbidity Survey Replication. American Journal of Psychiatry 163(4): 716-23.*

[22] *Kessler, R.C., Adler, L.A., Barkley, R. Patterns and predictors of ADHD persistence into adulthood: Results from the National Comorbidity Survey Replication. Biological Psychiatry 2005, 57(11): 1442-1451*

Schizophrenia

Schizophrenia is estimated to affect 0.4% of people in the community over their lifetime, with onset typically in early adulthood (late teens to mid-30s). Males and females are affected equally[23].

Personality disorders

Epidemiological studies show a range of prevalence of personality disorder from 9.0% to 15.7% in international studies of community-based populations.

Suicidal ideation

In 2012, 3296 people died of suicide in Canada, corresponding to a rate of 10.4 deaths per 100,000 people.[24]

14.3 Psychiatric disorders and adverse driving outcomes

Despite the prevalence of psychiatric disorders in the general population, there have been few investigations into the relationship between these disorders and adverse driving outcomes.

There are a number of methodological issues that impact the ability to draw conclusions from the existing research, in particular, the impact of improved treatment of psychiatric disorders and changes in the complexity of the driving environment on the results of older studies. Nonetheless, the consistency of findings supports a general conclusion that drivers with psychiatric conditions are at increased risk of adverse driving outcomes.

Mood disorders - Major Depressive Disorder, Bipolar Disorder, Dysthymic Disorder

A few studies have identified depression as one of a number of factors that may influence driving performance. However, the results of these studies are equivocal, and methodological limitations significantly limit any conclusions that may be drawn.

Pharmacological treatment of mood disorders is an important consideration. When treatment is effective, the alertness, cognitive ability and judgment of a person with a mood disorder may be improved. At the same time, the significant side effects of

[23] *McGrath, J., Saha, S., Chant, D., Welham, J. Schizophrenia: A concise overview of incidence, prevealnce and mortality. Epidemiologic Reviews 2008, 30(1): 67-76.*

[24] *http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/hlth66a-eng.htm*

antidepressant medications may include impairments in psychomotor functioning, sedation and impairments in cognitive functioning. The impact of the side effects of drug treatment on driving is considered in Chapter 15, Drugs, Alcohol and Driving.

Anxiety disorders

There are no studies that have investigated the relationship between anxiety disorders and driving, although symptoms of anxiety may increase the risk of self-reported collisions.[25] Pharmacological treatment with sedatives or hypnotics may include side effects that impair functional ability to drive. See Chapter 15, Drugs, Alcohol and Driving, for more information.

Attention-Deficit/Hyperactivity Disorder

There is a small body of research that suggests that drivers with ADHD are at a higher risk for crashes, have higher rates of traffic citations and licence revocations or suspensions, and are more likely to drive without a licence. There is some indication that pharmacological treatment of ADHD with stimulants may have a positive effect on driving performance. However, research in this area has primarily relied on driving simulators to measure outcomes. A few studies have investigated the relationship between pharmacological treatment of ADHD and on-road performance. However, methodological limitations, including small sample size, limit the findings. The effects of pharmacological treatment of ADHD are discussed further in Chapter 15, Drugs, Alcohol and Driving.

Schizophrenia

The results of the few studies on the relationship between Schizophrenia and adverse real-world driving outcomes are equivocal, although may be related to a reduced rate of licensure and driving exposure, as simulator studies tend to consistently show impairment.

Personality disorders

There are no contemporary studies of the risks of collisions associated with personality disorders.

However, two studies, both more than 30 years old, considered the relationship between personality disorders and adverse driving outcomes. Both studies found an increased crash risk for drivers with personality disorders.

[25] *Wickens, C.M., Mann, R., Stoduto, G., et al The impact of probable anxiety and mood disorder on self-reported collisions: A population study. Journal of Affective Disorders 2013; 145: 253-5.*

Suicidal ideation

Studies on the incidence of traffic suicides indicate that suicide attempts play a significant role in motor vehicle crashes. Moreover, it is likely that the reported incidence rates of traffic suicides are an underestimation, due to the methodological difficulties in classifying a traffic death as suicide. Research indicates the following risk factors for traffic suicides:

- males are significantly more at risk (90% to 95%) than females
- whites are more at risk than other racial groups
- those who are "depressed" or "mentally disturbed" are more at risk than those who are not, and
- those with a history of attempted suicide or a family history of suicide are more at risk than those without such history.

14.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Mood disorders Anxiety disorders ADHD Schizophrenia	Persistent impairment: Functional assessment	Cognitive Psychomotor	Medical assessments Functional assessment
	Episodic impairment: Medical assessment – likelihood of impairment	Cognitive Psychomotor	Medical assessments
Personality disorders	Persistent impairment: Functional assessment	Affective	Medical assessments
	Episodic impairment: Medical assessment – likelihood of impairment	Affective	Medical assessments

Psychiatric disorders can result in either a persistent or episodic impairment of the functions necessary for driving.

The role of insight

A driver's level of insight is a critical consideration when assessing the risk of an episodic impairment of functional ability due to a psychiatric disorder.

Drivers with good insight are more likely to be diligent about their treatment regime and to seek medical attention and avoid driving when experiencing acute episodes and have the judgment and willingness to adapt their driving to these limitations.

Poor insight may be evidenced by non-compliance with treatment, trivializing the driver's role in a crash or repeated involuntary admissions to hospital, often as a result of discontinuing prescribed medication

Affect

Affect refers to the observed expression of emotion. The ability to manage one's affect is an important functional component of safe driving performance. Affect includes:

- emotional intelligence
- impulse control/emotional control
- frustration threshold
- agitation, and
- impulsivity and/or mood control/management.

Psychomotor

Psychomotor functions affect the coordination of cognitive processes and motor activity. Abnormalities can include agitation, restlessness, pacing, aimless activity or slowing down of movements or thought. In his document, psychomotor function will be considered as one of the functional abilities needed for driving for drivers with psychiatric disorders.

Mood disorders - Major Depressive Disorder, Bipolar Disorder, Dysthymia

Cognitive abilities that may be affected by mood disorders include:

- attention and concentration
- memory
- information processing
- reaction time, and
- psychomotor functioning.

Anxiety disorders

The research on the effects of anxiety disorders on functional ability is limited. Findings from studies examining the effects of anxiety disorders on cognitive functioning are equivocal. Neurobiological studies suggest that medial and temporal lobe structures are affected in anxiety disorders. These are structures that are responsible for memory and higher order executive functioning. From a clinical perspective, the potential for diminished attention or perseverating on errors (including "freezing") in the face of unexpected risks on the road may be of concern for driving.

Attention-Deficit/Hyperactivity Disorder

The pattern of deficits in adults with ADHD is similar to that in children and adolescents. One of the primary cognitive functions that may be affected is the ability to sustain attention, particularly when performing demanding cognitive tasks. In addition to attentional impairments, individuals with ADHD often experience other cognitive deficits such as difficulties with:

- planning and forethought
- flexibility
- problem solving
- working memory, and
- response inhibition.

Symptoms of ADHD referenced in the DSM-5 that may be relevant to driving include:

Inattention examples

- often fails to give close attention to details or makes careless mistakes in school work, work or other activities
- often has difficulty sustaining attention in tasks or play activities
- often is easily distracted by extraneous stimuli

Hyperactivity-impulsivity examples

- often is "on the go" or acts as if "driven by a motor"
- often has difficulty awaiting his or her turn

Schizophrenia

Apart from the core symptoms of psychosis (delusions, hallucinations, disorganized thoughts and (behavior), apathy and neuropsychological deficits associated with schizophrenia may impact driving. The degree of functional impairment associated with schizophrenia varies between the acute and residual phases of the disorder.

Neuropsychological functions that may be impaired include:

- attention
- executive function
- spatial abilities
- memory, and
- motor and tactile dexterity.

Personality disorders

The characteristics of personality disorders most likely to affect driving include:

- affectivity (e.g., aggression, frustration, anger)
- interpersonal functioning (e.g., failure to conform to social norms, reckless disregard for the safety of others), and
- poor impulse control.

Suicidal ideation

Suicidal ideation is an important consideration regarding drivers with psychiatric disorders because of the risk of traffic suicide.

Pharmacological treatment

In addition to the direct effects of psychiatric disorders on functional ability to drive, the impact of pharmacological treatment is an important consideration when assessing drivers. The effects of drug treatment are considered in Chapter 15, Drugs, Alcohol and Driving.

14.5 Compensation

Drivers with psychiatric disorders may be able to compensate for their impairments if treated and /or stabilized. Functional assessment may be required.

14.6 Guidelines for assessment

14.6.1 Psychiatric disorder– All drivers

STANDARD	**All drivers eligible for a licence if** • **the condition is stable** • **the driver has sufficient insight to stop driving if condition becomes acute** • **the functional abilities necessary for driving are not impaired** • **a treating physician supports a return to driving, for drivers who have stopped driving due to a psychiatric disorder, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Stop driving and report to the authority if hospitalized due to a psychiatric disorder • Remain under regular medical supervision and comply with prescribed psychotropic medication regime or other recommended treatment
Reassessment	• Routine, or more frequently at the discretion of the licensing authority.
Information from health care providers	• Opinion of treating physician whether the condition is stable and controlled • Opinion of treating physician whether the driver has sufficient insight to stop driving if condition becomes acute • Opinion of treating physician whether the functional abilities necessary for driving may be persistently impaired by the condition or its treatment, and if yes, the results of a functional assessment • Whether the driver remains under regular medical supervision • Details of any prescribed psychotropic medication regime or other recommended treatment and opinion of treating physician whether the driver is compliant with the treatment • A specialist's report supporting a return to driving, for drivers who have stopped driving due to a psychotic episode • Date of most recent psychotic episode • Opinion of treating physician as to the appropriate reassessment interval
Rationale	Given the nature of psychiatric disorders, assessment must rely primarily on the clinical judgment of health care professionals involved in treatment. Where the disorder results in a persistent impairment, the impact of that impairment should be functionally assessed.

Chapter 15: Drugs, alcohol and driving

15.1 About drugs, alcohol and driving

It is increasingly clear that psychotropic (capable of affecting the mind, emotions or behaviour) drugs contribute to impairment in driving performance. It has been estimated that at least 10% of all people killed or injured in crashes were taking psychotropic medication, which might have been a contributory factor to the crash.

A 2011 study, *Drug use by fatally injured drivers in Canada (2000-2008*) by the Canadian Centre on Substance Abuse in Ottawa approximately 35% of people killed in accidents in Canada had drugs (includes legal and illicit drugs) in their system.

This chapter focuses on drugs that are commonly prescribed or used to treat medical conditions, and that are known to have psychotropic effects or potential side effects that could impair functional ability to drive. While alcohol is not used to treat medical conditions, information related to alcohol and driving is included.

Opioids (narcotics)

Opioids are derived from natural opium or a synthetically produced equivalent and are used primarily for moderate to severe pain relief. Opioid drugs include the following:

- codeine
- fentanyl [Duragesic®]
- morphine [MS-Contin®, M-Eslon®]
- meperidine [Demerol®]
- methadone
- pentazocine [Talwin®]
- hydromorphone [Dilaudid®, Hydromorph Contin®]
- oxycodone [Percodan®, Percocet®, Endocet®, Supeudol®, Oxy Neo®], and
- hydrocodone [Hycodan®]

Alcohol

Alcohol is a depressant drug that has both sedative and disinhibitory effects. It also impairs a driver's judgement, reflex control and behaviour towards others. According to the *CMA Physicians Guide (8th Edition)* and *The Chief Public Health Officer's Report on the State of Public Health in Canada 2015 – Alcohol Consumption in Canada*, people who are regular users of alcohol, withdrawal from alcohol may trigger seizures and cause other health problems such as liver disease, cancer, heart disease, and diabetes or neurological complications.

Antidepressants

Antidepressants are used in the treatment of major depression and a variety of other conditions such as chronic pain, anxiety, eating disorders, personality disorders and Obsessive Compulsive Disorder. Classes of antidepressants and examples of drugs from each class are listed in the table below.

Class	**Generic Name**	**Brand Name**
Tricyclic antidepressants (TCAs)	amitriptyline	Elavil®
	imipramine	Tofranil®
	nortriptyline	Aventyl®
	desipramine	Norpramin®
	clomipramine	Anafranil®
	doxepin	Sinequan®
Serotonin antagonist-reuptake inhibitor (SARIs)	trazadone	Desyrel®

Class	**Generic Name**	**Brand Name**
Selective serotonin-reuptake inhibitors (SSRIs)	fluoxetine	Prozac®
	fluvoxamine	Luvox®
	sertraline	Zoloft®
	citalopram	Celexa®
	paroxetine	Paxil®
Dual action agents (DAAs)	venlafaxine	Effexor®
Atypical Antidepressants	bupropion	Zyban®, Wellbutrin SR®
Monoamine oxidase inhibitors	phenelzine	Nardil®
	moclobemide	Various generics
	tranylcypromine	Parnate®

Antiepileptics

The following are 8 major categories of drugs used in the treatment of epilepsy and other conditions such as mood disorders or pain, in approximate order of the date they were introduced:

- barbiturates and derivatives (phenobarbital)
- succinimide derivatives (methsuximide [Celontin®])
- hydantoin derivatives (phenytoin [Dilantin®])
- iminostilbene derivatives (carbamazepine [Tegretol®])

- benzodiazepines (clonazepam [Clonapam®])
- carboxylic acid derivatives (divalproex sodium [Epival®], valproic acid [Depakene®])
- various anticonvulsants (lamotrigine [Lamictal®], topiramate [Topamax®])
- GABA derivatives (gabapentin [Neurontin®]).

Antihistamines

Antihistamines inhibit the activity of histamine, a protein involved in many allergic reactions. They are commonly prescribed to alleviate the symptoms of allergic reactions.

Examples of older antihistamines include:

- chlorpheniramine [Chlor-Tripolon®]
- diphenhydramine [Benadryl®].

Examples of newer antihistamines include:

- loratadine [Claritin®]
- cetirizine [Reactine®]
- desloratadine [Aerius®], and
- fexofenadine [Allegra®].

Antipsychotics

Antipsychotics are used primarily in the management of serious mental disorders such as Schizophrenia, Bipolar Disorder and organic psychoses (psychiatric symptoms arising from damage to or disease in the brain). The two major groups of antipsychotics are the "typical" or conventional antipsychotics, introduced in the early 1950s, and the "atypical" antipsychotics, introduced in the early 1990s and later.

Examples of typical antipsychotics include:

- haloperidol [Haldol®], and
- chlorpromazine [Largactil®]
- loxapine [Loxapac®]
- trifluoperazine [Stelazine®].

Examples of atypical antipsychotics include:

- clozapine [Clozaril®]
- risperidone [Risperdal®
- olanzapine [Zyprexa®]
- aripiprazole [Abilify®]

- paliperidone [Invega®]
- quetiapine [Seroquel®], and
- ziprasidone [Zeldox®].

Cannabis

Although the use of cannabis was legalised in Canada in 2018, it could be prescribed by physicians since a 2002 court decision mandating legal access for medical purposes. Tetrahydrocannabinol (THC) is the principle psychoactive constituent in cannabis and is responsible for most of the effects on driving. Its effects include delays in decision-making and information processing, but the extent of these effects can vary widely according to the concentration of THC. Over the past fifty years the concentration of THC has been increased through cultivation from 1% to more than 30%. Cannabis provided by Health Canada had a guaranteed concentration of THC of 12%. Obviously, the concentration of THC will have a major role in the extent of its effects upon the individual.

Non-steroidal anti-inflammatories

Non-steroidal anti-inflammatory drugs (NSAIDs) are used for pain relief, the reduction of fever, and to reduce inflammation. Examples of NSAIDs include:

- acetylsalicylic acid [Aspirin®, Entrophen®]
- diclofenac [Voltaren®]
- ibuprofen [Motrin®]
- naproxen [Anaprox®, Aleve®, Naprosyn®]
- celecoxib [Celebrex®], and
- indomethacin [Indocid®].

NSAIDs often are used in the treatment of mild to moderate pain, inflammation and fever in both acute and chronic conditions, such as:

- rheumatoid arthritis and osteoarthritis
- gout
- metastatic bone pain
- headaches and migraines, and
- mild to moderate pain due to inflammation and tissue injury (e.g., pain associated with tooth extraction, root canal, sports injuries, etc.)
- menstrual pain.

Sedatives and hypnotics

Sedative and hypnotic drugs are central nervous system depressants. They are used to treat anxiety, insomnia, alcohol withdrawal, as muscle relaxants, and as anticonvulsants.

The major categories are barbiturates, benzodiazepines and a new class of non-benzodiazepine sedatives called Z drugs.

Benzodiazepines can be divided into short acting, (those with a short half-life of 2 to 4 hours), which generally are used to treat insomnia, intermediate acting (those with half-life of 12-24 hours) and long-acting (those with a long half-life of >24 hours), which are used to treat anxiety.

Categories of sedatives and hypnotics and examples of drugs in each category are provided in the table below.

Category	**Generic Name**	**Brand Name**
Barbiturates	phenobarbital	Various generics
Benzodiazepines with a short half-life	triazolam	Halcion®
	alprazolam	Xanax®
	oxazepam	Serax®
Benzodiazepines with a medium half-life	lorazepam	Ativan®
	temazepam	Restoril®
	chloridazepoxide	Librium®
Benzodiazepines with a long half-life	clonazepam	Rivotril®
	diazepam	Valium®
	clorazepate	Tranxene®
	flurazepam	Dalmane®
Z drugs (non-benzodiazepines)	zopiclone	Imovane®
	zolpidem	Sublinox®

Stimulants (for ADHD, Narcolepsy)

Examples of stimulants used in the treatment of Attention-Deficit/Hyperactivity

Disorder (ADHD) and Narcolepsy include:

- methylphenidate [Ritalin®, Concerta®, Biphentin®)]
- modafinil [Alertec®]
- dextroamphetamine [Dexedrine®], and
- mixed amphetamine salts [Adderall®].

15.2 Prevalence

Opioids

No data are available on the use of opioids as a treatment for medical conditions in Canada.

Alcohol

In Canada, alcohol is the most widely consumed psychoactive drug except for caffeine. In 2013, an estimated 22 million Canadians, almost 80% of the population, reported that they drank alcohol in the previous year.

According to the *Traffic Injury Research Foundation, Road Safety Monitor 2014 Drinking and Driving in Canada* almost 18% of Canadians reporting drinking heavily on one occasion at least once a month in the previous year. Heavy drinking is defined as drinking 5 drinks or more for men and 4 drinks or more for women.

In 2015, 17.4% of Canadians admitted to driving after consuming any amount of alcohol in the past 30 days, and 6.6% indicated they had driven when they thought they were over the legal limit in the past 12 months.

Antidepressants

The most commonly used classes of antidepressants are SSRIs, dual action agents and tricyclics. Research from 2002 showed that SSRIs had a 46.3% market share, dual action agents had 23.9% and tricyclics had 23.7%. The least commonly used class was monoamine oxidase inhibitors, with a 2.1% market share.

Between 1981 and 2000, total prescriptions for antidepressants increased almost five fold, from 3.2 to 14.5 million. The 2002 Canadian Community Health Survey indicated that 5.8% of Canadians were taking antidepressants. Of those who had a major depressive episode in the past year, 40.4% were taking antidepressants.

Antiepileptics

No data on the prevalence of antiepileptic drug use in Canada is available. Epilepsy itself has a prevalence rate of 0.6% in the Canadian population. The incidence of epilepsy is 15,500 new cases per year, with 60% of these being young children or seniors. Because of the variability of the presentation of epilepsy among those diagnosed, and the use of antiepileptic drugs for conditions other than epilepsy, it is difficult to extrapolate the prevalence of anticonvulsant drug use based on the prevalence and incidence of epilepsy.

Antihistamines

The general use of antihistamines is difficult to ascertain. However, it has been estimated that allergic conditions that may be treated with antihistamines affect 10% to 25% of the population.

Antipsychotics

Prevalence statistics on the use of antipsychotics in Canada using population based surveys are complicated by low prevalence and questionable validity.

Non-steroidal anti-inflammatories

NSAIDs are among the most commonly used pharmacological agents, with 10 million prescriptions dispensed annually in Canada. The use of NSAIDs is predicted to increase with the aging population due to the association between age and musculoskeletal disorders such as osteoarthritis and rheumatoid arthritis.

Cannabis

In 2018 the use of cannabis was legalised. There are no statistics available on its use following legalization.

Sedatives and hypnotics

Data from the 2002 Canadian Community Health Survey indicated that the percentage of those who had used a sedative or hypnotic increased with age, moving from 3.1% of the general population 15 years and older, to 11.1% of those 75 and older. Overall, 7.2% of those with anxiety disorders had taken a sedative-hypnotic over the two days preceding the survey.

Benzodiazepine use made up most of the sedative-hypnotic use in all analyzed demographic and diagnostic groups. Information from this survey and other studies indicate that benzodiazepines are one of the most frequently used classes of drugs by seniors and women.

Stimulants

No data is available on the prevalence or incidence of the use of stimulants as a treatment for ADHD in Canada. An indication of the use of stimulants for ADHD may be gleaned from the prevalence of the condition itself. Research indicates that ADHD affects between 3% and 10% of children and between 4% and 6% of adults. Of adolescents and adults with ADHD, 76% achieve a therapeutic response with stimulant medication.

15.3 Psychotropic drugs, alcohol and adverse driving outcomes

Opioids

Research indicates that the use of opioids can adversely affect driving performance, with the degree of impairment dependent on the particular opioid used, dosage, previous use and developed tolerance, time of day taken.

Alcohol

Alcohol's effects are dose dependent and differ among individuals. Impaired driving is the leading cause of criminal death in Canada. According to Transport Canada total road fatalities in Canada in 2012 were 2,076 and 563 Canadians died in fatal accidents involving alcohol, which is approximately one quarter of all fatalities in motor vehicle accidents in Canada.

Antidepressants

Currently, there is little evidence to associate SSRIs or dual action agents with impaired driving performance. Although limited, research indicates that the use of tricyclic antidepressants is associated with impairments in driving performance. This is evidenced by elevated crash rates, as well as measures of on-road performance and laboratory tests of psychomotor and cognitive functioning.

Antiepileptics

In general, individuals with epilepsy have an increased risk for adverse driving outcomes, which may be caused by either the episodic impairment (seizures) or persistent impairments caused by the condition or treatment. Many classes of drugs may be used to treat epilepsy as well as combinations of drugs. Driving outcomes would depend on which medications are used in the treatment.

Antihistamines

Research indicates that the use of older antihistamines may impair driving performance. However, newer antihistamines used in therapeutic doses do not appear to increase the risk of adverse driving outcomes.

Antipsychotics

Studies examining the driving performance of individuals treated with antipsychotics (primarily those with Schizophrenia) indicate that those treated with atypical antipsychotics perform better than those treated with typical antipsychotics. However, less than 33% of those on atypical antipsychotics and 5% to 11% of those on typical antipsychotics were found to have adequate driving performance. It should be noted

that these results are based on functional tests conducted in a laboratory setting, and the relationship of these results to actual driving performance has not been established. Further, it is difficult to determine the relative impact of the underlying condition and antipsychotic treatment on driving performance.

Cannabis

A meta-analysis completed by Regeberg (2016) found that cannabis elevated the relative risk of crashing to 1.3, a rather modest amount and about the same as the case of antidepressants according to the study*. A Canadian systematic review led by Asbridge (2012) found that cannabis use elevated the relative risk of a crash to 1.92*. (). Both of these studies noted major differences in crash risk between the better-quality studies and the moderate-quality studies with the former having consistently higher risk. It should also be noted that these studies do not differentiate between medical and recreational use of cannabis.

Although legalisation of cannabis is predicted to result in increased crashes, five years after legalisation in Washington and Colorado the increase in crashes was less than in the neighbouring states where cannabis remained illegal according to a 2017 study by IIHS.

No matter whether the cannabis is used for medical or recreational reasons, **driving under the influence of cannabis is an offence under the Criminal Code of Canada**. No one should drive during the five-hour period following the inhalation of cannabis (smoking or vaping) or for eight hours following oral ingestion (cookies or brownies).

Non-steroidal anti-inflammatories

There is only a small body of literature related to the effects of NSAIDs on driving performance. These limited studies however indicate that the use of NSAIDs is associated with an increased risk of crash in both young and old drivers.

Sedatives and hypnotics

Research indicates that the use of sedatives and hypnotics is associated with a significant risk for adverse driving outcomes.

Stimulants (for ADHD)

There is some indication that pharmacological treatment of ADHD with stimulants may have a positive effect on driving performance. However, research in this area has primarily relied on driving simulators to measure outcomes. A few studies have investigated the relationship between pharmacological treatment of ADHD and on-road performance, but methodological limitations, including small sample size (< 20 in all cases), limit the findings.

15.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Use of psychotropic drugs	Persistent impairment: Functional assessment	Cognitive	Medical assessments Functional Assessment

Authorities should be primarily concerned with the persistent cognitive impairment associated with the effects or side effects of medication used for ongoing treatment of medical conditions. Potential temporary impairments from short term treatment or changes in dosage or type of medication are considered transient impairments for licensing purposes. Where an individual is taking multiple drugs (polypharmacy), authorities must also consider the potential compounding effects. Where relevant, authorities should also consider the potential compounding effect of the use of alcohol or illicit drugs.

Opioids

The use of opioids results in depression of the central nervous system. Possible effects on the functions necessary for driving include:

- blurred vision
- poor night vision
- slowed reaction times
- sedation
- tremors
- muscle rigidity
- impairment of short term/working memory and attention, and
- disorientation or hallucinations.

The effects of opioids on an individual depend on a number of factors, including the length of use, dosage and propensity for abuse or addiction. Tolerance is an important consideration in that adverse effects may be evident during acute use but diminish as tolerance develops.

Alcohol

Alcohol is a depressant drug which slows down the brain and body. Effects on function necessary for driving may include but are not limited to:

- reduced reaction times
- blurred or double vision

- altered depth perception
- reduced judgement and insight
- blunted alertness
- reduced motor co-ordination.

Antidepressants

The effects of antidepressants on cognitive ability vary by therapeutic class. Depression itself may result in cognitive impairment. While the use of antidepressants may improve cognitive function, the side effects may include cognitive impairment, including:

- impairment of thought processing
- attention deficits
- indecisiveness, and
- impairment of psychomotor function.

Therefore, distinguishing between the effects of the disorder and the side effects of antidepressants may be a challenge.

Tricyclic antidepressants

The major side effects of TCAs that may affect driving are anticholinergic effects, such as confusion or blurred vision, and sedating effects. The following table outlines the severity of the sedating effect of common TCAs.

Sedating Effect	**TCAs**
Low	Desipramine, nortriptyline [Aventyl®],
Moderate	imipramine [Tofranil®]
High	amitriptyline [Elavil®], doxepin [Sinequan®]

Selective serotonin-reuptake inhibitors

SSRIs generally have fewer side effects than TCAs. Nonetheless, some studies have shown impairments in both cognitive and psychomotor functioning in individuals using SSRIs.

Dual action antidepressants

Research indicates new DAAs, atypical antidepressants (the most recently introduced class of antidepressants), have fewer side effects than TCAs or SSRIs, but cognitive impairment associated with depression and/or treatment may still be present.

Antiepileptics

Anticonvulsants may impair motor and sensory functions, producing:

- ataxia (lack of coordination; unsteadiness)
- nystagmus (uncontrollable rapid eye movement)
- poor concentration
- slowed thinking
- blurring and double vision, and/or
- tremor.

Disruption of normal cognitive function is a frequent and pervasive side effect of anticonvulsant drugs. A variety of cognitive abilities may be affected, including memory, reaction time, executive functioning and problem solving.

The known side effects of first generation anticonvulsant drugs (phenobarbital, phenytoin, benzodiazepines and valproate) include sedation and cognitive dysfunction. Adverse cognitive effects, including impairments in memory and attention, are also evident with the use of more recently introduced anticonvulsant drugs (e.g., topiramate), though these generally have fewer side effects.

Antihistamines

Histamine is involved in many brain functions, including the waking-sleep cycle, attention, memory, learning and excitation. The effects of antihistamines differ depending on their generation. Older antihistamines, such as tripolidine [Actifed®], diphenhydramine [Benadryl®], and clemastine are associated with profound sedation, impaired psychomotor function and blurred vision.

Newer antihistamines, such as:

- loratadine [Claritin®]
- cetirizine [Reactine®]
- fexofenadine [Allegra®], and
- desloratadine [Aerius®]

are largely free from the sedating effects of the older antihistamines. However, at high doses, significant side effects have been reported, though still less pronounced than those associated with older antihistamines.

Beta-blockers

Beta-blockers include:

- propanolol [Inderal®], and
- atenolol [Tenormin®]

Common side effects of beta-blockers include tiredness, sleep disturbances and dizziness. Less common side effects relevant to driving include impairments in attention, mental flexibility (executive functioning) and memory.

The available evidence indicates that impairments in cognitive functioning can be a side effect of beta-blockers. However, results from the majority of studies indicate that there is little in the way of evidence to indicate that beta-blockers negatively impact cognitive performance in the general population of beta-blocker users.

Cannabis

The euphoric phase induced by THC affects judgement. Additional effects are time distortion, relaxation, exaggeration of sensory experiences and loss of inhibitions. The longer-lasting motor and cognitive effects affect coordination and short-term memory. Physical effects can include flushing and red eyes.

Use of dried cannabis leaves through inhalation or ingestion is known to produce psychoactive effects that may affect driving for up to 24 hours. Driving under the influence of cannabis is illegal according to the Criminal Code of Canada and drivers using cannabis in a medical context (medical marijuana) should be advised not to drive for at least five hours, and preferably for at least 24 hours, after use of the substance.

Many users of “medical marijuana” exceed the average usage rates (1.5 grams or 3 joints a day) by considerable margins. Drivers using “medical marijuana” in quantities exceeding the average usage rates should be counselled to avoid driving completely during periods of over-average consumption.

Antipsychotics

Research suggests that atypical antipsychotic drugs may improve cognitive functioning in individuals with Schizophrenia compared to treatment with typical antipsychotics. Nonetheless, the research indicates that even with atypical antipsychotics, individuals still experience residual cognitive impairments.

Non-steroidal anti-inflammatories

In general, the analgesic and anti-inflammatory effects of NSAIDs result in improvements in functional abilities (e.g., reduction in pain and stiffness in those with osteoarthritis, resulting in increased physical function and improvements in quality of life). However, there is a suggestion that the use of NSAIDs can impair cognitive ability.

Sedatives and hypnotics

The adverse effects of sedatives and hypnotics may include:

- sedation
- drowsiness
- cognitive and psychomotor impairment
- impaired coordination
- vertigo
- dizziness, and
- blurred or double vision.

Impairments are greater with higher dosages and with drugs that have a longer half-life. Those using sedatives and hypnotics are subject to developing dependency, addiction and increasing tolerance of the effects. Because of this, Health Canada advises that these drugs should only be used for short periods (e.g., less than 2 months for anxiety; 7 to 10 days for insomnia). Nonetheless, research indicates that long term use is not uncommon. Long term adverse effects of benzodiazepine may include cognitive decline, unwanted sedation and impaired coordination.

Stimulants (for ADHD) and Narcolepsy

There is some indication that stimulants may have a positive effect on driving performance. However, the effect of stimulant medication on the functional ability of drivers with ADHD is unclear because of the methodological limitations of research to date.

15.5 Compensation

A driver can't compensate for the effects of psychotropic drug use.

15.6 Guidelines for assessment

15.6.1 Medication – Prescribed - All Drivers

This standard applies to prescribed medication including psychotropic drugs and prescribed medical marijuana

STANDARD	**All drivers eligible for a licence if** • **The functional abilities necessary for driving are not impaired and** • **Where required, a functional assessment shows that the side effects of medication does not affect ability to drive** **Drivers on a formal methadone maintenance program must provide an addictions specialist report, in addition to meeting the above requirements.**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the licensing authority
Information from health care providers	• Types of psychotropic drugs used • Details of underlying medical conditions • Opinion of treating physician whether the individual is non-compliant or misuses psychotropic drugs • Functional impairment, if any
Rationale	The use of a psychotropic drug does not mean that a driver is ineligible for a licence. Where there is some evidence of a persistent cognitive impairment associated with the stable use of a drug, an individual assessment of the effect of the drug is required to determine licence eligibility.

15.6.2 Medication – Non Prescribed (Over the Counter) – All drivers

STANDARD	**All drivers eligible for a licence if:** • **The functional abilities necessary for driving are not impaired and,** • **Where required, a functional assessment shows the side effects of medication do not affect ability to drive.**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the licensing authority
Information from health care providers	• Types of drugs used • Details of underlying medical conditions • Opinion of treating physician whether the individual is non-compliant or misuses drugs • Functional impairment, if any
Rationale	The use of a psychotropic drug does not mean that a driver is ineligible for a licence. Where there is some evidence of a persistent cognitive impairment associated with the stable use of a drug, an individual assessment of the effect of the drug is required to determine licence eligibility.

15.6.3 Substance Use Disorder - All drivers

This applies to all drivers who are under the influence of alcohol and illicit drugs such as opioids, cocaine, amphetamines etc.

STANDARD	**All drivers eligible for a licence if** • **Meets the criteria for remission and/or has abstained from the substance for 12 months.** • **Earlier re-licensing may be considered upon favourable recommendation from an addictions specialist and/or treating physician recognized by the licensing authority, and the successful completion of a drug rehabilitation program.** • **The functional abilities necessary for driving are not impaired.** • **Where required, a road test or other functional assessment shows that the functional abilities for driving are not impaired.**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the licensing authority
Information from health care providers	• Types of drugs used • Details of underlying medical conditions • Opinion from a**n addictions specialist and/or treating physician recognized by the licensing authority** • **The successful completion of a substance abuse rehabilitation program and** • Report on whether the individual is abstinent / and or in remission
Rationale	These substances are known to potentially impair the ability to operate a motor vehicle safely

15.6.4 Alcohol, Cannabis and Driving – All drivers

STANDARD	**Impaired individuals are not permitted to drive any class of motor vehicle**
Conditions for maintaining licence	None
Reassessment	• Routine or more frequently at the discretion of the licensing authority
Information from health care providers	n/a
Rationale	Alcohol is known to impair the ability to operate a motor vehicle safely Medical Marijuana (Cannabis) is known to impair the ability to operate a motor vehicle safely. In general, individuals should not drive for approximately 5 hours after consuming medical marijuana and not drive at all if consuming 3 or more joints a day.

Chapter 16: Respiratory diseases

16.1 About respiratory diseases

Overview

A number of respiratory diseases may interfere with the safe operation of a motor vehicle by causing reduced oxygen flow to the brain and subsequent cognitive impairment, including impairments in attention, memory, decision making and judgement. Respiratory diseases that are most likely to affect cognitive functioning are those that are chronic in nature.

This chapter focuses on one of the most prevalent respiratory diseases, chronic obstructive pulmonary disease (COPD). However, other respiratory diseases also have the potential to impair driving due to reduced oxygen flow to the brain; where this is the case, the standards in this chapter also apply to them.

Chronic obstructive pulmonary disease

COPD refers to a group of diseases characterized by obstructed air flow, such as emphysema and chronic bronchitis. Emphysema and chronic bronchitis frequently coexist and the term COPD is often applied to individuals suffering from these two disorders.

The level of general impairment caused by respiratory diseases is commonly described as mild, moderate, or severe, as described in the table below.

Level of Impairment*	**Symptoms**	**Pulmonary Function Testing[26] result**	**Nature of General Impairment**
Normal	None	FVC > 80% of predicted, *and* FEV1 > 80% of predicted, *and* FEV1/FVC x 100 > 75%, *and* DLCOsb > 80% of predicted	None

[26] FVC = Forced vital capacity; FEV1 = Forced expiratory volume in first second; FEV1/FVC x 100 = Using the previously selected values for FVC and FEV1, compute the ratio and express as percentage; DLCOsb = Single breath diffusing capacity

Level of Impairment*	Symptoms	Pulmonary Function Testing[26] result	Nature of General Impairment
Mildly Impaired	Dyspnea when walking quickly on level ground or when walking uphill; ability to keep pace with people of same age and body build walking on level ground, but not on hills or stairs.	FVC > 60 to 70% of predicted, *or* FEV1 > 60 to 79% of predicted, *or* FEV1/FVC x 100 60 to 74%, *or* DLCOsb 60 to 79% of predicted.	Usually not correlated with diminished ability to perform most jobs
Moderately Impaired	Shortness of breath when walking for a few minutes or after 100m walking on level ground	FVC 51 to 59% of predicted, *or* FEV1 41 to 59% of predicted, *or* FEV1/FVC x 100 41 to 59%, *or* DLCOsb 41 to 59% of predicted.	Progressively lower levels of lung function correlated with diminished ability to meet the daily demands of many jobs
Severely Impaired	Too breathless to leave the house, breathless when dressing. The presence of untreated respiratory failure.	FVC 50% or less of predicted, *or* FEV1 40% or less of predicted, *or* FEV1/FVC x 100 > 40% or less, *or* DLCOsb > 40% or less of predicted.	Unable to meet the physical demands of most jobs, including travel to work

*The correlation between pulmonary function testing results and an individual's overall symptoms is imperfect. Where there is a discrepancy between the clinical functional level and the pulmonary function test results, an individual's symptoms should be the primary focus when making licensing decisions.

16.2 Prevalence

Estimates from the World Health Organization indicate that 80 million people have moderate to severe COPD. Chronic bronchitis affects individuals of all ages. Emphysema is more common among elderly individuals. In Canada men have a higher rate of COPD (6.3%) than women (5.2%). COPD increases in prevalence with age for both men and women with the highest prevalence for men over the age of 75 (9.1%).

16.3 Respiratory diseases and adverse driving outcomes

There have been no studies that examine the relationship between respiratory diseases and adverse driving outcomes.

16.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach[27]	Primary functional ability affected	Assessment tools
COPD or other respiratory disease	Persistent impairment: Functional assessment	Cognitive May also result in general debility	Medical assessments Functional Assessment

Research indicates that drivers with COPD are at risk of cognitive impairment due to chronic hypoxemia. For those with cognitive impairment, the impairment tends to be greater for more complex and demanding cognitive tasks. This cognitive impairment may affect a driver's functional ability to drive.

Drivers with COPD also may develop general debility resulting in a loss of stamina required to support the functions necessary for driving.

Older drivers with COPD are more at-risk for functional impairment because they may experience:

- age-related declines in blood flow to the brain
- disease-related declines in arterial oxygen content, and
- both age and disease-related declines in physical activity which can exacerbate deconditioning.

16.5 Compensation

Drivers with COPD may be able to compensate for their functional impairment by using supplemental oxygen.

[27] See Part 1 for a discussion of the use of functional assessments for driver licensing decisions.

16.6 Guideline for assessment

16.6.1 Mild impairment

STANDARD	**All drivers eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	• Pulmonary function testing result or statement that the level of impairment resulting from the respiratory disease is mild
Rationale	Mild impairment due to respiratory disease is unlikely to cause significant impairment of the functions needed for driving.

16.6.2 Moderate impairment – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Routine, or more frequently at the discretion of the licensing authority
Information from health care providers	• Pulmonary function testing result or statement that the level of impairment resulting from the respiratory disease is moderate
Rationale	Moderate impairment due to respiratory disease is unlikely to cause significant impairment of the functions needed for non-commercial driving. Reassessment is required to monitor for an increase in impairment that may affect ability to drive.

16.6.3 Severe impairment – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **a functional assessment indicates sufficient functional ability**
Conditions for maintaining licence	None
Reassessment	• Routine, or more frequently at the discretion of the licensing authority
Information from health care providers	• Results of functional assessment • Pulmonary function testing result or statement that the level of impairment resulting from the respiratory disease is severe • Whether the driver has insight into the impact their condition may have on driving
Rationale	Severe impairment due to respiratory disease may cause significant impairment of the functions needed for driving, including cognitive impairment. Licensing decisions should be based on an individual functional assessment.

16.6.4 Requiring supplemental oxygen – Non-commercial drivers

This guideline applies to non-commercial drivers who require supplemental oxygen while at rest.

STANDARD	**Non-commercial drivers eligible for a licence if** • **a road test while using supplemental oxygen indicates sufficient functional ability, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Only drive while using supplemental oxygen
Reassessment	• Routine or more frequently at the discretion of the licensing authority
Information from health care providers	• Results of functional assessment • Pulmonary function testing result or statement that the level of impairment resulting from the respiratory disease requires supplemental oxygen

	• Whether the driver has insight into the impact their condition may have on driving • History of compliance with prescribed treatment regime • If known or applicable, whether the driver is compliant with any current conditions of licence
Rationale	Drivers who require supplemental oxygen due to respiratory disease may have significant impairment of the functions needed for non-commercial driving, including cognitive impairment. Licensing decisions should be based on an individual functional assessment, including ability to drive while using supplemental oxygen.

16.6.5 Moderate impairment or requiring intermittent supplemental oxygen – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **a functional assessment indicates sufficient functional ability**
Conditions for maintaining licence	None
Reassessment	• Routine, or more frequently at the discretion of the licensing authority
Information from health care providers	• Functional impairment, if any • Pulmonary function testing result or statement that the level of impairment is moderate • Whether the driver has insight into the impact their condition may have on driving • History of compliance with prescribed treatment regime
Rationale	Moderate impairment due to respiratory disease may cause significant impairment of the functions needed for driving. Licensing decisions should be based on an individual functional assessment.

16.6.6 Severe impairment or requiring continuous supplemental oxygen – Commercial drivers

STANDARD	**Commercial drivers not eligible for a licence**
Conditions for maintaining licence	N/A
Reassessment	N/A
Information from health care providers	N/A
Rationale	Severe impairment or a requirement for continuous supplemental oxygen due to respiratory disease generally indicates significant impairment of the functions needed for commercial driving.

Chapter 17: Seizures and epilepsy

17.1 About seizures and epilepsy

Seizures

A seizure is caused by a sudden electrical discharge in the brain. A seizure does not always mean that a person falls to the ground in convulsions. It can be manifested in various ways, including:

- feelings of being absent
- visual distortions
- nausea
- vertigo
- tingling
- twitching
- shaking
- rigidity of parts of the body or the entire body, or
- an alteration or loss of consciousness.

Seizures may occur in people who do not have epilepsy. These non-epileptic seizures are often referred to as provoked seizures. Some are caused by transient factors with no structural brain abnormality such as:

- fever
- low blood sugar
- electrolyte imbalance
- head trauma
- meningitis
- simple fainting, and
- alcohol or drug toxicity or withdrawal.

Others are caused by conditions where there is a structural brain abnormality such as a:

- tumour
- stroke
- aneurysm, or
- hematoma.

Provoked seizures are not epilepsy, and they resolve after the provoking factor has resolved or stabilized.

Sometimes people appear to have seizures, even though their brains show no seizure activity. This phenomenon is called a non-epileptic psychogenic seizure (NEPS), sometimes referred to as a pseudoseizure, and is psychological in origin. Some people

with epilepsy have NEPS in addition to their epileptic seizures. Other people who have NEPS do not have epilepsy at all.

Epilepsy

Epilepsy refers to a condition characterized by recurrent (at least two) seizures, which do not have a transient provoking cause. The cause of the epileptic seizures may be known or unknown (idiopathic). About two-thirds of epilepsy in young adults is idiopathic, but more than half of epilepsy in those 65 and older has a known cause. Known causes of epilepsy include permanent structural brain abnormality such as scarring from:

- stroke
- prior surgery
- head injury
- infections
- tumours
- aneurysms, or
- arteriovenous malformations.

Types of seizures

Seizures are divided into two main categories: partial (also called focal or local) seizures and generalized seizures. A partial seizure is a seizure that arises from an electrical discharge in one part of the brain. A generalized seizure is caused by discharges throughout the brain.

Partial seizures

There are three types of partial seizures:

- simple partial seizures
- complex partial seizures, and
- partial seizures (simple or complex) that evolve into secondary generalized seizures (see below).

The difference between simple and complex seizures is that individuals experiencing simple partial seizures retain awareness during the seizure, whereas those experiencing complex partial seizures lose awareness during the seizure.

Symptoms of partial seizures depend on which part of the brain is affected. They may include one or more of the following:

- head turning
- eye movements
- mouth movements

- lip smacking
- drooling
- apparently purposeful movements
- rhythmic muscle contractions in a part of the body
- abnormal numbness
- tingling and a crawling sensation over the skin
- sensory disturbances such as smelling or hearing things that are not there, or
- having a sudden flood of emotions.

Individuals who have partial seizures, especially complex partial seizures, may experience an aura, i.e., unusual sensations that warn of an impending seizure. An aura is actually a simple partial seizure. The aura symptoms an individual experiences and the progression of those symptoms tend to be similar every time.

Generalized seizures

Types of generalized seizures and their symptoms are listed in the table below.

Type of Generalized Seizure	**Symptoms**
Absence	Brief loss of consciousness
Myoclonic	Sporadic (isolated), jerking movements
Clonic	Repetitive, jerking movements
Tonic	Muscle stiffness, rigidity
Tonic-clonic or 'grand mal'	Unconsciousness, convulsions, muscle rigidity
Atonic	Loss of muscle tone

Most common seizures

The three most common types of seizures in adults are:

- generalized tonic-clonic or grand mal seizures
- complex partial seizures, and
- simple partial seizures.

Approximately one-third of all individuals with epilepsy have complex partial seizures, with the prevalence increasing to one-half in those with epilepsy who are 65 and older.

Recurrence of seizures

The estimated risk of a recurrence after an initial unprovoked seizure ranges from 23% to 71%, with the average risk of recurrence for adults being 43%. If the seizure is idiopathic (i.e., the cause is unknown) and the individual's electroencephalogram (EEG)

is normal, the risk of recurrence is reduced. Individuals who experience a partial seizure and have an abnormal EEG or other neurological abnormality, have an increased risk for seizure recurrence. A family history of epilepsy also increases the risk of recurrence.

Treatment for seizures and epilepsy

Seizure patterns in individuals with epilepsy may change over time, and seizures may eventually stop. Epilepsy is generally treated with anticonvulsant drugs (antiepileptics) and is sometimes treated with surgery to remove the source of epilepsy from the brain. Recent studies indicate that more than half of newly diagnosed individuals with epilepsy can achieve seizure control with antiepileptic drugs. Many of those who achieve seizure control are eventually able to stop taking antiepileptic drugs and remain seizure-free. However, the relapse rate with drug withdrawal is at least 30% to 40%. For a further discussion of the impact of antiepileptics on driving, see Chapter 15, Psychotropic Drugs.

17.2 Prevalence

Research indicates that up to 9% of the general population will have at least one seizure. Epilepsy has an overall prevalence rate of 0.6% in Canada, with an estimated incidence of 15,500 new cases per year (2003). The table below shows the prevalence of epilepsy in Canada by age.[28]

Age (years)	Prevalence (%)	Age (years)	Prevalence (%)
0 – 11	0.3	25 – 44	0.7
12 – 14	0.6	46 – 64	0.7
16 – 24	0.6	> 65	0.7

17.3 Seizures, epilepsy and adverse driving outcomes

Research indicates that, in general, individuals with epilepsy have an increased risk for adverse driving outcomes. Variability in the methodology and study results makes it difficult to determine the extent of the increased risk.

Studies of crash rates indicate that the following factors increase the risk of crash for those with epilepsy:

- age – younger drivers have increased risk, particularly those under 25
- treatment – those not receiving antiepileptic drug treatment are at greater risk than those receiving treatment.

[28] Source: Data from Ontario Health Survey, Community Health Survey and National Population Health Survey (Wiebe S, Bellhouse D, Fallary C, Eliasziv M. Burden of epilepsy: the Ontario health survey. Can J Neurol Sci 1999;26:263-70).

17.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Seizures Epilepsy	Episodic impairment: Medical assessment – likelihood of impairment	Variable – sudden impairment	Medical assessments

The primary consideration for drivers with epilepsy is the potential for a seizure causing a sudden impairment of cognitive, motor or sensory functions, or a loss of consciousness while driving.

17.5 Compensation

As seizures and epilepsy cause an episodic impairment of the functions necessary for driving, a driver cannot compensate.

17.6 Guideline for assessment

Rationale for all epilepsy and seizure standards

The general approach of the guideline for drivers with epilepsy or who experience seizures is that seizures must be controlled as a prerequisite to driving.

Most of the guidelines include a requirement for a seizure-free period. The purpose of this requirement for a provoked seizure is to establish the likelihood that the provoking factor has been successfully treated or stabilized. For an unprovoked seizure, the purpose is to allow time to assess the cause, and where epilepsy is diagnosed, to establish the likelihood that

- a therapeutic drug level has been achieved and maintained
- the drug being used will prevent further seizures, and
- there are no side effects that may affect the driver's ability to drive safely.

The guidelines identify exceptions to the requirement to remain seizure free for non-commercial drivers who have epilepsy and who have only simple partial seizures, or seizures that only occur while they are asleep or immediately upon awakening.

17.6.1 Provoked seizure caused by a structural brain abnormality

If more than one seizure occurs, then the epilepsy standard is applied

This standard applies to drivers who have experienced one provoked seizures caused by a structural brain abnormality such as:

- a brain tumour
- stroke
- subdural hematoma, or
- aneurysm.

STANDARD	**All drivers eligible for a licence if** • **they have undergone a neurological assessment to determine the cause of the seizure, and epilepsy is not diagnosed** • **it has been 6 months since the provoking factor stabilized, resolved, or was corrected, with or without treatment, and they have not had a seizure during that time** • **the treating neurologist or neurosurgeon indicates that further seizures are unlikely**
Conditions for maintaining licence	None
Suggested Reassessment	• If a seizure occurred within the past 12 months, reassess in 1 year • If a seizure occurred more than 1 year ago, or if no further seizures are reported after the initial reassessment, reassess in 5 years • If no further seizures are reported during those 5 years, at the discretion of the Authority.
Information from health care providers	• Date of the last seizure • Description of the type of seizure • Whether a neurological assessment has been conducted and the results of the assessment • Date that the provoking factor stabilized, resolved or was corrected • Details of the driver's treatment regime • Opinion of treating physician on whether the driver is compliant with their treatment regime • Opinion of treating physician on whether further seizures are likely. Depending on the nature of the provoking factor, the opinion of a neurologist may be required to determine the risk of further seizures.

17.6.2 Provoked seizures with no structural brain abnormality

This standard applies to drivers who have experienced provoked seizures caused by a:

- toxic illness
- adverse drug or alcohol reaction, and substance use disorder* is not diagnosed
- trauma, or
- other cause that is not associated with a structural brain abnormality. (for example psychogenic non epileptic (PNES))

* Note if substance use disorder is diagnosed, then 17.6.3 would apply

STANDARD	**All drivers eligible for a licence if** • **they have undergone a neurological assessment to determine the cause of the seizure, and epilepsy is not diagnosed** • **the provoking factor has stabilized, resolved, or been corrected, with or without treatment, and** • **the treating physician indicates that further seizures are unlikely**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	• Description of the type of seizure • Whether a neurological assessment has been conducted and the results of the assessment • Opinion of treating physician on whether the provoking factor has stabilized, resolved or been corrected • Opinion of treating physician on whether further seizures are likely. Depending on the nature of the provoking factor, the opinion of a neurologist may be required to determine the risk of further seizures.

17.6.3 Alcohol Withdrawal Seizures

STANDARD	**All drivers eligible for a licence if** • **the treating physician has confirmed that the cause of the seizure was alcohol withdrawal (i.e., the driver is not epileptic)** • **they have undergone addiction treatment and have received a favourable report from an addiction counsellor,** • **the criteria for licence reinstatement are met in accordance with the Substance Use Disorder Standard (see 15.6.3)**
Conditions for maintaining licence	• Follow up regularly with treating physician and comply with any prescribed treatment regime • Cease driving and report to the authority and treating physician if driver has a seizure
Reassessment	• Reassess in one year • If no further seizures are reported after the initial reassessment, reassess in five years • If no further seizures are reported during those five years, then routine
Information from health care providers	• Description of the cause of the seizure • Date of the last seizure • Details of treatment regime • Date of abstinence • Whether the driver has undergone addiction treatment • Report from an addiction counsellor and / or treating physician whether the driver is compliant

17.6.4 Single unprovoked seizure – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **Complete neurological assessment has been conducted to determine the cause of the seizure, and epilepsy is not diagnosed, and** • **CNS imaging and EEG results do not suggest an increased likelihood of seizure reoccurrence.**
Conditions for maintaining licence	None
Reassessment	• If the seizure occurred within the past 12 months, reassess in one year • If the seizure occurred more than one year ago, or if no further seizures are reported after the initial reassessment, reassess in five years • If no further seizures are reported during those five years, then routine
Information from health care providers	• Date of the seizure • Description of the type of seizure • Whether a neurological assessment has been conducted and the results of the assessment

17.6.5 Single unprovoked seizure – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** • **it has been at least 12 months since the seizure occurred, and** • **Complete neurological assessment has been conducted to determine the cause of the seizure, and epilepsy is not diagnosed, and** • **CNS imaging and EEG results are satisfactory**
Conditions for maintaining licence	None
Reassessment	• Reassess in one year • If no further seizures are reported after the initial reassessment, then routine
Information from health care providers	• Date of the seizure • Description of the type of seizure • Whether a neurological assessment has been conducted and the results of the assessment

17.6.6 Epilepsy – Non-commercial drivers

This standard applies to non-commercial drivers who have been diagnosed with epilepsy, with the following exceptions:

- If the epileptic seizures only occur while the driver is asleep, or immediately after awakening, standard 17.6.7 applies.
- If the driver only experiences simple partial seizures, standard 17.6.8 applies.
- If the driver has had surgery for epilepsy, standard 17.6.9 applies.
- If the driver has changed effective medication, standard 17.6.10 applies.

STANDARD	**Non-commercial drivers eligible for a licence if** • **It has been 6 months since the seizure occurred with or without medication** • **Waiting period may be reduced to no less than 3 months on neurologist's recommendation if rationale is provided**
Conditions for maintaining licence	• Routinely follows treatment regime and physician's advice regarding prevention of seizures • Driver must cease driving and report to the authority and physician if has a seizure
Reassessment	• Reassess in one year if a seizure occurred within the past 12 months • Otherwise, routine
Information from health care providers	• Date of the last seizure • Details of the driver's treatment regime, including length of time the driver has been on antiepileptic medication • Opinion of treating physician on whether the driver is compliant with their treatment regime

17.6.7 Epilepsy with seizures only while asleep or upon awakening – Non-commercial drivers

STANDARD	**Non-commercial driver eligible for a licence if** • **it has been 6 months since the last seizure OR,** • **the driver is experiencing seizures but seizure pattern has been consistent for at least 1 year- and therefore no seizure free waiting period required** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follow treatment regime and physician's advice regarding prevention of seizures, if the driver is treated • Routinely follow physician's advice regarding continued monitoring of your seizures • Report to the authority and physician if the pattern of seizures changes
Reassessment	• Routine
Information from health care providers	• Description of the seizure pattern • Whether the seizure pattern has been consistent for at least 5 years • Details of the driver's treatment regime • Opinion of treating physician on whether the driver is compliant with their treatment regime

17.6.8 Epilepsy with simple partial seizures – Non-commercial drivers

This standard applies to non-commercial drivers with epilepsy who only experience simple partial seizures (no impairment in level of consciousness), the symptoms of which do not impair their functional ability to drive.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 6 months since the last seizure OR,** • **the driver is experiencing seizures but the seizure pattern has been consistent for at least 1 year- and therefore no seizure free waiting period required** • **favourable assessment from the treating physician or neurologist** • **no impairment in level of consciousness or cognition** • **no head or eye deviation with seizures** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follow treatment regime and physician's advice regarding prevention of seizures, if the driver is treated • Must report to the authority and physician if the symptoms of seizures change
Reassessment	• Routine
Information from health care providers	• Description of the symptoms of the seizures • Whether the symptoms of the seizures have been consistent for at least 1 year • Details of the driver's treatment regime • Opinion of treating physician on whether the driver is compliant with their treatment regime

17.6.9 Surgery for epilepsy – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if:** • **they have not had a seizure for 12 months after surgery** • **taking anti-epileptic medication as directed by physician** • **waiting period may be reduced to 6 months upon neurologist recommendation** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follow treatment regime and physician's advice regarding prevention of seizures. • Cease driving and report to authority and physician if a seizure occurs.
Reassessment	• At discretion of licencing authority.
Information from health care providers	• Date of last seizure • Details of driver's treatment regime • Opinion of treating physician on whether the driver is compliant with their treatment regime

17.6.10 Surgery for Epilepsy – Commercial Drivers

STANDARD	**Commercial drivers eligible for a licence if:** • **they have not had a seizure for 5 years after surgery with or without anti-epileptic medication** • **waiting period may be reduced to 3 years upon neurologist/specialist recommendation** • **conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follow treatment regime and physician's advice regarding prevention of seizures. • Cease driving and report to authority and physician if a seizure occurs.
Reassessment	• At discretion of licencing authority.
Information from health care providers	• Date of last seizure • Details of driver's treatment regime • Opinion of treating physician on whether the driver is compliant with their treatment regime if applicable

17.6.11 Epilepsy with medication change – Non-commercial drivers

This standard applies to non-commercial drivers with epilepsy who undergo a prescribed change to, or withdrawal of, an effective antiepileptic medication. This standard only applies where the driver's treatment was effective (i.e., their epilepsy was controlled) prior to the change to, or withdrawal from, medication. This means they should not have had a seizure for at least six months prior to the change or withdrawal of medication. If their treatment prior to the change was not effective, then guideline 17.6.6 applies.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been 3 months since the change or withdrawal and they have not had a seizure during that time, and** • **the conditions for maintaining a licence are met** **Non-commercial drivers who have a seizure after a change to, or withdrawal from, antiepileptic medication eligible for a licence if** • **they re-establish a previously effective treatment regime** • **the treating physician indicates that further seizures are unlikely,** • **it has been 3 months since the previously effective treatment regime was resumed and they have not had a seizure during that time** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follow treatment regime and physician's advice regarding prevention of seizures • Cease driving and report to the authority and your physician if you have a seizure
Reassessment	• If a seizure occurred within the past 12 months, reassess in one year • If no seizures occurred within the past 12 months, or if no seizures are reported after the initial reassessment, reassess in five years • If no seizures are reported during those five years, then routine
Information from health care providers	• Date of the medication change or withdrawal • Date of the last seizure • Details of the driver's treatment regime • Opinion of treating physician whether the driver is compliant with their treatment regime • Opinion of treating physician whether further seizures are likely

17.6.12 Epilepsy – Commercial drivers

This standard applies to commercial drivers, who have been diagnosed with epilepsy, except:

- whose seizure only occur while they are asleep or immediately after awakening, and (17.6.13)
- who have only simple partial seizures (no impairment in level of consciousness), the symptoms of which do not impair their functional ability to drive (17.6.14).

See guideline 17.6.15 for commercial drivers who meet this standard and then change medication.

STANDARD	**Commercial drivers eligible for a licence if** • **they have not had a seizure with or without medication for 5 years, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follows treatment regime and physician's advice regarding prevention of seizures • Cease driving and report to the authority and physician if a seizure occurs
Reassessment	• Routine
Information from health care providers	• Date of the last seizure • Details of the driver's treatment regime, including length of time the driver has been on or off antiepileptic medication • Opinion of treating physician on whether the driver is compliant with their treatment regime

17.6.13 Epilepsy with seizures only while asleep or upon awakening - Commercial Drivers

STANDARD	**Commercial drivers eligible for a licence if** • **the driver is experiencing seizures but the seizure pattern has been consistent for at least 5 years** • **no prolonged postictal impairment in wakefulness**
Conditions for maintaining licence	• Routinely follow treatment regime and physician's advice regarding prevention of seizures, if the driver is treated • Routinely follow physician's advice regarding continued monitoring of your seizures • Report to the authority and physician if the pattern of seizures changes
Reassessment	• Routine
Information from health care providers	• Description of the seizure pattern • Whether the seizure pattern has been consistent for at least 5 years • Details of the driver's treatment regime • Opinion of treating physician on whether the driver is compliant with their treatment regime

17.6.14 Epilepsy with simple partial seizures - Commercial Drivers

STANDARD	**Commercial drivers eligible for a licence if** • **it has been 5 years since the last seizure OR,** • **the driver is experiencing seizures but the seizure pattern has been consistent for 3 years – and therefore no seizure free waiting period required** • **favourable assessment from neurologist to drive** • **no impairment in level of consciousness or cognition** • **no head or eye deviation with seizures** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follow treatment regime and physician's advice regarding prevention of seizures, if the driver is treated • Must report to the authority and physician if the symptoms of seizures change
Reassessment	• Routine
Information from health care providers	• Description of the symptoms of the seizures • Whether the symptoms of the seizures have been consistent for at least 1 year • Details of the driver's treatment regime • Opinion of treating physician on whether the driver is compliant with their treatment regime

17.6.15 Epilepsy with medication change - Commercial drivers

This standard applies to commercial drivers with epilepsy who undergo a prescribed change to, or withdrawal of, an effective antiepileptic medication. This standard only applies where the driver's treatment was effective (i.e., their epilepsy was controlled) prior to the change to, or withdrawal from, medication. This means they must first meet guideline 17.6.12 before this standard will apply.

STANDARD	**Commercial drivers eligible for a licence if** • **it has been 6 months since the prescribed change or withdrawal and they have not had a seizure during that time, and** • **the conditions for maintaining a licence are met** **Commercial drivers who have a seizure after a prescribed change to, or withdrawal from antiepileptic medication are eligible for a licence if:** • **it has been 6 months since the prescribed change or withdrawal and they have not had a seizure during that time** • **they have re-established a previously effective treatment regime** • **the treating physician indicates that further seizures are unlikely, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follow treatment regime and physician's advice regarding prevention of seizures • Cease driving and report to the authority and physician if seizure occurs
Reassessment	• Routine
Information from health care providers	• Date of the medication change or withdrawal • Date of the last seizure • Details of the driver's treatment regime • Opinion of treating physician on whether the driver is compliant with their treatment regime • Opinion of treating physician on whether further seizures are likely

Chapter 18: Sleep disorders

18.1 About sleep disorders

Sleep disorders involve any difficulties related to sleeping, including:

- difficulty falling asleep (insomnia) or staying asleep
- falling asleep at inappropriate times
- excessive total sleep time, or
- abnormal behaviours associated with sleep.

This chapter focuses on the most common forms of sleep disordered breathing - obstructive sleep apnea - and on narcolepsy.

In addition to sleep disorders, a number of other factors such as work schedules or lifestyle choices may result in inadequate nocturnal sleep. Regardless of the cause, the risks of excessive sleepiness for driving safety are similar[29].

Sleep disordered breathing

Sleep disordered breathing consists of three distinct clinical syndromes:

- obstructive sleep apnea-hypopnea syndrome (OSAHS): apnea-hypopnea caused by repeated closure of the throat or upper airway during sleep. This is the most common form of sleep disordered breathing. In the medical standards in this section, obstructive sleep apnea-hypopnea syndrome is referred to as OSA.
- central sleep apnea-hypopnea syndrome (CSAHS): includes types of apnea-hypopnea caused by a neurological problem that interferes with the brain's ability to control breathing during sleep, as well as high altitude periodic breathing and apnea-hypopnea due to drug or substance abuse.
- sleep hypoventilation syndrome (SHVS): a type of sleep disordered breathing characterized by insufficient oxygen absorption during sleep. It usually occurs in association with restrictive lung disease in morbidly obese individuals, respiratory muscle weakness or obstructive lung disease such as COPD.

Obstructive sleep apnea-hypopnea syndrome (OSA)

With OSA, the tissue and muscles of the upper airway repetitively collapse during sleep, reducing or preventing breathing. As oxygen levels in the blood fall, arousal causes the airway to re-open. Although individuals with OSA often remain asleep, their sleep patterns are disrupted. These sleep disturbances result in excessive daytime sleepiness. Impairments in cognitive function are common in individuals with OSA and these may

[29] Canadian Sleep Society. https://css-scs.ca/

include difficulties in attention, concentration, complex problem solving, and short-term recall of verbal and spatial information.

Sleep monitoring is used to confirm a diagnosis of OSA. The preferred test used in diagnosis is nocturnal polysomnography. This test involves monitoring a number of physiological functions, such as brain activity, respiration, heart activity and oxygenation of the blood, while an individual is sleeping. A diagnosis of sleep apnea is based on the apnea-hypopnea index (AHI), where apnea is defined as a cessation of airflow lasting at least 10 seconds and hypopnea is defined as a reduction in airflow with a decline in blood oxygen level lasting at least 10 seconds. Generally, an individual is diagnosed with sleep apnea if they have greater than 5 apnea/hypopnea episodes per hour of sleep. There are a number of scales used to measure the severity of OSA. A scale based on the AHI describes the following levels of severity:

- Mild: 5 to 14 events per hour
- Moderate: 15 to 30 events per hour
- Severe: more than 30 events per hour.

Although nocturnal polysomnography is considered to be the best test for the diagnosis of OSA, a number of other tests may be used by sleep specialists to assist in evaluation or diagnosis. Overnight oximetry is similar to polysomnography, but only measures oxygen level and heart rate. Results from overnight oximetry alone are not considered adequate to diagnose OSA.

A number of tests are used to evaluate daytime sleepiness. These include the Maintenance of Wakefulness Test (MWT), the Multiple Sleep Latency Test (MSLT) and the Epworth Sleepiness Scale (ESS). MWT measures the level of daytime drowsiness based on how long a person can remain awake during the day under controlled conditions. The MSLT is similar to the MWT, but measures how long it takes a person to fall asleep when taking daytime naps, rather than how long they can stay awake. The ESS is a subjective test in which a person is asked to rate on a scale of 1 to 4 the likelihood that they would fall asleep in different situations, such as when watching TV, riding in a car or engaging in conversation.

Treatment options for OSA include:

- lifestyle changes such as weight loss, alcohol abstinence or change in sleep position
- the use of oral appliances
- the use of a nasal continuous positive airway pressure (CPAP) device,
- bariatric surgery (for morbidly obese individuals), and
- in rare cases, corrective upper airway surgery.

CPAP is the most effective treatment, and the only one which has been shown to reduce the risk of motor vehicle crashes. A CPAP machine blows heated, humidified air through

a short tube to a mask worn by the individual while sleeping. As the individual breathes, air pressure from the CPAP machine holds the nose, palate and throat tissues open.

An immediate reduction (usually within 2 weeks) in daytime sleepiness is often reported with CPAP treatment, although studies indicate that approximately 6 weeks of treatment are required for maximum improvement in symptoms. Medical consensus supports the resumption of driving after 2 weeks of treatment. Estimates of compliance with CPAP treatment vary depending on how it is measured. Subjective rates of compliance based on self-report are higher than objectively determined rates. Using objective measures, a 1993 study found that 46% of individuals were acceptably compliant with their CPAP treatment. The study defined acceptable compliance as the use of the CPAP machine for at least four hours per night for more than 70% of the observed nights.

OSA Indicators

During periodic medical assessments it is essential the examining physician screen for sleep disorders risk factors. The FMCSA Expert Panel Recommendations on Obstructive Sleep Apnea and Commercial Motor Vehicle Driver Safety (2008) reflected the following on OSA.

Symptoms suggestive of OSA:

- Chronic loud snoring
- Witnessed apneas or breathing pauses during sleep
- Daytime sleepiness

Risk factors for OSA:

- Male
- Advancing age
- BMI>28 kg/m2 (BMI - Body Mass Index)
- Small jaw
- Large neck size ($\geq$17 inches male, $\geq$15.5 inches female)
- Small airway
- Family history of OSA

Conditions associated with OSA:

- HBP (High Blood Pressure) or HTA (Hypertension Arterial)
- Type 2 diabetes
- Hypothyroidism

OSA Assessment

Patients with severe OSA, who have been involved in a crash in which their medical condition was a causal factor, are at high risk of having more accidents if they are not treated successfully. Even without having experienced a crash, severe sleep apnea has been identified as a factor that increases crash risk. Consequently, commercial drivers who have experienced a crash associated with falling asleep, or report they have experienced excessive sleepiness while driving, should be advised to stop driving immediately pending completion of sleep studies and effective treatment.

Furthermore, licensing agencies must decide if commercial drivers with OSA risk factors associated with the symptoms listed are fit to hold class 1, 2, 3 or 4 driver licences pending a sleep expert assessment given current waiting times for sleep studies.

Treated OSA is subject to annual medical review by the licensing agency for all Class 1, 2, 3 and 4 driver licence holders.

Narcolepsy

Narcolepsy is a chronic neurological disorder in which the brain is unable to regulate sleep-wake cycles normally. It is characterized by excessive daytime sleepiness and may also cause cataplexy (abrupt loss of muscle tone), hallucinations and sleep paralysis. There is no known cure. The symptoms of narcolepsy relevant to driving are sleepiness and cataplexy.

The excessive daytime sleepiness of narcolepsy comprises both a background feeling of sleepiness present much of the time and a strong, sometimes irresistible, urge to sleep recurring at intervals through the day. This desire is heightened by conducive or monotonous circumstances, but naps at inappropriate times, such as during meals, are characteristic. The naps associated with narcolepsy usually last from minutes to an hour and occur a few times each day. Potential secondary symptoms related to sleepiness may include visual blurring, diplopia and cognitive impairment. Cognitive impairment may include difficulties with attention and memory.

Cataplexy refers to an abrupt loss of skeletal muscle tone. It is estimated that 60% to 90% of individuals with narcolepsy experience cataplexy. During a cataplexy attack, which can last up to several minutes and occur several times a day, an individual remains conscious but is unable to move. Generalized attacks can cause an individual to completely collapse, although the muscles of the diaphragm and the eyes remain unaffected. Partial attacks, which affect only certain muscle groups, are more common than generalized attacks. Laughter or humorous events are a common trigger of cataplexy attacks, although anger, embarrassment, surprise or sexual arousal can also trigger an attack.

As there is no cure, treatment for narcolepsy is focussed on the control of sleepiness and cataplexy where present. Medications used for treatment may include:

- stimulants such as Modafinil (Altertec™)
- tricyclic antidepressants
- selective serotonin reuptake inhibitors
- venlafaxine (Effexor™), or
- reboxetine (Edronax™).

See Chapter 15, Psychotropic Drugs, for more information about medications and driving.

18.2 Prevalence

OSA affects at least 2% of women and 4% of men. It is more prevalent among middle aged and older individuals and those who are obese. It commonly remains undiagnosed, with estimates suggesting that 93% of women and 82% of men with moderate to severe sleep apnea are undiagnosed.

Canadian data on the prevalence of narcolepsy are lacking. Research in the United States indicates a prevalence rate of 47 per 100,000 individuals (.05%). It is more common in men than in women.

18.3 Sleep disorders and adverse driving outcomes

Numerous studies have investigated the relationship between OSA and adverse driving outcomes. OSA may cause daytime drowsiness and reduced concentration that are symptoms that can negatively affect driving safely. OSA is also of special concern for the commercial driver who often drives long distances with few breaks and whose work schedule may not be conducive to healthy sleep hygiene.

The majority of studies indicate that individuals with OSA have a 2 to 4 times greater risk for a crash, and the crashes result in more severe injuries. Although numerous tests are available to measure daytime sleepiness, the research also indicates that measures of daytime sleepiness and the severity of sleep apnea are not consistent predictors of impairments in driving performance.

Unlike OSA, there are few studies on narcolepsy and adverse driving outcomes. Although limited, this research suggests that narcolepsy is also associated with elevated crash rates.

18.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
OSA Narcolepsy	Episodic impairment: Medical assessment – likelihood of impairment	All – sudden incapacitation Cognitive – reduced alertness	Medical assessments
	Persistent impairment: Functional assessment	Cognitive	Medical assessments Functional Assessments

18.5 Compensation

Drivers with sleep disorders are not able to compensate for their impairment. Recently, a number of warning systems for drowsy drivers have been developed. These systems are designed to detect drowsiness by monitoring the driver's eye movement, head movement or other physical activity, or by sensing when a vehicle is drifting on the road. When drowsiness is suspected, a warning system alerts the driver. These systems are in various stages of development and production.

Research on the effectiveness of drowsy driving warning systems is limited. The existing research indicates that these technologies show promise as a means to warn drivers of fatigue or drowsiness. However, it is recognized that alertness is a complex phenomenon, and no single measure alone may be sensitive and reliable enough to quantify driver fatigue. Further research and development is required before the use of these warning systems can be applied in driver licensing decisions.

18.6 Guideline for assessment

18.6.1 OSA – All drivers

STANDARD	**All drivers eligible for a licence if** • **has untreated obstructive sleep apnea with an AHI < 30, and does not admit to daytime sleepiness,** • **Drivers with severe obstructive sleep apnea (AHI ≥ 30) are disqualified from driving unless the condition is successfully treated, OR the driver has been assessed by a sleep specialist who is of the opinion that there is a low risk of a sleep related crash**

	• **Any driver with OSA, regardless of severity, who has experienced within the previous 5 years a crash associated with falling asleep or sleepiness while driving must provide evidence that the OSA is successfully treated.**
Conditions for maintaining licence	• All commercial drivers must file periodic mandatory medical reports to assess their fitness to hold a commercial licence. • Non-commercial drivers are assessed for fitness to drive on a case by case basis, taking into account the treating physician's specific recommendations. • Cease driving and report any episodes of sleep at the wheel to the treating physician and the authority.
Reassessment	• At the discretion of the authority for non-commercial drivers, • Annual medical review for commercial drivers with OSA.
Information from health care providers	• History of sleep at the wheel within the past five years • Opinion of treating physician whether the driver understands the nature of the condition and the potential impact on driving
Rationale	The primary concerns with OSA are daytime sleepiness (risk of sleep while driving) and persistent cognitive impairment. Determining who is at risk of adverse driving outcomes due to daytime sleepiness is problematic. Because existing measures of daytime sleepiness and the severity of sleep apnea are not consistent predictors of impairments in driving performance, the standard looks to driver history of sleep at the wheel for identifying current risk of sleep while driving. The standard also emphasizes the responsibility of the driver to be attentive to the risk for daytime sleepiness.[30]

[30]Canadian Sleep Society. https://css-scs.ca/

18.6.2 Narcolepsy – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **there have been no daytime sleep attacks or cataplexy, with or without treatment, during the past 12 months.** • **Earlier re-licensing may be considered upon favourable recommendation from sleep specialist**
Conditions for maintaining licence	None
Reassessment	• At the discretion of the Authority
Information from health care providers	• Type of treatment • Whether there have been daytime sleep attacks within the past 12 months • Whether there have been episodes of cataplexy within the past 12 months
Rationale	The general approach of the standard for drivers with narcolepsy is that attacks must be controlled as a prerequisite to driving. Where a driver is treated, the standard includes a requirement for an attack-free period to establish the likelihood that: • a therapeutic drug level has been achieved and maintained • the drug being used will prevent further attacks, and • there are no side effects that may affect the driver's ability to drive safely. The episodic risk of a sleep attack or cataplexy while driving is addressed in the requirement for a 12 month period without an episode prior to driving. The length of this no driving period is based on consensus medical opinion in Canada.

18.6.3 Narcolepsy – Commercial drivers

This standard applies to drivers who are diagnosed with narcolepsy

STANDARD	**Commercial drivers generally not eligible for a licence. May be eligible if:** • **demonstrated effective treatment** • **sleep specialist supports driving commercial vehicles** • **there have been no daytime sleep attacks or cataplexy during the last 12 months** • **Earlier re-licensing may be considered upon favourable recommendation from a sleep specialist**
Conditions for maintaining licence	• remain under regular medical supervision • do not drive commercial vehicle for long hours, overnight or on irregular shifts. • A jurisdiction may consider having a sleep specialist has review and approve the driver's work schedule and have a sleep specialist review and support driving commercial vehicles
Reassessment	• At discretion of licencing authority.
Specific information required	• Type of treatment • MSLT demonstrating effective treatment • Whether there have been daytime sleep attacks or episodes of cataplexy within past 12 months.
Rationale	Consensus medical opinion in Canada indicates that the risks from increased driving exposure associated with commercial driving are such that drivers with narcolepsy may not drive. However, CMA Driver's Guide 8th Ed also indicates people with narcolepsy, who are able to maintain a regular sleep-wake cycle, may be able to drive commercial vehicles during the day, over short routes. The recommendation for licensing commercial drivers with narcolepsy in the CMA Guide is a consensus recommendation based on clinical grounds.

Chapter 19: Syncope

19.1 About syncope

Syncope refers to a partial or complete loss of consciousness, usually resulting from a temporary reduction in blood flow to the brain. The onset of syncope is relatively rapid and recovery is generally prompt, spontaneous and complete. The non-medical term for syncope is fainting.

Syncope has many different causes, including cardiovascular disease and neurological disorders. In some cases, no underlying cause can be found.

The following are the major types of syncope:

- vasovagal syncope
- postural syncope, and
- cardiac syncope.

The most common types of syncope are vasovagal (neurocardiogenic) and cardiac syncope.

Vasovagal syncope

Vasovagal or neurocardiogenic syncope refers to syncope that is triggered by an exaggerated and inappropriate nervous system response to a particular stimulus. The response is characterized by alterations in heart rate and blood flow, with a subsequent reduction in blood pressure. The stimulus can be any of a wide range of events such as:

- dehydration
- intense emotional stress
- anxiety
- fear
- pain
- hunger, or
- the use of alcohol or drugs.

Stimuli can also include forceful coughing, turning of the neck or wearing a tight collar (carotid sinus hypersensitivity), or urinating (micturition syncope).

Postural syncope

Postural syncope is syncope that results from a sudden drop in blood pressure immediately after standing or sitting up. It can be a side-effect of some medications or may be caused by dehydration or medical conditions such as Parkinson's disease.

Cardiac syncope

Cardiac syncope refers to syncope caused by cardiac conditions such as:

- valvular heart disease
- chronic heart failure, or
- arrhythmias (bradycardias or tachycardias).

Cardiac arrhythmias are the most common cause of cardiac syncope.

19.2 Prevalence

The prevalence of syncope is difficult to determine. One study reported that 3% of males and 3.5% of females had at least one episode of syncope over a 26 year period. The Canadian Cardiovascular Society estimates that syncope may affect as many as 50% of Canadians at some point during their lives. Higher rates of syncope are reported in older individuals.

19.3 Syncope and adverse driving outcomes

Few studies have considered the relationship between syncope and driving. Of those that have, most indicate a relationship between syncope and impaired driving performance for at least some groups that experience syncope.

19.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Syncope	Episodic impairment: Medical assessment – likelihood of impairment	All – sudden incapacitation	Medical assessments

Syncope causes an episodic impairment of all the functions necessary for driving.

19.5 Compensation

As syncope causes an episodic impairment of the functions necessary for driving, compensation does not apply.

19.6 Guideline for Assessment

The following table lists the standards applicable to various types of syncope.

Type of syncope		Standards for non-commercial drivers	Standards for commercial drivers
Single (one episode within a 12 month period)	**Typical vasovagal -** Typical vasovagal syncope is a vasovagal syncope that occurs when standing and is preceded by warning signs that are sufficient to allow a driver to pull off the road before losing consciousness.	19.6.1	19.6.8
	Unexplained	19.6.2	19.6.10
	Atypical vasovagal - Atypical vasovagal syncope is a vasovagal syncope that occurs in the sitting position or is not preceded by warning signs that are sufficient to allow a driver to pull off the road before losing consciousness.	19.6.2	19.6.10
Recurrent (two or more episodes within a 12 month period)	**Reversible cause**	19.6.3	19.6.3
	Diagnosed and treated cause (e.g., pacemaker for bradycardia)	19.6.4	19.6.9
	Typical vasovagal (see definition above)	19.6.5	19.6.10
	Situational with an avoidable trigger (e.g., micturition syncope, defecation syncope)	19.6.6	19.6.6
	Unexplained	19.6.7	19.6.10
	Atypical vasovagal (see definition above)	19.6.7	19.6.10

The following table summarizes the syncope standards and waiting periods

STANDARD	Non Commercial Driver Class 5-8	Commercial Driver Class 1-4
Single episode of typical vasovagal syncope*	No restriction	
Diagnosed and treated cause e.g., permanent pacemaker for bradycardia	1 week	1 month
Reversible cause e.g., hemorrhage, dehydration	Successful treatment of underlying condition	
Situational syncope with avoidable trigger e.g., micturition syncope, defecation syncope	1 week	
Single episode of unexplained syncope Recurrent (within 12 months) vasovagal syncope	1 week	12 months
Recurrent episode of unexplained syncope (within 12 months)	3 months	12 months
Syncope due to documented tachyarrhythmia, or inducible tachyarrhythmia at EPS	Refer to Cardiac Section on Syncope	

* No restriction is recommended unless the syncope occurs in the sitting position or if it is determined that there may be an insufficient prodrome to pilot the vehicle to the roadside to a stop before losing consciousness. If vasovagal syncope is atypical, the restrictions for "unexplained" syncope apply. ***EPS****: Electrophysiology study*

Rationale for all syncope standards

These guidelines are based primarily on recommendations contained in the final report of the 2003 Canadian Cardiovascular Society (CCS) Consensus Conference Assessment of the Cardiac Patient for Fitness to Drive and Fly. When applying these standards, the CCS indicates that waiting periods may be modified based on individual factors such as length of any reliable warning symptoms (prodrome), reversible or avoidable precipitating factors, and position from which the individual experiences syncope.

19.6.1 Single episode of typical vasovagal syncope – Non-commercial drivers

Typical vasovagal syncope is a vasovagal syncope that occurs when standing and is preceded by warning signs that are sufficient to allow a driver to pull off the road before losing consciousness.

STANDARD	**Non-commercial drivers eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	• Description of the type of syncope

19.6.2 Single episode of unexplained syncope or atypical vasovagal syncope – Non-commercial drivers

Atypical vasovagal syncope is a vasovagal syncope that occurs in the sitting position or is not preceded by warning signs that are sufficient to allow a driver to pull off the road before losing consciousness.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been at least 1 week since the last episode of syncope, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Report to the authority and your physician if you have another episode of syncope
Reassessment	• Reassess in one year if an episode occurred within the past 12 months • Otherwise, routine
Information from health care providers	• Description of the type of syncope • Date of the last episode of syncope

19.6.3 Syncope with a reversible cause

STANDARD	**All drivers eligible for a licence if** • **the cause has been successfully treated, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Report to the authority and your physician if you have another episode of syncope
Reassessment	• Routine, unless reassessment is required because of the underlying medical condition or treatment
Information from health care providers	• Description of the cause of the syncope • Opinion of the treating physician whether the treatment was successful

19.6.4 Syncope with a diagnosed and treated cause – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been at least one week since successful treatment, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Report to the authority and your physician if you have another episode of syncope
Reassessment	• Routine, unless reassessment is required because of the underlying medical condition or treatment
Information from health care providers	• Description of the cause of the syncope • Date of treatment • Opinion of the treating physician whether the treatment was successful

19.6.5 Recurrent typical vasovagal syncope – Non-commercial drivers

This guideline applies to non-commercial drivers who have had two or more episodes of typical vasovagal syncope within a 12 month period.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been at least one week since the last episode of syncope**
Conditions for maintaining licence	None
Reassessment	• Reassess in one year if an episode occurred within the past 12 months • Otherwise, routine
Information from health care providers	• Description of the type of syncope • Date of the last episode

19.6.6 Recurrent situational syncope with an avoidable trigger

This guideline applies to drivers who have had two or more episodes of situational syncope with an avoidable trigger (e.g., micturition syncope, defecation syncope) within a 12 month period.

STANDARD	**All drivers eligible for a licence if** • **it has been at least one week since the last episode of syncope**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	• Description of the type of syncope • Date of the last episode of syncope

19.6.7 Recurrent atypical vasovagal or recurrent unexplained syncope – Non-commercial drivers

This guideline applies to non-commercial drivers who have had two or more episodes of atypical vasovagal syncope, or unexplained syncope within a 12 month period.

Atypical vasovagal syncope is a vasovagal syncope that occurs in the sitting position or is not preceded by warning signs that are sufficient to allow a driver to pull off the road before losing consciousness.

STANDARD	**Non-commercial drivers eligible for a licence if** • **it has been at least three months since the last episode of syncope, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Report to the authority and your physician if you have another episode of syncope
Reassessment	• Reassess in one year if an episode occurred within the past 12 months • Otherwise, routine
Information from health care providers	• Description of the type of syncope • Date of the last episode of syncope

19.6.8 Single episode of typical vasovagal syncope – Commercial drivers

This guideline applies to commercial drivers who have had a single episode of typical vasovagal syncope within a 12 month period.

Typical vasovagal syncope is a vasovagal syncope that occurs when standing and is preceded by warning signs that are sufficient to allow a driver to pull off the road before losing consciousness.

STANDARD	**Commercial drivers eligible for a licence if** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	Report to the authority and your physician if you have another episode of syncope
Reassessment	• Routine
Information from health care providers	• Description of the type of syncope

19.6.9 Syncope with a diagnosed and treated cause – Commercial drivers

This guideline applies to commercial drivers who have syncope with a diagnosed and treated cause (e.g., pacemaker for bradycardia).

STANDARD	**Commercial drivers eligible for a licence if** • **it has been at least one month since successful treatment, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Report to the authority and your physician if you have another episode of syncope
Reassessment	• Routine, unless reassessment is required because of the underlying medical condition or treatment
Information from health care providers	• Description of the cause of the syncope • Date of treatment • Opinion of the treating physician whether the treatment was successful

19.6.10 Single or recurrent unexplained, single or recurrent atypical vasovagal, or recurrent typical vasovagal syncope – Commercial drivers

This standard applies to commercial drivers who have had:

- single or recurrent atypical vasovagal syncope
- single or recurrent unexplained syncope, or
- recurrent typical vasovagal syncope within a 12 month period.

Typical vasovagal syncope is a vasovagal syncope that occurs when standing and is preceded by warning signs that are sufficient to allow a driver to pull off the road before losing consciousness.

Atypical vasovagal syncope is a vasovagal syncope that occurs in the sitting position or is not preceded by warning signs that are sufficient to allow a driver to pull off the road before losing consciousness.

STANDARD	**Commercial drivers eligible for a licence if** • **it has been at least 12 months since the last episode of syncope, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Routinely follow your treatment regime and physician's advice regarding prevention of syncope • Report to the authority and your physician if you have another episode of syncope
Reassessment	• Reassess in one year • After initial reassessment, routine
Information from health care providers	• Description of the type of syncope • Date of the last episode of syncope • Opinion of treating physician whether the driver is compliant with the treatment regime and the physician's advice regarding prevention of syncope

Chapter 20: Traumatic brain injury

20.1 About traumatic brain injury

Traumatic brain injury (TBI) is a nondegenerative, noncongenital insult to the brain from an external mechanical force, possibly leading to permanent or temporary impairment of cognitive, physical and psychosocial functions, with an associated diminished or altered state of consciousness. The leading causes of TBI are falls and motor vehicle crashes.

Descriptions of the severity of a TBI reflect the length of time a person is unconscious or lacks awareness of their environment. Mild TBI indicates only a brief change in mental status or consciousness, while severe TBI describes an extended period of unconsciousness or amnesia after the injury.

TBI can result in a wide range of impairments, which will vary depending on the severity and location of the injury, and the age and general health of the injured person.

Possible sensory impairments include:

- visual field deficits
- visual neglect
- diplopia, and
- loss of sensation or hearing.

Possible motor impairments include paralysis, paresis (partial loss of movement or impaired movement) and slowed reaction times. Possible cognitive impairments include deficits in:

- attention
- memory
- executive functioning
- processing speed, and
- visuo-spatial abilities, including visual memory.

Behavioural impairments are common, including disorders affecting mood and impulse control. Sleep disturbances, sleep apnea and fatigue are also commonly reported. TBI is also associated with epilepsy.

Anosognosia (unawareness of impairment) is common in individuals with TBI, particularly in those with moderate to severe TBI, and is of particular concern for driving. Research suggests that anosognosia is more frequently associated with cognitive and behavioural impairments than with physical deficits.

20.2 Prevalence

Rates of incidence and prevalence of TBI are difficult to determine due to a lack of uniformity in definitions and reporting methods. Canadian data suggest that the overall prevalence of TBI is 62.3 per 100,000 adults. Rates were highest in the 45 to 64 year old age range, three times the rate of those in the 15 to 24 year old range.

20.3 Traumatic brain injury and adverse driving outcomes

Numerous studies have examined the relationship between TBI and driving outcomes. Although few studies have examined crash rates, the existing research indicates higher rates of crashes and traffic violations for those who have experienced a TBI. Notably, studies indicate that approximately 50% of those experiencing a TBI will not resume driving after the TBI. Research examining road test results indicates that approximately 30% of individuals who have experienced a TBI will fail a subsequent road test.

20.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Traumatic brain injury	Persistent impairment: Functional assessment	Variable – cognitive, motor or sensory	Medical assessments Functional assessment
	Episodic impairment: Medical assessment – likelihood of impairment	Variable – sudden impairment (epilepsy)	Medical assessments

Traumatic brain injury may result in a persistent cognitive, motor or sensory impairment, or an episodic impairment (epilepsy), or both.

20.5 Compensation

Drivers who have experienced a persistent impairment of motor or sensory function may be able to compensate. An occupational therapist, driver rehabilitation specialist, driver examiner or other medical professional may recommend specific compensatory vehicle modifications or restrictions based on an individual functional assessment. Some examples of compensatory mechanisms are shown in the following table.

Motor impairment	Sensory (vision) impairment
• Steering wheel spinner knob • Restriction to automatic transmission or power-assisted brakes	• Scanning horizon more frequently • Turning head 90◦ to maximize area scanned • Large left and right side mirrors

20.6 Guidelines for assessment

20.6.1 Traumatic brain injury

If a driver has epilepsy as a result of a TBI, also see the standards in Chapter 17.

STANDARD	**All drivers eligible for a licence if** • **movement and strength are sufficient to perform the functions necessary for driving** • **cognitive and visual functions necessary for driving are not impaired** • **any pain associated with the condition, and any treatment for the condition, do not impair the functional abilities necessary for driving** • **where required, a functional assessment indicates that the driver is able to compensate for any loss of functional ability necessary for driving, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Only drive vehicles that have the permitted modifications and devices required to compensate for functional impairment
Reassessment	• Routine
Information from health care providers	• Whether the driver suffers from epilepsy as a result of the TBI. See the standards under Chapter 17 if epilepsy is present. • Opinion of treating physician on whether the driver has a loss of movement or strength that may affect functional ability to drive • Opinion of treating physician on whether pain or treatment may adversely affect functional ability to drive • Opinion of treating physician on whether the driver suffers from diplopia and/or a visual field deficit that may affect functional ability to drive. See the standards under Chapter 22 if the treating physician indicates that either of these conditions may be present. • Where required, the results of a functional assessment
Rationale	The potential functional impairments associated with traumatic brain injury are variable.

Chapter 21: Vestibular disorders

21.1 About vestibular disorders

The vestibular system - or balance system - is a sensory apparatus localized in the inner ears. It provides information to the nervous system about a person's movement and orientation in space. Vestibular input contributes to:

- control of balance
- gaze stabilization so that a person can see clearly while moving, and
- spatial orientation so that a person knows their position with reference to gravity.

Vestibular disorders may result in:

- vertigo
- dizziness
- disturbed vision such as involuntary eye movement, and
- illusory movement of the visual world as a result of head movement.

A hallmark of vestibular disorders is vertigo, a term that refers to the sensation of spinning or whirling resulting from a disturbance in balance (equilibrium). Most commonly an attack of vertigo generally lasts less than one minute (30 seconds is typical) but it may last up to 60 minutes. A small number of people may experience vertigo lasting as long as 24 hours and an even smaller number may experience vertigo lasting up to, or beyond, 30 days.

Disorders of the vestibular system are classified as either peripheral or central.

Peripheral vestibular disorders

Peripheral disorders are characterized by episodic fluctuating symptoms; the dominant symptom is 'true spinning vertigo', that is the sensation of motion when no motion is occurring relative to earth's gravity. Peripheral vestibular disorders typically occur as a single acute episode or as recurrent acute episodes. However, complete bilateral hypofunction may result in severe and constant disequilibrium and motion sensitivity. The most common peripheral vestibular disorders and the typical duration of an episodic event are shown in the following table.

Disorder	Duration
benign paroxysmal positioning vertigo (BPPV)	20-30 seconds
vestibular neuronitis (labyrinthitis)	Tends to be single attack lasting days to weeks
Meniere's Disease	20 minutes – 24 hours

Less common peripheral vestibular disorders are described in the following table.

Disorder	Description
Drop Attacks (Tumarkin's Otolithic Crisis)	Sudden, spontaneous fall to the ground without prior warning
Complete bilateral vestibular hypofunction (absence of function)	May result in severe and constant disequilibrium and motion sensitivity

Central vestibular disorders

Central vestibular disorders generally arise from underlying persistent medical conditions. Because of this, they are more likely to produce prolonged continuous non-specific dizziness. They are characterized by difficulty in interpretation of vestibular, visual and proprioceptive (the unconscious perception of movement and spatial orientation arising from stimuli within the body itself) inputs. Gaze stabilization and posture during locomotion may also be affected.

Common persistent medical conditions that can cause persistent central vestibular dysfunction are:

- cerebrovascular disease
- cervical vertigo
- epilepsy
- multiple sclerosis
- normal pressure hydrocephalus
- paraneoplastic syndromes (a response to the effects of a tumour in the body), and
- traumatic brain injury.

Common episodic medical conditions that are not related to structural brain disease but that may cause central vestibular disorders, and typical episode duration, are shown in the following table.

Disorder	Duration
migraines	a few seconds to hours
Psychogenic vertigo/anxiety (hyperventilation syndrome)	a few seconds to hours

21.2 Prevalence

Peripheral vestibular disorders are more common than central vestibular disorders. Age-related decrements in vestibular function are well documented and are likely due to degeneration at both the central and peripheral level. BPPV is reported as a common underlying cause of impairments in balance with aging.

A 2005 study on the frequency of moderate or severe vertigo and dizziness reported that 36.2% of women and 22.4% of men had experienced vertigo or dizziness at some point in their life.

One study identified that 32.5% of people with Meniere's disease developed drop attacks (Tumarkin's otolithic crisis); the attacks typically occurred in a flurry during a period of 1 year or less. No patient in the study required treatment for the drop attacks. Most people with this have a spontaneous remission of the drop attacks.

21.3 Vestibular disorders and adverse driving outcomes

The evidence linking vestibular disorders with adverse driving outcomes is weak because there has been little empirical research in this area. Nonetheless driving ability is dependent on the normal functioning of the vestibular mechanism to sense movement and position.

In subjective studies where drivers with vestibular disorders were asked about driving, driving difficulties were commonly reported and included a wide range of difficulties including driving in the rain, at night, pulling in and out of parking spaces, changing lanes, and freeway and rush hour driving.

In one study, 20-40% of drivers reported that they had had to pull off the road while driving due to vertigo. In a different study, 43% indicated that they had felt dizzy while driving; only 27% indicated that they 'always' or 'usually' got a warning that a dizzy spell was about to occur, with more than 1/3 indicating that they 'rarely' or 'never' get warnings. Of those who did get warnings, 56% indicated that there was less than a 5-second interval between the warning and the dizzy spell.

21.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Vestibular disorders resulting in episodic impairment, including: • migraines • psychogenic vertigo/anxiety (hyperventilation syndrome) • benign paroxysmal positioning vertigo (BPPV) • Meniere's Disease • vestibular neuronitis (labyrinthitis) • Drop Attacks (Tumarkin's Otolithic Crisis)	Episodic impairment: Medical assessment – likelihood of impairment	Sensorimotor	Medical assessments
	Persistent impairment: Functional assessment	Cognitive	Medical assessments Functional assessment
Vestibular disorders resulting in persistent impairment, including: • complete bilateral vestibular hypofunction (absence of function), or • vestibular disorder resulting from an underlying persistent medical condition.	Persistent impairment: Functional assessment	Sensorimotor Cognitive	Medical assessments Functional assessment

The functional effects associated with vestibular disorders can occur suddenly and with sufficient severity to make safe driving of any type of vehicle impossible.

People with vestibular disorders become disoriented more easily by extraneous visual stimuli or visual noise. This means that drivers are more likely to have difficulty driving in reduced visual conditions such as driving at night or in the rain.

Rapid head movements are also likely to elicit vertigo in people with vestibular disorders. This means that tasks such as parking a car, manoeuvring in a parking space, lane maintenance and lane changes, and entering traffic may be risk factors for the onset of vertigo.

Research also indicates that damage to the vestibular system results in cognitive deficits in people with both peripheral and central vestibular disorders. People with vestibular disorders exhibit a range of cognitive deficits including those that are spatial and non-spatial. The cognitive deficits do not appear to be related to any particular episode of vertigo or dizziness and the deficits may occur even in those people who have no symptoms of dizziness or postural deficits.

Central vestibular disorders

The majority of central vestibular disorders have a persistent impact on driving because they arise from underlying persistent medical conditions. However, two common causes of central vestibular disorders - migraines and hyperventilation syndrome - are episodic in nature with short disease duration.

Peripheral vestibular disorders

Peripheral vestibular disorders are generally more episodic with, in general, shorter disease duration. Drivers, however, with complete bilateral vestibular hypofunction (absence of function) may have severe and constant disequilibrium and motion sensitivity forever. These drivers may have more difficulty driving, particularly during evening hours or on bumpy roads, and may not be safe to drive.

21.5 Compensation

Drivers with vestibular disorders are not able to compensate for their functional impairment.

21.6 Guideline for assessment

21.6.1 Recurrent episodes of vertigo that occur with warning symptoms

This may include drivers with:

- benign paroxysmal positioning vertigo (BPPV)
- Meniere's disease
- vestibular neuronitis (labyrinthitis)
- migraines, or
- psychogenic vertigo/anxiety (hyperventilation syndrome).

STANDARD	**All drivers eligible for a licence if** • **warning symptoms do not themselves impair ability to drive** • **warning symptoms are of a sufficient duration to allow a driver to safely pull off the road, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Stop driving whenever experiencing warning symptoms and do not resume driving until all symptoms associated with the episode have subsided
Reassessment	• Routine
Information from health care providers	• Description of warning symptoms and effect on functional ability • Whether the driver has insight into the impact their vestibular dysfunction may have on driving • History of compliance with prescribed treatment regime • If known, whether the driver is compliant with any current conditions of licence related to their vestibular dysfunction
Rationale	The risk from an episodic vestibular dysfunction can be mitigated where the episode is consistently preceded by warning symptoms that are not incapacitating and which last long enough for a driver to safely stop their driving until the episode is over.

21.6.2 Recurrent episodes of vestibular dysfunction that occur without warning symptoms – All drivers

This may include drivers with:

- benign paroxysmal positioning vertigo (BPPV)
- Meniere's disease
- vestibular neuronitis (labyrinthitis)
- migraines, or
- psychogenic vertigo/anxiety (hyperventilation syndrome).

STANDARD	**All drivers eligible for a licence if** • **it has been at least 6 months since an episode of vestibular dysfunction** • **the treating physician or specialist indicates that their symptoms have been controlled or have abated, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Immediately stop driving and report to the authority and treating physician if experiencing an episode of vestibular dysfunction
Reassessment	• Routine
Information from health care providers	• Date of last episode of vestibular dysfunction • Treating physician's opinion as to whether the symptoms have been controlled or have abated • Treating physician's opinion as to whether the driver has insight into the impact their vestibular dysfunction may have on driving • History of compliance with prescribed treatment regime • If known or applicable, whether the driver is compliant with any current conditions of licence related to their vestibular dysfunction
Rationale	Where episodes of vestibular dysfunction are not preceded by warning symptoms or the warning symptoms are not sufficient to allow the driver to safely stop driving, evidence that further episodes are unlikely to occur is required to mitigate the risk. Consensus medical opinion suggests that this evidence should include a minimum period of 6 months without an episode and opinion of the treating physician that this episode-free period reflects effective treatment or abatement of the episodes.

21.6.3 Drop attacks (Tumarkin's otolithic crisis)

STANDARD	**All drivers eligible for a licence if** • **it has been at least 6 months since experiencing a drop attack, or** • **the treating physician indicates that the attacks have been successfully treated, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Immediately stop driving and report to the authority and treating physician if experiencing a drop attack
Reassessment	• If attack has occurred in past 12 months, reassess in one year • If no new attacks after initial reassessment, then routine reassessment for commercial drivers and reassess after 5 years for non-commercial drivers • If no new attacks upon subsequent reassessment, then routine
Information from health care providers.	• Date of last drop attack or opinion of treating physician as to success of treatment • Treating physician's opinion as to whether the driver has insight into the impact their condition may have on driving • History of compliance with prescribed treatment regime • If known or applicable, whether the driver is compliant with any current conditions of licence related to their vestibular disorder
Rationale	For drop attacks, which occur without warning, evidence that further attacks are unlikely to occur is required to mitigate the risk. Consensus medical opinion suggests that this evidence should be an opinion from the treating physician that the driver has been successfully treated or that 6 months has passed without an attack.

21.6.4 Single episode of vestibular dysfunction – transient impairment

STANDARD	**All drivers eligible for a licence**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers.	None
Rationale	A single episode of vestibular dysfunction is a transient impairment.

21.6.5 Vestibular disorder resulting in a persistent impairment

STANDARD	**All drivers eligible for a licence if** • **functional assessments indicate ability required for driving safely**
Conditions for maintaining licence	None
Reassessment	• To be determined on an individual basis
Information from health care providers.	• Results of functional assessment • Treating physician's opinion as to whether the driver has insight into the impact their vestibular disorder may have on driving • History of compliance with prescribed treatment regime • If known or applicable, whether the driver is compliant with any current conditions of licence related to their vestibular dysfunction
Rationale	Persistent vestibular dysfunction may cause significant impairment of the functions needed for driving. Decisions about driver fitness should be based on an individual functional assessment.

Chapter 22: Vision impairment

22.1 About vision impairment

Vision impairment is defined as a functional limitation of the visual system and can be manifested as:

- reduced visual acuity
- reduced contrast sensitivity
- visual field loss
- loss of depth perception
- diplopia (double-vision)
- visual perceptual difficulties, or
- any combination of the above.

This chapter focuses on common vision impairments and medical conditions and treatments that can cause vision impairments.

Common vision impairments

Impaired visual acuity

Visual acuity is the ability of the eye to perceive details. It can be described as either static or dynamic. Static visual acuity, the common measure of visual acuity, is defined as the smallest detail that can be distinguished in a stationary, high contrast target (e.g., an eye chart with black letters on a white background). When tested, it is reported as the ratio between the test subject's visual acuity and standard "normal" visual acuity. Normal visual acuity is described as 20/20 or 6/6 in metric. A person with 20/40 vision (6/12 metric) needs to be 20 feet (6 metres) away to distinguish detail that a person with normal vision can distinguish at 40 feet (12 metres). The standard Snellen chart for measuring visual acuity and a table of standard ratings is included in 22.7.1
Dynamic visual acuity is the ability to distinguish detail when there is relative motion between the object and the observer. Given the nature of driving, dynamic visual acuity would seem to be more relevant to licensing decisions than static visual acuity. However, barriers to the use of dynamic visual acuity for decision-making include:

- the absence of a practicable method of testing dynamic visual acuity
- limited research on its relevancy for driving, and
- the lack of established levels of dynamic visual acuity required for driving safely.

Myopia, hyperopia, presbyopia and astigmatism (refractive errors)

Myopia, hyperopia, presbyopia and astigmatism are conditions associated with reduced visual acuity. They are known as refractive errors and are the result of errors in the focusing of light by the eye.

Myopia (nearsightedness) is a condition in which near objects are seen clearly but distant objects do not come into proper focus. Individuals with normal daytime vision may experience "night myopia." Night myopia is believed to be caused by pupils dilating to let more light in, which adds aberrations that result in nearsightedness. It is more common in younger individuals and people who are myopic.

Hyperopia (farsightedness) is a condition in which distant objects are seen clearly but close objects do not come into focus. Age-related farsightedness is called presbyopia. It is not a disease, but occurs as a natural part of the aging process of the eye and usually becomes noticeable as an individual enters their early to mid -40s.

Astigmatism is a visual condition that results in blurred vision. It commonly occurs with other conditions such as myopia and hyperopia.

Visual field loss

The visual field is the extent of the area that a person can see with their eyes held in a fixed position, usually measured in degrees. The normal binocular (using both eyes) visual field is 135 degrees vertically and 180 degrees horizontally.

The visual field can be divided into central and peripheral portions. Central vision refers to vision within 30 degrees of the point of fixation or gaze. The macula, a small area in the centre of the retina, is responsible for fine, sharp, straight-ahead central vision.

Peripheral vision allows for the detection of objects and movement outside the scope of central vision.

Visual field impairment refers to a loss of part of the normal visual field. The table and diagram on the following two pages provide further information on various types of visual field defects. The term "scotoma" refers to any area where the area of lost visual field is surrounded by normal vision.

Hemianopia, vision loss in one half of the visual field, or quadrantanopia, vision loss in one quarter of the visual field, can occur as a result of a stroke, trauma or tumour. They are not usually caused by a problem with the eye itself.

An important consideration related to hemianopia is the potential for anosognosia. Anosognosia is a condition in which a person with an impairment caused by a brain injury is unaware of the impairment. Research indicates that hemianopic anosognosia is relatively frequent, occurring in approximately two-thirds of those with hemianopia.

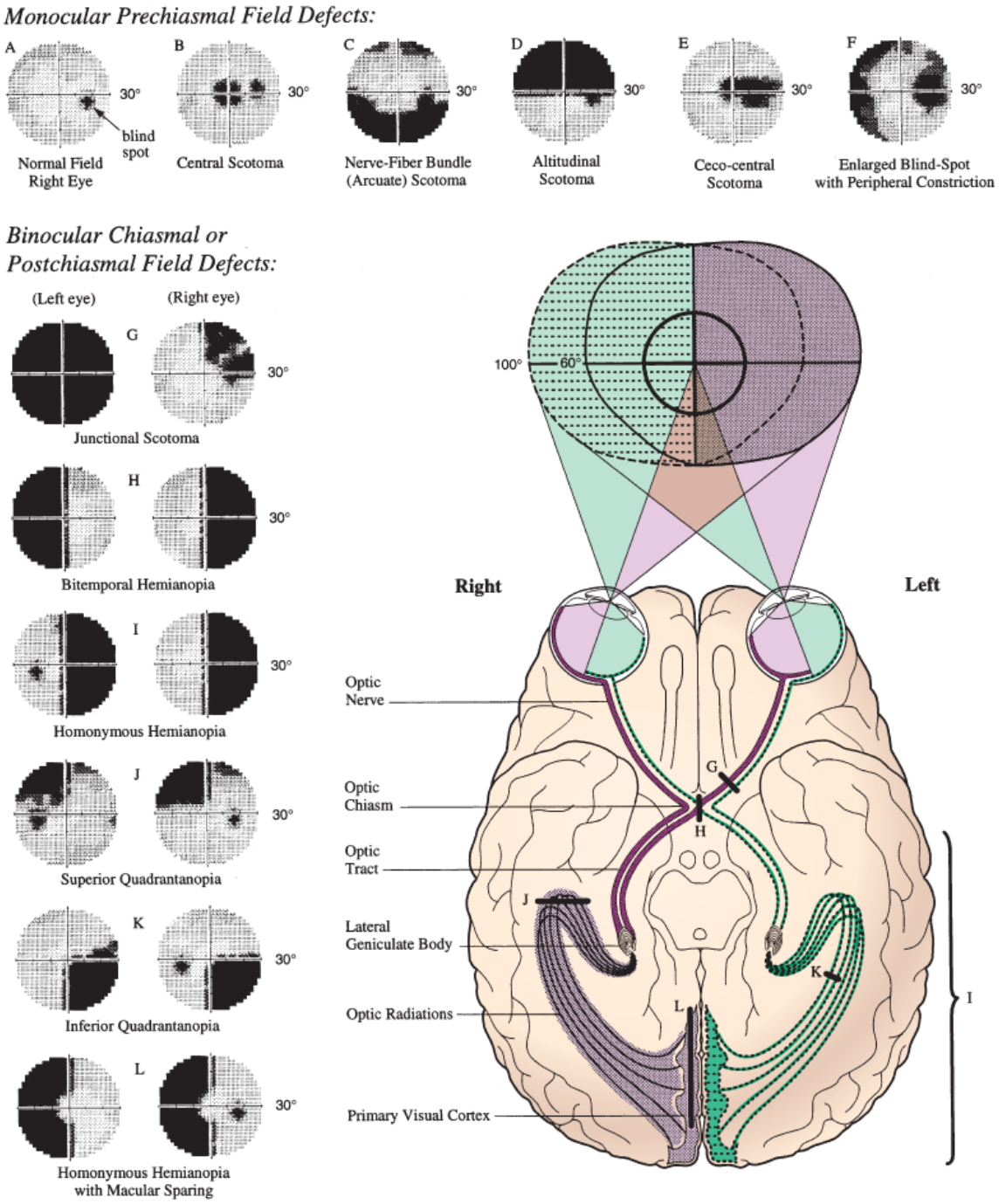
Unawareness of visual field deficits has an obvious negative impact on safe driving performance.

Types of visual field defects[31]		
Type	**Description**	**Causes**
Altitudinal field defect	Loss of all or part of the superior or inferior half of the visual field, but in no case does the defect cross the horizontal median	More common: Ischemic optic neuropathy, hemibranch retinal artery occlusion, retinal detachment Less common: Glaucoma, optic nerve or chiasmal lesion, optic nerve coloboma
Arcuate scotoma	A small, arcuate-shaped field loss due to damage to the ganglion cells that feed into a particular part of the optic nerve head, which follows the arcuate shape of the nerve fibre pattern; the defect does not cross the horizontal median	More common: Glaucoma Less common: Ischemic optic neuropathy (especially nonarteritic), optic disk drusen, high myopia
Binasal field defect (uncommon)	Loss of all or part of the medial half of both visual fields; the defect does not cross the vertical median	More common: Glaucoma, bitemporal retinal disease (e.g., retinitis pigmentosa) Rare: Bilateral occipital disease, tumour or aneurysm compressing both optic nerves
Bitemporal hemianopia	Loss of all or part of the lateral half of both visual fields; the defect does not cross the vertical median	More common: Chiasmal lesion (e.g., pituitary adenoma, meningioma, craniopharyngioma, aneurysm, glioma) Less common: Tilted optic disks Rare: Nasal retinitis pigmentosa
Blind-spot enlargement	Enlargement of the normal blind spot at the optic nerve head	Papilledema, optic nerve drusen, optic nerve coloboma, myelinated nerve fibres at the optic disk, drugs, myopic disk with a crescent
Central scotoma	A loss of visual function in the middle of the visual field, typically affecting the fovea centralis	Macular disease, optic neuropathy (e.g., ischemic, Leber's hereditary, optic neuritis), optic atrophy (e.g., from tumour compressing the nerve, toxic/metabolic disease) Rare: Occipital cortex lesion
Homonymous hemianopia	Loss of part or all of the left half or right half of both visual fields; the defect does not cross the vertical median	Optic tract or lateral geniculate body lesion; temporal, parietal, or occipital lobe lesion of the brain (stroke and tumour more common; aneurysm and trauma less common). Migraine may cause a transient homonymous hemianopia
Constriction of the peripheral fields leaving only a small residual central field	Loss of the outer part of the entire visual field in one or both eyes	Glaucoma, retinitis pigmentosa or some other peripheral retinal disorder, chronic papilledema after panretinal photocoagulation, central retinal artery occlusion with cilioretinal artery sparing, bilateral occipital lobe infarction with macular sparing, nonphysiologic vision loss, carcinoma-associated retinopathy

[31] From http://www.merck.com/mmpe/sec09/ch098/ch098a.html - Adapted from *The Wills Eye Manual*, Douglas J. Rhee, M.D. and Mark F. Pyfer, M.D.© 1999 by Lippincott Williams & Wilkins.

Types of visual field defects[31]		
Type	**Description**	**Causes**
		Rare: drugs

Visual field defects diagram[32]



[32] Source National Eye Institute

Blindness/low vision

Total blindness is the complete lack of vision and is often described as no light perception. A person may be considered "blind" even though they have some vision. There is no universally accepted level of visual acuity to define blindness. In North America and most of Europe a person is considered to be legally blind if their visual acuity is 20/200 (6/60) or less in the better eye with the best correction possible, or if their visual field is less than 20 degrees in diameter. The World Health Organization (WHO) defines "low vision" as visual acuity between 20/60 (6/18) and 20/400 (6/120) or a visual field between 10 and 20 degrees in diameter. The WHO definition of "blindness" is visual acuity less than 20/400 (3/60) or a visual field less than 10 degrees.

Monocular vision/Loss of stereoscopic depth perception

Monocular vision refers to having vision in one eye only and is associated with the loss of stereoscopic vision. Stereoscopic vision, in which the brain processes information from each eye to create a single visual image, is integral to depth perception in those with binocular vision.

Impaired colour vision

Individuals with impaired colour vision (colour blindness) lack a perceptual sensitivity to some or all colours. These impairments are usually congenital and, in general, drivers learn to compensate for the inability to distinguish colours when driving.

Impaired contrast sensitivity

Visual contrast sensitivity refers to the ability to perceive differences between an object and its background. Depending on the cause, a loss of contrast sensitivity may or may not be associated with a corresponding loss of visual acuity. Declines in contrast sensitivity are associated with normal aging, and can also result from conditions such as:

- cataracts
- age-related macular degeneration
- glaucoma, and
- diabetic retinopathy.

Impaired dark adaptation and glare recovery

Dark adaptation refers to the process in which the visual system adjusts to a change from a well-lit environment to a dark environment. Glare recovery refers to the process in which the eyes recover visual sensitivity following exposure to a source of glare, such as oncoming headlights when driving at night.

Prolonged dark adaptation is associated with normal aging and results in decreased visual acuity at night. It may also be the result of a medical condition, and where severe, may be referred to as "night blindness." Night blindness may be caused by a number of medical conditions including:

- retinitis pigmentosa
- vitamin A deficiency
- diabetes
- cataracts, or
- macular degeneration.

As with dark adaptation, individuals require a longer time to recover from glare as they age. Cataracts and corneal edema are also associated with prolonged glare recovery. Individuals may also experience prolonged glare recovery following laser assisted in situ keratomileusis (LASIK) or panretinal laser photocoagulation (PRP) surgery.

A number of illnesses can affect glare recovery time, with prolonged recovery times reported in individuals with diabetes, vascular disease and hypertension. Retinal conditions with demonstrated relationships to prolonged glare recovery include age-related maculopathy, "cured" retinal detachment and central serous retinopathy.

Diplopia

Diplopia (double vision) is the simultaneous perception of two images of a single object. These images may be displaced horizontally, vertically or diagonally in relation to each other.

Diplopia can be binocular or monocular. Binocular diplopia is present only when both eyes are open, with the double vision disappearing if either eye is closed or covered.

Monocular diplopia is also present with both eyes open, but unlike binocular diplopia, the diplopia persists when the problematic eye is open and the other eye is closed or covered.

Binocular diplopia, or true diplopia, is an inability of the visual system to properly fuse the images viewed by each eye into a single image. It may be caused by the physical misalignment of the eyes (strabismus) or diseases such as Parkinson's disease or multiple sclerosis. Two of the most common causes of binocular diplopia in people over 50 are thyroid conditions, such as Grave's disease, and cranial nerve damage.

Monocular diplopia is not caused by misalignment, but rather by problems in the eye itself. Astigmatism, dry eye, corneal distortion or scarring, vitreous abnormalities, cataracts and other conditions can cause monocular diplopia.

Nystagmus

Nystagmus is an involuntary, rapid, rhythmic movement of the eyeball. The movements may be horizontal, vertical, rotary or mixed. Nystagmus which occurs before 6 months of age is called congenital or early onset, whereas that occurring after 6 months is labelled acquired nystagmus. Early onset nystagmus may be inherited, or the result of eye or visual pathway defects. In many cases, the cause is unknown. Causes of acquired nystagmus are many and it may be a symptom of another condition such as stroke, multiple sclerosis, or even a blow to the head.

Many individuals with nystagmus have significant impairments in their vision, with some having low vision or legal blindness.

Medical conditions causing vision impairments

Cataracts

A cataract is an opacification or clouding of the crystalline lens of the eye, which blocks light from reaching the retina. Cataracts may be due to a variety of causes. Some are congenital, but few occur during the early years of life. The majority of cataracts are the result of the aging process. The presence of a cataract can interfere with visual functioning by decreasing acuity, contrast sensitivity and visual field.

Diabetic retinopathy

Diabetic retinopathy is the most common eye disease in those with diabetes, results in significant impairments in vision (blurred vision, vision loss) and is a leading cause of blindness in adults. It is caused by changes in the blood vessels of the retina (microvascular retinal changes) as a result of the disease.

There are two types of diabetic retinopathy: background (non-proliferative) and proliferative. Background retinopathy reflects early changes in the retina and often is asymptomatic. However, it may result in decreased visual acuity. Background diabetic retinopathy can progress into a more advanced or proliferative stage.

Proliferative retinopathy is the result of retinal hypoxia (lack of oxygen to the retina) and carries a much graver prognosis. The lack of oxygen to the retina results in a proliferation of new vessels in the retina or on the optic disc (neovascularization). Without treatment, the new vessels can leak blood into the centre of the eye, resulting in blurred vision. Fluid (exudate) also can leak into the centre of the macula (that part of the eye where sharp, straight-ahead vision occurs), a condition called macular edema. The leakage causes swelling of the macula, resulting in blurred vision. Macular edema can occur at any stage of diabetic retinopathy, but is more likely to occur as the disease progresses. Research indicates that approximately half of those with proliferative retinopathy also have macular edema.

An example of the effects of diabetic retinopathy on vision is shown below[33].

Normal vision

Vision of individual with diabetic retinopathy

Glaucoma

Glaucoma is a group of diseases characterized by increased intraocular pressure. The increased pressure can lead to optic nerve damage, resulting in blindness. Types of glaucoma include adult primary, secondary, congenital and absolute glaucoma. Open angle glaucoma, a type of adult primary glaucoma, is the most common. It is often referred to as the "silent blinder" because extensive damage may occur before the patient is aware of the disease. Early diagnosis and treatment are important for the prevention of optic nerve damage and visual field loss (primarily peripheral vision) due to glaucoma.

An example of the effects of glaucoma on vision is shown below[34].

Normal vision

Vision of individual with glaucoma

[33] Source National Eye Institute - http://www.nei.nih.gov/resources/strategicplans/neiplan/frm_impairment.asp
[34] Source National Eye Institute - http://www.nei.nih.gov/resources/strategicplans/neiplan/frm_impairment.asp

Age-related macular degeneration (ARMD)

Age-related macular degeneration (ARMD) is associated with the advanced stages of age-related maculopathy, or disease of the macula. The macula is the central portion of the retina and is responsible for central vision in the eye. Most individuals with maculopathy have impairments in their central vision. Those with ARMD, however, experience a progressive destruction of the photoreceptors in the macula, resulting in profound central vision loss.

ARMD has two forms, dry and wet. The dry form is the result of atrophy to the retinal pigment, resulting in vision loss due to the loss of photoreceptors (rods and cones) in the central portion of the eye. High doses of certain vitamins and minerals have been shown to slow the progression of the disease and reduce associated vision loss.

Wet ARMD (neovascular or exudative) is due to abnormal blood vessel growth in the eye, leading to blood and protein leakage in the macula. The bleeding, leaking and scarring from these blood vessels eventually result in damage to the photoreceptors, with a rapid loss of vision if left untreated. Treatment for wet ARMD has improved. Recent pharmaceutical advancements have resulted in compounds that, when injected directly into the vitreous humor, can cause regression of the abnormal blood vessels, leading to an improvement in vision.

An example of the effects of ARMD on vision is shown below[35].

Normal vision

Vision of individual with macular degeneration

Retinitis pigmentosa

Retinitis pigmentosa is the term given to a group of hereditary retinal diseases that result in the degeneration of rod and cone photoreceptors. The diseases cause progressive visual loss, ending in blindness. Night blindness is an early symptom of retinitis pigmentosa, followed by a constriction of the peripheral visual field. Loss of central vision typically occurs late in the course of the illness.

[35] Source National Eye Institute - http://www.nei.nih.gov/resources/strategicplans/neiplan/frm_impairment.asp

Typically, symptoms are not prominent in childhood, but with progressive degeneration of the photoreceptor cells, vision is gradually lost during adolescence and adulthood.

22.2 Prevalence

Common vision impairments

Blindness/low vision

Based on WHO classifications, the prevalence of low vision and blindness in Canada is 35.6 and 3.8 per 10,000 individuals, respectively. Among individuals with some vision loss (vision worse than 20/40), cataract and visual pathway disease were the most common causes, together accounting for 40% of visual impairment. Age-related macular degeneration and other retinal diseases were the next most common causes of vision loss, with diabetic retinopathy and glaucoma less frequently encountered as causes of visual impairment.

Myopia, hyperopia, presbyopia and astigmatism (refractive errors)

The prevalence of visual conditions such as astigmatism, hyperopia, myopia and presbyopia in Canada is difficult to determine due to the absence of population based studies evaluating the ocular health of Canadians.

Night myopia is relatively common among younger individuals, with an estimated prevalence of 38% in those 16 to 25 years of age.

Monocular vision, impaired contrast sensitivity, impaired dark adaptation and glare recovery

There are no data on the prevalence of monocular vision, impaired contrast sensitivity or impaired dark adaptation and glare recovery.

Visual field loss including hemianopia

Research indicates that the prevalence of visual field loss for those age 16 to 60 years is between 3% and 3.5%, rising to 13% for those 65 and older.

Diplopia

There are no data on the prevalence of diplopia.

Nystagmus

Although the prevalence of nystagmus is not accurately known, the condition is believed to affect around 1 in 5,000 individuals.

Medical conditions causing vision impairments

Cataracts

Canadian data on the prevalence of cataracts are lacking, but statistics from the United States indicate that approximately 17% of Americans aged 40 years and older have a cataract on at least one eye. Cataracts frequently occur bilaterally (in both eyes), with the prevalence of bilateral cataracts greater among women than men. Overall prevalence of cataracts increases with age, leading to increasing prevalence in the future as the population ages. United States census estimates project that the prevalence of cataracts will increase by 50% by the year 2020.

Cataracts are more common in women and affect Caucasians somewhat more frequently than other races, particularly with advancing age. Risk factors for age-related cataracts include:

- diabetes
- prolonged exposure to sunlight
- use of tobacco, and
- use of alcohol.

Diabetic retinopathy

Individuals with both Type 1 and Type 2 diabetes are at-risk for diabetic retinopathy. At present there is little published information about the prevalence of diabetic retinopathy in Canada. A study from the United States indicates that, after 20 years from the onset of diabetes, over 90% of people with Type 1 diabetes and more than 60% of people with Type 2 diabetes will have diabetic retinopathy.

Glaucoma

Approximately 67 million people worldwide have glaucoma, with more than 250,000 affected in Canada. Two percent of people over the age of 40 have glaucoma and the prevalence increases to 4% to 6% in people over 60. Those at increased risk for developing glaucoma include Blacks, those over the age of 60 and individuals with a family history of glaucoma.

Glaucoma is one of the leading causes of blindness, accounting for between 9% and 12% of all cases of blindness. The rate of blindness from glaucoma is between 93 and 126 per 100,000 population 40 years or older.

Age-related macular degeneration (ARMD)

In Canada using 2010 data, more than two million people over the age of 50 have some form of ARMD, with the numbers projected to triple in the next 25 years due to the aging of the population. Dry ARMD is more common than wet ARMD, accounting for 85% of all cases of ARMD. The greatest risk factor for acquiring macular degeneration is age. Other risk factors include:

- gender (females more at risk than males)
- race (Caucasians more at risk than Blacks)
- smoking, and
- family history.

Retinitis pigmentosa

The worldwide prevalence of retinitis pigmentosa is approximately 1 in 4,000. Based on this prevalence rate, approximately 8,500 individuals in Canada currently suffer from retinitis pigmentosa.

22.3 Vision impairments and adverse driving outcomes

Common vision impairments

Impaired visual acuity

There is a considerable body of research examining the relationship between static visual acuity and driving performance. Despite the obvious importance of vision when driving, research has failed to find a strong relationship between the two. One of the primary reasons for this is methodological. Given that most jurisdictions have minimum vision requirements for licensing, individuals with significant vision impairments are not licensed and therefore not included in measures of driving performance.

Monocular vision

Research on monocular vision and driving is limited, with most studies conducted before 1980. The evidence suggests that monocular drivers have higher crash and traffic violation rates.

Impaired contrast sensitivity

In general, the available research suggests that impairments in contrast sensitivity are associated with impairments in driving performance. However, those associations are insufficient to support specific decisions regarding loss of contrast sensitivity and continued driving. More research is required to develop screening tools for contrast sensitivity that are valid and reliable in the driver fitness context.

Impaired dark adaptation and glare recovery

Despite its obvious relevance to safe driving performance, there is little in the way of research to assist the medical community or authorities in making decisions related to dark adaptation, glare recovery and driving.

Visual field loss including hemianopia

A significant body of literature now exists on the relationship between visual field loss and driving performance, as measured either by crashes, on-road performance or simulator studies. Few studies have been done on hemianopia and driving. Taken together, the results from the on-road and crash literature suggest that visual field deficits can and do compromise driving performance. However, the current body of evidence fails to inform on the extent of deficit in the visual field that must be present before driving is impaired.

Diplopia and Nystagmus

There is little or no research on diplopia or nystagmus and driving performance.
Medical conditions causing vision impairments

Cataracts

Results on the impact of cataracts on driving performance are mixed, with some studies showing increased risk of crashes, ranging from 1.3 to 2.5 times higher than those without cataracts. However, other studies have failed to find an association between cataracts and crash rates. Results from studies that have examined self-reported difficulties in driving performance are more uniform, with the majority of participants reporting difficulties in many aspects of driving.

Notably, cataract surgery results in an improvement in visual functioning. However, a significant percentage of drivers continue to report difficulties in driving, particularly at night. An important consideration is when driving can safely resume following cataract surgery. Unfortunately, there is a paucity of data to inform on this issue. Of equal importance are the effects of wait times for cataract surgery on visual functions related to driving. Current literature indicates wait times of 6 months or longer result in decrements in vision that may have an impact on safe driving performance.

Diabetic retinopathy

The majority of research on diabetic retinopathy and driving is concerned with the effects of laser surgery (PRP) for proliferative diabetic retinopathy on visual fields. PRP reduces the risk of severe visual loss in proliferative diabetic retinopathy but also is associated with visual field loss and reductions in peripheral vision.

Glaucoma
There is evidence that drivers with glaucoma are at a significantly greater risk for impaired driving performance than those without the disease, likely due to loss of visual field.

Age-related macular degeneration (ARMD) and retinitis pigmentosa

There is little research on the relationship between ARMD or retinitis pigmentosa and driving performance.

22.4 Effect on functional ability to drive

Condition	Type of driving impairment and assessment approach	Primary functional ability affected	Assessment tools
Vision impairment	Persistent impairment: Functional assessment	Sensory - Vision	Medical assessments Visual assessment field test Functional assessment

Drivers with impaired visual acuity may lack the ability to perceive necessary details while driving. Visual field impairments may interfere with driving by limiting the area that a driver can see.

Drivers with reduced contrast sensitivity may have difficulty seeing traffic lights or cars at night. Limitations in research and testing preclude standards for impairments in contrast sensitivity, dark adaptation or glare recovery, although some individuals with these impairments may not be able to drive safely.

22.5 Compensation

The loss of certain visual functions can be compensated for adequately, particularly in the case of long-standing or congenital impairments. When a person becomes visually impaired, the capacity to drive safely varies with the ability to compensate. As a result, there are people with visual deficits who do not meet the vision standards for driving but who are able to drive safely.

Corrective lenses

Most drivers can compensate for a typical loss of visual acuity from myopia, hyperopia, astigmatism or presbyopia by wearing eyeglasses or contact lenses.

Telescopic lenses/other low vision aids

Low vision and telescopic lens aids cannot be used to meet the vision standard.

Telescopic (bioptic) lenses are sometimes used to assist drivers with low vision. A telescopic lens typically is mounted at the top half of a regular spectacle lens, and provides the driver with a magnified view of objects (e.g., text or detail of traffic signs that otherwise could be seen only at distances too short for a safe or timely stop). For the most part, the driver views the road through the spectacle lens, looking intermittently through the telescopic lens to read road signs, determine the status of traffic lights or scan ahead for road hazards.

Although telescopic spectacles, hemianopia aids and other low vision aids may enhance visual function, there are significant problems associated with their use in driving a motor vehicle. These include the loss of visual field, magnification causing apparent motion and the illusion of nearness. There has been little research to evaluate the use of telescopic lenses for driving by drivers with low vision. Although limited, studies indicate that drivers with low vision who drive with telescopic lenses have higher crash rates.

Prism lenses/eye patch

Drivers with binocular diplopia may be able to compensate for their impairment with the use of prism lenses or an eye patch.

Driving in daylight only

Drivers who have a vision impairment may be able to compensate for their impairment by driving during daylight hours only.

Strategies to compensate for visual field loss

Drivers with visual field loss may be able to compensate for their reduced visual field by practicing more rigorous scanning techniques involving more frequent eye and head movement.

Exceptional Cases

The loss of some visual functions can be compensated for adequately, particularly in the case of long-standing or congenital impairments. When an individual becomes visually impaired, the capacity to drive safely varies with his/her compensatory abilities. As a result, there may be individuals with visual deficits who do not meet the vision standards for driving but who are able to drive safely. On the other hand, there may be individuals with milder deficits who do meet the vision standards but who cannot drive safely.

In these exceptional situations, it is recommended that the individual undergo a special assessment for the fitness to drive. The decision on fitness to drive can only be made by the appropriate licensing authorities. However, it is recommended the following information be taken into consideration: (1) favourable reports from the ophthalmologist or optometrist; (2) good driving record; (3) stability of the condition; (4)

no other significant medical contraindications; (5) other references (e.g., professional, employment, etc.); (6) functional assessment.

In some cases it may be reasonable to grant a restricted or conditional licence to an individual to ensure safe driving. It may also be appropriate to make such permits exclusive to a single class of vehicles.

22.6 Guidelines for assessment

22.6.1 Impaired visual acuity – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **visual acuity is not less than 20/50 (6/15) with both eyes open and examined together, and** • **the conditions for maintaining a licence are met**
Conditions for maintaining licence	• Wear corrective lenses while driving, if a driver requires corrective lenses in order to meet the standard above
Reassessment	• Routine if the condition causing the visual acuity loss is not progressive • To be determined on an individual basis for drivers with impaired visual acuity that is progressive such as cataracts, macular degeneration, glaucoma and diabetic retinopathy
Information from health care providers	• Uncorrected and corrected standard rating of visual acuity for both eyes open and examined together. Standards for testing visual acuity are outlined in 22.7.1
Rationale	There is little research evidence regarding the level of visual acuity required for driving fitness. The minimum acuity requirement in the standard is based on consensus medical opinion in Canada.

22.6.2 Impaired visual acuity – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** **Class 4 (Taxi) and 5 (commercial)** • **visual acuity is not less than 20/40 (6/12) with both eyes open and examined together. Worse eye not less than 20/200 (6/60).** **Class 1-4 (Emergency)** • **visual acuity is not less than 20/30 (6/9) with both eyes open and examined together. Worse eye not less than 20/100 (6/30).**
Conditions for maintaining licence	• Wear corrective lenses while driving, if a driver requires corrective lenses in order to meet the standard above

Reassessment	• Routine if the condition causing the visual acuity loss is not progressive • To be determined on an individual basis for drivers with impaired visual acuity that is progressive such as cataracts, macular degeneration, glaucoma and diabetic retinopathy
Information from health care providers	• Uncorrected and corrected standard rating of visual acuity for both eyes open and examined together. Standards for testing visual acuity are outlined in 22.7.1
Rationale	There is little research evidence regarding the level of visual acuity required for driving fitness. The minimum acuity requirement in the standard is based on consensus medical opinion in Canada.

22.6.3 Visual field loss – Non-commercial drivers

STANDARD	**Non-commercial drivers eligible for a licence if** • **visual field is at least 120 continuous degrees along the horizontal meridian and 15 continuous degrees above and below fixation with both eyes open and examined together**
Conditions for maintaining licence	None

Reassessment	• Routine if the condition causing the visual field loss is not progressive (e.g., eye trauma, stroke, head injury)
	• To be determined on an individual basis for drivers with medical conditions that cause progressive visual field loss, such as:
	  ○ retinitis pigmentosa
	  ○ diabetic retinopathy
	  ○ vascular retinopathy
	  ○ glaucoma, or
	  ○ brain tumour

Information from health care providers	• Binocular field print using an approved visual field testing technique. Standards for testing visual field loss are outlined in 22.7.2
Rationale	There is little research evidence regarding the level of visual field required for driving fitness. The minimum visual field requirement in the standard is based on consensus medical opinion in Canada.

22.6.4 Visual field loss – Commercial drivers

STANDARD	**Commercial drivers eligible for a licence if** **Class 4 (Taxi) and 5 (commercial)** • **visual field is at least 120 continuous degrees along the horizontal meridian and 15 continuous degrees above and below fixation with both eyes open and examined together** **Class 1-4 (Emergency)** • **visual field is at least 150 continuous degrees along the horizontal meridian and 20 continuous degrees above and below fixation with both eyes open and examined together**
Conditions for maintaining licence	None
Reassessment	• Routine if the condition causing the visual field loss is not progressive (e.g., eye trauma, stroke, head injury) • Reassess drivers with diabetic retinopathy annually • To be determined on an individual basis for drivers with other medical conditions that cause progressive visual field loss, such as: o retinitis pigmentosa o vascular retinopathy o glaucoma, or o brain tumour
Information from health care providers	• Binocular field print using an approved visual field testing technique. Standards for testing visual field loss are outlined in 22.7.2
Rationale	There is little research evidence regarding the level of visual field required for driving fitness. The minimum visual field requirement in the standard is based on consensus medical opinion in Canada.

22.6.5 Loss of stereoscopic depth perception or monocularity – All drivers

STANDARD	**All drivers eligible for a licence if** • **standards for visual acuity and visual fields are met** • **the treating opthalmologist or optometrist indicates sufficient time has elapsed since loss of stereoscopic depth perception to allow the driver to adjust and compensate for the change in vision.** • **Where required, a road test or other functional assessment indicates the driver is able to compensate for any loss of functional ability necessary for driving, and** • **the conditions for maintaining a license are met**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	• Date of loss of stereoscopic depth perception • Opinion of a vision specialist whether the driver has adjusted and compensated for the change in vision
Rationale	Drivers with monocular vision can compensate for the loss of stereoscopic depth perception by using visual cues, such as the relative size of objects, and generally have adequate depth perception for everyday activities such as driving. The Canadian Ophthalmological Society notes that a driver who has recently lost the sight of an eye or stereoscopic vision may require a few months to recover the ability to judge distance accurately.

22.6.6 Diplopia

This guideline applies to drivers with diplopia within the central 40 degrees of primary gaze (i.e., 20 degrees to the left, right, above, and below fixation).

STANDARD	**Eligible for any class of licence if** • **the diplopia can be corrected using prism lenses so that they no longer have diplopia within the central 40 degrees of primary gaze** • **visual acuity and visual fields are met with prisms** • **the treating ophthalmologist or optometrist indicates that adequate adjustment has occurred, and** • **when required a functional assessment indicates the driver is able to compensate for any loss of functional ability necessary for driving**
Conditions for maintaining licence	• Wear corrective lenses while driving (if a driver requires prism lenses)
Reassessment	• Determined on an individual basis if the diplopia is the result of a progressive condition; as recommended by the treating physician or in accordance with the reassessment standard for that medical condition. • Otherwise, routine
Information from health care providers	• Description of corrective mechanism • Opinion of vision specialist whether adequate adjustment has occurred
Rationale	Consensus medical opinion in Canada indicates that an individual who has diplopia within the central 40 degrees of primary gaze is not eligible for a licence unless they can compensate for this impairment by wearing an eye patch or prism lenses while driving.

22.6.7 Impaired colour vision

STANDARD	**All drivers eligible for a licence if** • **Drivers can discriminate between different traffic lights**
Conditions for maintaining licence	None
Reassessment	• Routine
Information from health care providers	• Opinion of treating physician whether a lack of insight or cognitive impairment impairs the ability to compensate
Rationale	Impaired colour vision is usually congenital and in general, drivers learn to compensate for the inability to distinguish colours when driving.

22.7 Standards for testing visual functions

22.7.1 Visual acuity

The distance visual acuity of drivers should be tested using the refractive correction (spectacles or contact lenses) that they will use for driving. The examiner should assess visual acuity under binocular (both eyes open) conditions. It is recommended that visual acuity be assessed using a Snellen chart (see below) or equivalent at the distance appropriate for the chart under bright photopic lighting conditions of 275 to 375 lux (or greater than 80 candelas/m^2). Charts that are designed to be used at 3 meters or greater are recommended.

Snellen chart and standard ratings of visual acuity

Standard ratings in feet and metres	
Feet	Metres
20/200	6/60
20/100	6/30
20/70	6/21
20/50	6/15
20/40	6/12
20/30	6/9
20/25	6/7.5
20/20	6/6
20/15	6/4.5
20/10	6/3

22.7.2 Visual field

When a confrontational field assessment is carried out to screen for visual field defects the following procedure should be used at a minimum:

1. The examiner is standing or seated approximately 0.6 m (2 feet) in front of the examinee with eyes at about the same level.
2. The examiner asks the examinee to fixate on the nose of the examiner with both eyes open.
3. The examiner extends his or her arms forward, positioning the hands halfway between the examinee and the examiner. With arms fully extended, the examiner asks the examinee to confirm when a moving finger is detected.
4. The examiner should confirm that the ability to detect the moving finger is continuously present throughout the area specified in the applicable visual field standard. Testing is recommended in an area of at least 180° horizontal and 40° vertical, centred around fixation.

If a defect is detected, the driver should be referred to an ophthalmologist or optometrist for a full assessment. During a full assessment, binocular testing is required and the following techniques are acceptable:

1. Goldmann III/4e and V4e isopters
2. Humphrey Esterman test
3. Humphrey 81, 120, 135, or 246 point screener. Set test strategy to single intensity or 3 zone and all other parameters to standard. Two zone Humphrey testing is inadequate.
4. Medmont 700 Driving Field
5. Other visual field techniques will be accepted if appropriate.

Please note:
Goldman, Esterman and Humphrey 135 are the only tests that will test 150 degrees of horizontal vision as required for professional (class 1 to 4) drivers.

22.7.3 Contrast sensitivity

Assessment of contrast sensitivity is recommended for applicants referred to an ophthalmologist or optometrist for vision problems related to driving. Contrast sensitivity may be a more valuable indicator of visual performance in driving than Snellen acuity. The Canadian Ophthalmological Society therefore encourages increased use of this test as a supplement to visual acuity assessment.

Contrast sensitivity can be measured by means of several commercially available instruments:

- the Pelli-Robson letter contrast sensitivity chart
- either the 25% or the 11% Regan low-contrast acuity chart
- the Bailey-Lovie low-contrast acuity chart, or
- the VisTech contrast sensitivity test.

The testing procedures and conditions recommended for the specific test used should be followed.

Chapter 23: Medical Review for Drivers

The functional declines associated with aging are well documented. These functional declines in healthy aging drivers are unlikely to lead to unsafe declines in driving performance, except in the case of extreme old age. However, aging is also associated with increased risk for a broad range of medical conditions, such as visual impairments, musculoskeletal disorders, cardiovascular disease, diabetes, and cognitive impairment and dementia. These medical conditions and medications used to treat them may affect fitness to drive.

Because of the association between age and many chronic medical conditions, aging drivers are more likely to have one or more of these conditions. A 2003 survey found that 33% of Canadians age 65 and older had 3 or more chronic medical conditions. The survey also found that the average number of chronic conditions increases with age.

All Canadian jurisdictions have the legal authority to examine a driver's fitness and ability to drive. Authorities are specifically concerned with individuals whose fitness and ability to drive may be impaired by medical conditions. This includes individuals who may be impaired by medications or treatment regimes prescribed as treatment for a medical condition, general debility or a lack of stamina.

As a result, Canadian jurisdictions have developed a medical review for drivers as noted below:

STANDARD	**Recommended Frequency of Medical Review** **Class 1, 2, 3, 4** • **On application** • **At least every 5 years to age 45, and** • **thereafter every 3 years to age 65** • **annually at 65 and over** **Class 5 and 6 and 7** • **at age 75 and 80** • **every 2 years over age 80**

PART 3:

APPENDICES

Appendix 1: Canadian Driver Licence Classes

The National Safety Code (NSC) in Canada is a set of 16 standards developed by the member jurisdictions of CCMTA in consultation with the motor carrier industry to ensure road safety and facilitate the safe and efficient movement of people and goods across Canada.

The NSC is designed to create a comprehensive code of minimum performance standards for the safe operation of passenger and commercial vehicles. It has a specific focus on those responsible for the operation of commercial vehicles on the road, including trucks, buses, tractors and trailers

NSC Standard 4 – The Classified Driver Licensing is comprised of seven distinct licence classes, each designating a certain type of vehicle in accordance with the degree of capability necessary for its operation. In summary:

- Classes 1 to 4 are generally described as commercial classes of driver licence.
- Class 5 is required to drive a passenger vehicle
- Class 6 is required for driving a motorcycle
- Class 7 is a learner/instructional driver licence

Please see NSC Standard 4 (Classified Driver Licensing System) for additional details on the standard.

Appendix 2: Canada – US Reciprocity Agreement

Effective April 1, 1992, the US Department of Transport required all American commercial drivers to hold an American Commercial Drivers Licence (CDL).

In preparation for this requirement, a reciprocity agreement between Canada and the US completed 1989. This ensured that commercial driver's licences issued by Canadian provinces and territories under the National Safety Code Standards are recognised in the US. In fact, to ensure the one driver, one licence concept, the holder of a provincial or territorial commercial driver licence is prohibited from obtaining a CDL. The US Federal Register of Tuesday, May 23, 1989 proclaimed the Reciprocity Agreement.

Subsequently on December 30, 1998, Canada and the US signed reciprocity letters on medical fitness requirements for operators of commercial motor vehicles. The elements prescribed in the reciprocity agreement related to Canadian provinces and territories adhering to the National Safety Code (NSC) and that the licensing and testing standards were deemed equivalent to US standards. A similar evaluation by jurisdictions deemed the US CDL to be equivalent to the NSC.

Letters between the US and Canadian federal governments were used as the agreement, and when taken together constituted the understanding between Canada and the US respecting reciprocity of commercial driver licences.

By virtue of the agreement, the two countries medical standards were deemed equivalent with the exception of the requirements regarding (Cdn) (i) insulin-dependent diabetic drivers, (ii) hearing impaired drivers, (iii) drivers with epilepsy and (iv) drivers operating under a medical waiver or who are operating under medical *grandfather rights* who are prohibited from operating in international commerce.

Both countries agreed to adopt a unique identifier code to be displayed on the licence and the driving record to identify a commercial driver who is not qualified or disqualified from operating a commercial vehicle in the other country.

In December 2001, CCMTA agreed the Canadian identifier would be "W", and defined as: "restricted commercial class - Canada only". In December 2008, FMCSA announced it will implement the identifier "V" which will indicate the US driver is only allowed to drive in the US and is not medically qualified to drive in Canada. The identifier "V" was implemented on January 2014.

As part of the Canada – US agreement commercial drivers (Class 1, 2, 3 and 4 licence holders) are required to file a satisfactory medical report on application, every 5 years to age 45, at least every 3 years from age 46 to 65 and annually thereafter.

On September 24, 2019, both Canada and the United States agreed to remove the Code W identifier for Canadian insulin-dependent diabetic drivers who are well controlled. These commercial motor vehicle drivers can now drive in Canada and the United States.

Appendix 3: Provincial/Territorial Contact Information

Provincial/Territorial contact information for reporting potentially unfit drivers*

Driver assessment centres and rehabilitation resources can also be located in your area by contacting these offices.

Coordonnées des organismes gouvernementaux auxquels signaler les conducteurs potentiellement inaptes*

Vous pouvez également communiquer avec eux pour obtenir les coordonnées des centres d'évaluation des conducteurs et des ressources de réadaptation de votre région.

ALBERTA
Driver Fitness and Monitoring Branch
Alberta Transportation
Government of Alberta
Main Floor, Twin Atria Building
4999–98 Avenue
Edmonton AB T6B 2X3
Tel (780) 427-8230
Toll free in Alberta 310-0000
Fax (780) 422-6612
https://www.alberta.ca/driver-fitness-monitoring.aspx

BRITISH COLUMBIA/COLOMBIE-BRITANNIQUE
RoadSafetyBC
PO Box 9254, Stn Prov Gov
Victoria BC V8W 9J2
Tel (250) 387-7747
Toll free (855) 387-7747
Fax (250) 952-6888
https://www2.gov.bc.ca/gov/content/transportation/driving-and-cycling/roadsafetybc/medical-fitness/medical-prof/med-standards

MANITOBA
Driver Fitness
Manitoba Public Insurance
Box 6300
Winnipeg MB R3C 4A4
Tel (204) 985-1900
Toll free (866) 617-6676
Fax (204) 953-4992
Email: driverfitness@mpi.mb.ca
https://www.mpi.mb.ca/Pages/health-care-professionals.aspx

NEW BRUNSWICK/NOUVEAU-BRUNSWICK
Registrar of Motor Vehicles
Department of Public Safety
Motor Vehicle Branch
20 McGloin Street
PO Box 6000
Fredericton NB E3B 5H1
Tel (506) 453-2410
Fax (506) 462-2130
https://www2.gnb.ca/content/gnb/en/departments/public-safety.html

NEWFOUNDLAND AND LABRADOR/TERRE-NEUVE-ET-LABRADOR
Medical Review Officer
Motor Registration Division
Digital Government and Service NL
149 Smallwood Drive
St. John's NL A1N 1B5
Tel (877) 636-6867
Fax (709) 729-4360
https://www.gov.nl.ca/dgsnl/department/drivers-contact/

NORTHWEST TERRITORIES/TERRITOIRES DU NORD-OUEST
Compliance & Licensing
Department of Infrastructure
Government of the Northwest Territories
Box 1320
Yellowknife NT X1A 2L9
Tel (867) 767-9088
Fax (867) 873-0120
https://www.inf.gov.nt.ca/en

NOVA SCOTIA/NOUVELLE-ÉCOSSE
Transportation and Infrastructure Renewal
Road Safety Division
1672 Granville Street 6th floor
PO Box 1652
Halifax, NS B3J 2Z3
Tel (902) 424-5732
Fax (902) 424-0772
https://novascotia.ca/sns/rmv/licence/medicals.asp

NUNAVUT
Motor Vehicles Division
Department of Economic Development and Transportation
Government of Nunavut
PO Box 10
Gjoa Haven NU X0B 1J0
Tel (867) 360-4615
Fax (867) 360-4619
https://gov.nu.ca/edt/faq/where-can-i-get-drivers-licence

ONTARIO
Driver & Vehicle Services
Driver Medical Review Office
Ministry of Transportation
77 Wellesley Street W Box 589
Toronto ON M7A 1N3
Tel (416) 235-1773
Toll free (800) 268-1481
Fax (416) 235-3400 or (800) 304-7889
Email: drivermedicalreview@ontario.ca
http://www.ontario.ca/driverimprovement

PRINCE EDWARD ISLAND/ÎLE-DU-PRINCE-ÉDOUARD
Department of Transportation, Infrastructure and Energy
Driver Records Section
Highway Safety Division
Box 2000
Charlottetown PE C1A 7N8
Tel (902) 368-5210 or (902) 368-5234
Fax (902) 368-5236
Email: driverrecords@gov.pe.ca
http://www.gov.pe.ca/forms/pdf/2682.pdf

QUEBEC/QUÉBEC
Service de l'évaluation médicale et du suivi du comportement
Société de l'assurance automobile du Québec
333, boul. Jean-Lesage
CP 19500 succursale Terminus
Québec QC G1K 8J5
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www.saaq.gouv.qc.ca

SASKATCHEWAN
Saskatchewan Government Insurance
Medical Review Unit
2260–11th Avenue, 3rd floor
Regina SK S4P 2N7
Tel (306) 775-6176
Toll free (844)-855-2744 x 6176
Fax (306) 347-2577 or (866) 274-4417
Email: mruinquiries@sgi.sk.ca
www.sgi.sk.ca/individuals/medical/index.html

YUKON
Driver Sanctions Coordinator
Motor Vehicles
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Government of Yukon
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Toll free (800) 661-0408 ext. 5315
Fax (867) 393 7448
Email: motor.vehicles@gov.yk.ca

*As of February 2021

STANDARD 7

CARRIER AND DRIVER PROFILES

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INTRODUCTION - CARRIER PROFILE

The National Safety Code (NSC) provides for various performance standards in the operation of motor vehicles. In order for the objectives of the NSC to be achieved, an equitable administrative program profiling the performance of each carrier regarding the various requirements of the NSC is necessary. The Profile system was established to provide NSC administrators with an overview of a carrier's record and the ability to review current and past performance. Its administration calls for inter-jurisdictional exchange of information and implies a coordination of carrier operations.

The Profile system encompasses a wide range of components from carrier demographics, conviction information, reportable accident information, CVSA inspection information, audit results and monitoring activity and information on the legal entity.

Appendix A outlines the minimum list of data elements to be maintained by each jurisdiction in its control system (demographic, conviction, reportable accident, Commercial Vehicle Safety Alliance (CVSA) inspection, audit/monitoring and legal entity information). Monitoring and sanctioning activities identified on the carrier profile will be directed toward the carrier to take corrective action with drivers or to improve safety management practices.

Appendix B provides for the minimum convictions to be kept on a carrier profile and exchanged among jurisdictions for both carriers and commercial drivers.

Appendix A

Minimum List of Data Elements to be Contained in Each Jurisdiction's Control System

A. Demographic Information

1. Carrier Identification Number (NSC)

2. NSC Jurisdiction of carrier

3. Legal Entity Name(s)
   (Names of company/companies)
   - Legal Entity Address(es)
   - street name and number, city name
   - province/territory
   - postal code

4. Carrier Rating
   (Satisfactory, satisfactory unaudited, conditional, unsatisfactory)

5. Carrier Status
   (Active/inactive)

6. Fleet Size
   (Total number of power units in fleet)

B. Conviction Information

1. Heading Identifier
   (Conviction information)

2. Ticket/Control Number

3. Name of Convicted
   (Carrier/driver)

4. Driver's Licence Number
   (If driver convicted)

5. Driver Licence Jurisdiction

6. Date of Offence

7. Time of Offence

8. Date of Conviction

9. Vehicle Licence Plate
(Power unit)

10. Plate Jurisdiction

11. Location of Offence

12. Conviction Description

13. Equivalency Code

14. Statute Name
(Act, section, subsection, clause)

15. Weighting for Conviction

C. Reportable Accident Information

1. Heading Identifier
(Accident information)

2. Accident Report Identifier (number)

3. Driver's Name

4. Driver's Licence Number

5. Driver Licence Jurisdiction

6. Vehicle Licence Plate Number

7. Plate Jurisdiction

8. Vehicle Description

9. Date of Accident

10. Time of Accident

11. Location of Accident

12. Accident Jurisdiction

13. Accident Type

14. Weighting for accident
(PDO/injury/fatality = 2/4/6, respectively)

D. CVSA Inspection Information

1. Heading Identifier
(CVSA information)

2. Inspection Report Identifier (number)

3. Level of Inspection

4. Place of Inspection

5. Date of Inspection

6. Time of Inspection

7. Inspection Result for each vehicle

- unit plate number
- plate jurisdiction
- description of unit
- itemization of defects and out of service indicator
(for each CVSA inspection category)
- status of inspection result
(pass, violation present, out of service)

8. Driver Licence Number

9. Driver Name

10. Driver Licence Jurisdiction

11. Weighting for out of service CVSA report: 3

E. Audit Results and Monitoring Activity

1. Heading Identifier
(Intervention information)

2. Sanction Identifier (for example:)

- warning letter
- interview (compliance)
- hearing (show cause)

- audit
- vehicle plate/registration (suspension/revocation)
- NSC authority (suspension/revocation)
- monetary sanctions

3. Date of Sanction (interventions and sanctions)

4. Start Date (effective date)

5. End Date
(Reinstatement date or date eligible for re-entry)

6. Date of each intervention

7. Summary of Audit Results

F. Legal Entity - Director(s)/Partner(s) Information

Name(s) of directors/partners and applicable driver licence number(s) and jurisdiction of issuance.

Appendix B

Minimum List of Convictions to be Kept on the Carrier Profile

A. Drivers (driver related elements for carrier management)

1. Criminal Code Offences

2. Moving Violations (highway safety offences)

3. Driver's Liabilities

   - Failure by a driver involved in an accident to report
   - Holding more than one valid driver licence
   - Driving without the proper class of licence

4. Driver related NSC Convictions

B. Carriers

1. Vehicle Maintenance Convictions

2. Hours of Service Convictions

3. Vehicle Weights and Dimensions Convictions

4. Load Security Convictions

5. Dangerous Goods Convictions

6. Operating While Under Sanction

7. Operating Without Proper Authority (without NSC certificate, etc.)

STANDARD 8

SHORT-TERM SUSPENSION

SHORT-TERM SUSPENSION

MODEL LEGISLATION

1. A peace officer may, at any time and place on a highway or industrial road, when he has reasonable and probable grounds to believe that a driver's ability to drive a motor vehicle is affected by:

   a) alcohol,
   b) drugs,

   move or cause to be moved the motor vehicle to the nearest place off the travelled portion of the highway or industrial road and there, to request the driver to surrender his driver licence or any document issued in another jurisdiction that allows him to drive or operate a motor vehicle.

2. Where a peace officer requests a driver to surrender his driver licence under section 1, the driver shall forthwith surrender to the peace officer the licence issued to him under the law or any document issued in another jurisdiction that allows him to drive or operate a motor vehicle.

3. Unless the suspension from driving a motor vehicle is terminated under section 4, 5 or 6, the driver is automatically suspended from driving a motor vehicle for a period not to exceed 24 hours from the time the peace officer requested the surrender of the driver's licence.

4. Where a driver who is requested to surrender his driver licence under point a) of section 1 forthwith requests a peace officer to administer and does undergo, as soon as practicable, a test that indicates that his blood alcohol level does not exceed 50 mg of alcohol in 100 ml of blood, the driving suspension is terminated and the peace officer shall return the driver licence to the driver.

5. Where a driver who is requested to surrender his driver licence under point a) of section 1 produces to a peace officer having charge of the matter a certificate of a medical practitioner that:

   a) states that the blood alcohol level of the driver did not exceed 50 mg of alcohol in 100 ml of blood at the time the certificate was signed, and

   b) was signed after the driver was suspended from driving,

   the driving suspension is terminated and the peace officer shall return the driver licence to the driver.

6. Where a driver who is requested to surrender his driver licence under point b) of section 1 satisfies a peace officer having charge of the matter that his ability to drive a motor vehicle is not affected by a drug, the driving suspension is terminated and the peace officer shall return the driver licence to the driver.

7. Except where a peace officer earlier returns a driver licence to a driver under section 4, 5 or 6, a driver licence surrendered pursuant to section 1 of this Act shall remain in the possession of a peace officer for a period not exceeding 24 hours.

8. Where a peace officer prohibits a person from driving a motor vehicle under this Act, the peace officer shall issue a notice of suspension to the driver, a report of the suspension is to be delivered to the appropriate authority on the recognized form established by the said authority, and the information contained in the report shall be entered on the driver's driving record.

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Canadian Council of Motor Transport Administrators
Conseil canadien des administrateurs en transport motorisé

National Safety Code

STANDARD 9: Commercial Vehicle Drivers Hours of Service

February 2022
ISBN: 978-1-927993-75-0

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STRUCTURE OF THE STANDARD

The revised Standard is structured into seven parts but retains the numbering system and general appearance of the previous August 2010 version of the Standard.

This version incorporates provisions that cover electronic logging devices, as well as daily log requirements. This was done to add clarity in scenarios where a motor carrier and driver are exempt from the use ELDs and are permitted to use daily logs. The following table sets out the structure of the Standard:

Document Structure

Part	Title	Application
I	General Provisions	Definitions and responsibilities
II	Scheduling South of Latitude 60°N	Driving South of Latitude 60°N
III	Scheduling North of Latitude 60°N	Driving North of Latitude 60°N
IV	Permits	Requirements for operating by permit.
V	Emergencies and Adverse Driving Conditions	Managing hours of service requirements during emergencies and adverse driving conditions.
VI	Electronic Logging Device	Requirements for motor carriers and drivers who use ELDs
VII	Daily Log Requirements	Requirements for motor carriers and drivers permitted to use daily logs.

ComPART I

GENERAL PROVISIONS

INTERPRETATION

1 The following definitions apply to this Standard

Act means the *Motor Vehicle Transport Act*.

adverse driving conditions means snow, sleet, fog or other adverse weather or road conditions that were not known to a driver or a motor carrier dispatching a driver immediately before the driver began driving or could not reasonably have been known to them.

co-driver means a person who is present in a commercial vehicle because of having been, or being about to be, its driver.

commercial vehicle means a vehicle that

(a) is operated by a motor carrier and propelled otherwise than by muscular power; and

(b) is a truck, tractor, trailer or any combination of them that has a registered gross vehicle weight in excess of 4 500 kg or a bus that is designed and constructed to have a designated seating capacity of more than 10 persons, including the driver.

cycle means

(a) cycle 1, under which on-duty time is accumulated over a period of 7 days; and

(b) cycle 2, under which on-duty time is accumulated over a period of 14 days.

daily log means a record in the form set out in Schedule 2B containing the information required by Section 102.

day in respect of a driver, means a 24-hour period that begins at the hour designated by the motor carrier for the duration of the driver's cycle.

director means a federal director or a provincial director.

driver

(a) means a person who drives a commercial vehicle;

(b) means, in respect of a motor carrier, a person employed or otherwise engaged by the motor carrier to drive a commercial vehicle, including a self-employed driver; and

(c) for the purposes of sections 98 and 111, includes a co-driver.

duty status means any of the following periods

(a)off-duty time, other than time spent in a sleeper berth;

(b) off-duty time spent in a sleeper berth;

(c) driving time; or

(d) on-duty time, other than driving time.

electronic logging device or **ELD** means a device or technology that automatically records a driver's driving time and facilitates the recording of the driver's record of duty status, and that is certified by an accredited certification body under section 79.1 of the Federal *Commercial Vehicle Driver's Hours of Service Regulation SOR/2005-313*.

electronic recording device or ERD means an electric, electronic or telematic device that is installed in a commercial vehicle and is capable of accurately recording, in accordance with section 103, each period of duty status, in whole or in part.

emergency vehicle means a fire-fighting vehicle, ambulance, police vehicle or other vehicle that is used for emergency purposes.

federal director means Chief of the Motor Carriers Division of the Department of Transport.

home terminal means the place of business of a motor carrier at which a driver ordinarily reports for work and, for the purposes of sections 80-82 and 100-102, includes a temporary work site designated by the motor carrier.

inspector means

(a) a person designated under subsection 3(2); or

(b) a peace officer within the meaning of section 2 of the Criminal Code.

motor carrier means a person who is engaged in the operation of a bus or truck undertaking.

off-duty time means any period other than on-duty time.

oil well service vehicle means a commercial vehicle that is

(a) specially constructed, altered or equipped to accommodate a specific service requirement associated with the oil or natural gas industry; and

(b) used exclusively in the oil or natural gas industry for transporting equipment or materials to and from oil or natural gas well facilities or for servicing and repairing those facilities.

on-duty time means the period that begins when a driver begins work or is required by the motor carrier to be available to work, except if the driver is waiting to be assigned to work, and that ends when the driver stops work or is relieved of responsibility by the motor carrier, and

(a) includes driving time and time spent by the driver

(i) inspecting, servicing, repairing, conditioning, fueling or starting a commercial vehicle;

(ii) travelling in a commercial vehicle as a co-driver, when the time is not spent in the sleeper berth;

(iii) participating in the loading or unloading of a commercial vehicle;

(iv) inspecting or checking the load of a commercial vehicle;

(v) waiting before and while a commercial vehicle is serviced, loaded, unloaded or dispatched;

(vi) waiting before and while a commercial vehicle or its load is inspected and the driver's requirements are assessed and, if relevant, the time spent taking the required remedial actions;

(vii) waiting at an en-route point because of an accident or other unplanned occurrence or situation;

(viii) resting in or occupying a commercial vehicle for any other purpose, except:

(A) time counted as off-duty time in accordance with section 10;

(B) time spent in a sleeper berth;

(C) time spent in a stationary commercial vehicle to satisfy the requirements of section 14(3), and

(D) time spent in a stationary commercial vehicle that is in addition to the off-duty requirements of section 14(3).

(ix) performing any work for any motor carrier, and

(x) performing yard moves of a commercial vehicle within a terminal, depot or port and that is not on a public road.

(b) does not include driving time for the driver's personal use if

(i) the vehicle is not used in the course of the business of the motor carrier;

(ii) the vehicle has been unloaded;

(iii) any trailers have been unhitched;

(iv) the distance travelled does not exceed 75 km in a day;

(v) the driver has recorded in the daily log or record of duty status the odometer reading at the beginning and end of the personal use, and

(vi) the driver is not the subject of an out-of-service declaration under section 91 or section 108.

out-of-service declaration means a declaration issued by a director or inspector under section 91 or section 108.

principal place of business means the place or places designated by the motor carrier where daily logs or records of duty status and supporting documents are stored.

record of duty status means a record in which the driver records the information required under section 77 or 82, as the case may be, for each day.

sleeper berth [Repealed]

supporting document means any one of the following documents or information received or prepared by a driver in the course of their duties or received or prepared by the motor carrier

(a) any electronic mobile communication record reflecting communications between a driver and a motor carrier transmitted through a driver call-in or fleet management system;

(b) any payroll record, settlement sheet or equivalent document that indicates payments to the driver;

(c) any government issued document indicating the location of the commercial vehicle;

(d) any report, receipts, records, or other documentation relating to the load of the commercial vehicle including any bill of lading, itinerary, schedule or equivalent document that indicates the origin and destination of each trip;

(e) any reports, receipts, records or other documentation relating to the servicing, repairing, conditioning, fuelling, inspection, or rental of the commercial vehicle; and

(f) Any reports, receipts, dispatch or trip records or other documentation, in paper or electronic formats, indicating the date, time, or location of the commercial vehicle and/or driver during the trip, including arrival and departure times.

Technical Standard means the *Technical Standard for Electronic Logging Devices* published by the Canadian Council of Motor Transport Administrators as amended from time to time, other than provision 4.5.1.11(b)(9) of that Standard.

1.1 (1) For the purposes this Standard, every reference to HOS Regulations in the Technical Standard shall be read as a reference to the *Commercial Vehicle Drivers Hours of Service Regulations*, SOR/2005-313 as amended from time to time.

APPLICATION

2 (1) This Standard applies to all commercial vehicles other than the following

(a) a two or three-axle commercial vehicle being used for:

(i) transporting the primary products of a farm, forest, sea or lake, if the driver or the motor carrier is the producer of the products, or

(ii) a return trip after transporting the primary products of a farm, forest, sea or lake, if the vehicle is empty or is transporting products used in the principal operation of a farm, forest, sea or lake;

(b) an emergency vehicle;

(c) a vehicle engaged in providing relief in the case of a public welfare emergency, as that expression is defined in section 5 of the *Emergencies Act*; and

(d) a bus that is part of the public transit service that is provided in a municipality, in contiguous municipalities or within 25 km of the boundary of the municipality or contiguous municipalities in which the public transit service is provided.

(e) [Repealed]

(2) [Repealed]

DIRECTORS

3 (1) The minister responsible for highway safety in a province may designate a person to exercise in the province the duties and functions of a director for the purposes of this Standard.

(2) A director may designate inspectors for the purposes of this Standard.

RESPONSIBILITIES OF MOTOR CARRIERS, SHIPPERS, CONSIGNEES AND DRIVERS

4 No motor carrier, shipper, consignee or other person shall request, require or allow a driver to drive and no driver shall drive if:

(a) [repealed];

(b) driving would be likely to jeopardize the safety or health of the public, the driver or the employees of the motor carrier;

(c) the driver is the subject of an out-of-service declaration; or

(d) the driver, in doing so, would not be in compliance with this Standard.

[5 to 9 reserved]

TRAVELLING AS A PASSENGER - OFF DUTY TIME

10 If a driver who has, at the request of the motor carrier by whom the driver is employed or otherwise engaged, spent time travelling as a passenger, by any mode of transportation, to the destination at which the driver will begin driving takes 8 consecutive hours of off-duty time before beginning to drive, the time spent as a passenger shall be counted as off-duty time.

PART II

SCHEDULING - DRIVING SOUTH OF LATITUDE 60°N

APPLICATION

11 Sections 12 to 29 apply in respect of driving south of latitude 60°N.

DAILY DRIVING AND ON-DUTY TIME

12 (1) No motor carrier shall request, require or allow a driver to drive and no driver shall drive after the driver has accumulated 13 hours of driving time in a day.

(2) No motor carrier shall request, require or allow a driver to drive and no driver shall drive after the driver has accumulated 14 hours of on-duty time in a day.

MANDATORY OFF-DUTY TIME

13 (1) No motor carrier shall request, require or allow a driver to drive and no driver shall drive after the driver has accumulated 13 hours of driving time unless the driver takes at least 8 consecutive hours of off-duty time before driving again.

(2) No motor carrier shall request, require or allow a driver to drive and no driver shall drive after the driver has accumulated 14 hours of on-duty time unless the driver takes at least 8 consecutive hours of off-duty time before driving again

(3) No motor carrier shall request, require or allow a driver to drive and no driver shall drive after 16 hours of time have elapsed between the conclusion of the most recent period of 8 or more consecutive hours of off-duty time and the beginning of the next period of 8 or more consecutive hours of off-duty time.

DAILY OFF-DUTY TIME

14 (1) A motor carrier shall ensure that a driver takes, and the driver shall take at least 10 hours of off-duty time in a day.

(2) Off-duty time other than the mandatory 8 consecutive hours may be distributed throughout the day in blocks of no less than 30 minutes each.

(3) The total amount of off-duty time taken by a driver in a day shall include at least 2 hours of off-duty time that does not form part of a period of 8 consecutive hours of off-duty time required by section 13.

[**15** reserved]

DEFERRAL OF DAILY OFF-DUTY TIME

16 Despite sections 12 and 14, a driver who is not splitting off-duty time in accordance with section 18 or 19 may defer a maximum of 2 hours of the daily off-duty time to the following day if

(a) the off-duty time deferred is not part of the mandatory 8 consecutive hours of off- duty time;

(b) the total off-duty time taken in the 2 days is at least 20 hours;

(c) the off-duty time deferred is added to the 8 consecutive hours of off-duty time taken in the second day;

(d) the total driving time in the 2 days does not exceed 26 hours; and

(e) there is a declaration in the record of duty status or in the "Remarks" section of the daily log that states that the driver is deferring off-duty time under this section and that clearly indicates whether the driver is driving under day one or day two of that time.

FERRIES

17 Despite sections 13 and 14, a driver travelling by a ferry crossing that takes more than 5 hours is not required to take the mandatory 8 consecutive hours of off-duty time if

(a) the time spent resting in a sleeper berth while waiting at the terminal to board the ferry, in rest accommodations on the ferry and at a rest stop that is no more than 25 km from the point of disembarkation from the ferry combine to total a minimum of 8 hours;

(b) the hours are recorded in the record of duty status or the daily log as off-duty time spent in a sleeper berth;

(c) the driver retains, as a supporting document, the receipt for the crossing and rest accommodation fees; and

(d) the supporting document coincides with the record of duty status or daily log entries.

SPLITTING OF OFF-DUTY TIME — SINGLE DRIVER

18 (1) A driver who is driving a commercial vehicle fitted with a sleeper berth may meet the mandatory off-duty time and daily off-duty time requirements of sections 13 and 14 by accumulating off-duty time in no more than 2 periods if

(a) neither period of off-duty time is shorter than 2 hours;

(b) the total of the 2 periods of off-duty time is at least 10 hours;

(c) the off-duty time is spent resting in the sleeper berth;

(c.1) the sleeper berth meets the requirements of Schedule 1;

(d) the total of the driving time in the periods immediately before and after each of the periods of off-duty time does not exceed 13 hours;

(e) the elapsed time in the periods immediately before and after each of the periods of off-duty time does not include any driving time after the 16th hour after the driver comes on-duty;

(f) none of the daily off-duty time is deferred to the next day; and

(g) the total of the on-duty time in the periods immediately before and after each of the periods of off-duty time referred to in paragraph (b) does not include any driving time after the 14th hour.

(2) The 16th hour is calculated by

(a) excluding any period spent in the sleeper berth that is 2 hours or more in duration and that, when added to a subsequent period in the sleeper berth, totals at least 10 hours; and

(b) including

(i) all on-duty time;

(ii) all off-duty time not spent in the sleeper berth;

(iii) all periods of less than 2 hours spent in the sleeper berth, and

(iv) any other period spent in the sleeper berth that does not qualify as counting towards meeting the requirements of this section.

(3) [Repealed]

SPLITTING OF DAILY OFF-DUTY TIME — TEAM OF DRIVERS

19 (1) A team of drivers driving a commercial vehicle fitted with a sleeper berth may meet the mandatory off-duty time and daily off-duty time requirements of sections 13 and 14 by accumulating off-duty time in no more than 2 periods if

(a) neither period of off-duty time is shorter than 4 hours;

(b) the off-duty time is spent resting in the sleeper berth;

(c) the sleeper berth meets the requirements of Schedule 1;

(d) the total of the driving time in the periods immediately before and after each of the periods of off-duty time does not exceed 13 hours;

(e) the elapsed time in the periods immediately before and after each of the periods of off-duty time does not include any driving time after the 16th hour after the driver comes on duty;

(f) none of the daily off-duty time is deferred to the next day; and

(g) the total of the on-duty time in the periods immediately before and after each of the periods of off-duty time referred to in paragraph (b) does not include any driving time after the 14th hour.

(2) The 16th hour is calculated by

(a) excluding any period spent in the sleeper berth that is 4 hours or more in duration and that, when added to a subsequent period in the sleeper berth, totals at least 8 hours; and

(b) including

(i) all on-duty time;

(ii) all off-duty time not spent in the sleeper berth;

(iii) all periods of less than 4 hours spent in the sleeper berth, and

(iv) any other period spent in the sleeper berth that does not qualify as counting towards meeting the requirements of this section.

(3) [Repealed]

[20 to 23 reserved]

CYCLES

24 A motor carrier shall require that a driver follows, and the driver shall follow either cycle 1 or cycle 2.

25 Subject to section 28, no motor carrier shall request, require or allow a driver to drive and no driver shall drive unless the driver has taken at least 24 consecutive hours of off-duty time in the preceding 14 days.

26 Subject to section 28, no motor carrier shall request, require or allow a driver who is following cycle 1 to drive, and no driver who is following cycle 1 shall drive, after the driver has accumulated 70 hours of on-duty time during any period of 7 days.

27 Subject to section 28, no motor carrier shall request, require or allow a driver who is following cycle 2 to drive and no driver who is following cycle 2 shall drive after the driver has accumulated

(a) 120 hours of on-duty time during any period of 14 days; or,

(b) 70 hours of on-duty time without having taken at least 24 consecutive hours of off- duty time.

CYCLE RESET - OFF-DUTY TIME

28 (1) A driver may end the current cycle and begin a new cycle if the driver first takes the following off-duty time:

(a) for cycle 1, at least 36 consecutive hours; or

(b) for cycle 2, at least 72 consecutive hours.

(2) After taking the off-duty time, the driver begins a new cycle, the accumulated hours are set back to zero and the driver's hours begin to accumulate again.

CYCLE SWITCHING — OFF-DUTY TIME

29 (1) No motor carrier shall request, require or allow a driver to switch and no driver shall switch from one cycle to the other without first taking the following off-duty time before beginning to drive again

(a) to switch from cycle 1 to cycle 2, at least 36 consecutive hours; or

(b) to switch from cycle 2 to cycle 1, at least 72 consecutive hours.

(2) After taking the off-duty time, the driver begins the other cycle, the accumulated hours are set back to zero and the driver's hours begin to accumulate again.

[**30** to **36** reserved]

PART III

SCHEDULING — DRIVING NORTH OF LATITUDE 60°N

APPLICATION

37 Sections 39 to 54 apply in respect of driving north of latitude 60°N.

38 [Repealed]

MANDATORY OFF-DUTY TIME

39 (1) No motor carrier shall request, require or allow a driver to drive and no driver shall drive after the driver has accumulated more than 15 hours of driving time or 18 hours of on-duty time unless they take at least 8 consecutive hours of off-duty time before driving again.

(2) No motor carrier shall request, require or allow a driver to drive and no driver shall drive if more than 20 hours of time has elapsed between the conclusion of the most recent period of 8 or more consecutive hours of off-duty time and the beginning of the next period of 8 or more consecutive hours of off-duty time.

40 [Repealed]

SPLITTING OF DAILY OFF-DUTY TIME — SINGLE DRIVER

41 (1) A driver who is driving a commercial vehicle fitted with a sleeper berth may meet the mandatory off-duty time requirements of section 39 by accumulating off-duty time in no more than 2 periods if

(a) neither period of off-duty time is shorter than 2 hours;

(b) the total of the 2 periods of off-duty time is at least 8 hours;

(c) the off-duty time is spent resting in the sleeper berth;

(c.1) the sleeper berth meets the requirements of Schedule 1;

(d) the total of the driving time in the periods immediately before and after each of the periods of off-duty time does not exceed 15 hours;

(e) the on-duty time in the periods immediately before and after each of the periods of off-duty time does not include any driving time after the 18th hour after the driver comes on duty, calculated in accordance with subsection (2); and

(f) none of the daily off-duty time is deferred to the next day.

(2) The 18th hour is calculated by

(a) excluding any period spent in the sleeper berth that is 2 hours or more in duration and that, when added to a subsequent period in the sleeper berth, totals at least 8 hours; and

(b) including

(i) all on-duty time;

(ii) all off-duty time not spent in the sleeper berth;

(iii) all periods of less than 2 hours spent in the sleeper berth, and

(iv) any other period spent in the sleeper berth that does not qualify as counting towards meeting the requirements of this section.

(3) [Repealed]

SPLITTING OF DAILY OFF-DUTY TIME — TEAM OF DRIVERS

42 (1) A team of drivers driving a commercial vehicle fitted with a sleeper berth may meet the mandatory off-duty time requirements of section 39 by accumulating off-duty time in no more than 2 periods if

(a) neither period of off-duty time is shorter than 4 hours;

(b) the off-duty time is spent resting in the sleeper berth;

(c) the sleeper berth meets the requirements of Schedule 1;

(d) the total of the driving time in the periods immediately before and after each of the periods of off-duty time does not exceed 15 hours;

(e) the on-duty time in the periods immediately before and after each of the periods of off-duty time does not include any driving time after the 18th hour after the driver comes on duty, calculated in accordance with subsection (2); and

(f) none of the off-duty time is deferred to the next day.

(2) The 18th hour is calculated by

(a) excluding any period spent in the sleeper berth that is 4 hours or more in duration and that, when added to a subsequent period in the sleeper berth, totals at least 8 hours; and

(b) including

(i) all on-duty time;

(ii) all off-duty time not spent in the sleeper berth;

(iii) all periods of less than 4 hours spent in the sleeper berth, and

(iv) any other period spent in the sleeper berth that does not qualify as counting towards meeting the requirements of this section.

(3) [Repealed]

[43 to 48 reserved]

CYCLES

49 A motor carrier shall require that a driver follows, and the driver shall follow either cycle 1 or cycle 2.

50 Subject to section 53, no motor carrier shall request, require or allow a driver to drive and no driver shall drive unless the driver has taken at least 24 consecutive hours of off-duty time in the preceding 14 days.

51 Subject to section 53, no motor carrier shall request, require or allow a driver who is following cycle 1 to drive and no driver who is following cycle 1 shall drive after the driver has accumulated 80 hours of on-duty time during any period of 7 days.

52 Subject to section 53, no motor carrier shall request, require or allow a driver who is following cycle 2 to drive and no driver who is following cycle 2 shall drive after the driver has accumulated

(a) 120 hours of on-duty time in any period of 14 days; or

(b) 80 hours of on-duty time, without having taken at least 24 consecutive hours of off- duty time.

CYCLE RESET — OFF-DUTY TIME

53 (1) A driver may end the current cycle and begin a new cycle if they first take the following off-duty time

(a) for cycle 1, at least 36 consecutive hours; or

(b) for cycle 2, at least 72 consecutive hours.

(2) After taking the off-duty time, the driver begins a new cycle, the accumulated hours are set back to zero and the driver's hours begin to accumulate again.

CYCLE SWITCHING — OFF-DUTY TIME

54 (1) No motor carrier shall request, require or allow a driver to switch and no driver shall switch from one cycle to the other without first taking the following off-duty time before beginning to drive again

(a) to switch from cycle 1 to cycle 2, at least 36 consecutive hours; or

(b) to switch from cycle 2 to cycle 1, at least 72 consecutive hours.

(2) After taking the off-duty time, the driver begins the other cycle, the accumulated hours are set back to zero and the driver's hours begin to accumulate again.

[55 to 60 reserved]

PART IV

PERMITS

SPECIAL PERMITS

61 (1) A federal director may issue a special permit to a motor carrier for the purpose of a research or pilot project if the safety and health of the public, the driver or the employees of the motor carrier are unlikely to be jeopardized.

(2) Sections 12 to 54 and 76 to 112 do not apply in respect of special permits.

(3) The applicant shall provide to the federal director a detailed work plan that includes at least the following information

(a) the nature of the proposed research or pilot project;

(b) the objectives of the proposed research or pilot project;

(c) the competence of the applicant to participate in the proposed research or pilot project;

(d) the criteria and method for measuring results;

(e) the safety implications and the approach to addressing any possible risks identified;

(f) the duration of the proposed research or pilot project; and

(g) the manner of and timing for reporting results.

PERMITS FOR COMMERCIAL VEHICLES OTHER THAN OIL WELL SERVICE VEHICLES

62 (1) A provincial director may issue a permit to a motor carrier in respect of a commercial vehicle other than an oil well service vehicle if

(a) the safety and health of the public, the driver or the employees of the motor carrier are unlikely to be jeopardized; and

(b) a reduction of off-duty time or an increase in driving time is required

(i) to allow a driver following a regular itinerary to reach their home terminal or destination,

(ii) to allow the delivery of perishable goods, or

(iii) to accommodate a significant temporary increase in the transportation of passengers or goods by the motor carrier.

(2) The only deviations from the requirements of this Standard that may be authorized in the permit are

(a) a reduction of the 2 hours of daily off-duty time required by subsection 14(3) if the commercial vehicle is driven south of latitude 60°N; and

(b) an increase in driving time and on-duty time of up to a total of 2 hours.

OIL WELL SERVICE VEHICLE PERMITS

63 (1) A provincial director may issue a permit to a motor carrier in respect of an oil well service vehicle if:

(a) the driver has successfully completed training directly related to safety requirements associated with operating within the field services sector of the oil or natural gas industry; and

(b) the safety and health of the public, the driver or the employees of the motor carrier are unlikely to be jeopardized.

(2) Sections 24 to 29 and 49 to 54 do not apply in respect of an oil well service vehicle permit, but instead the permit shall require that the driver take:

(a) at least 3 periods of off-duty time, each at least 24 hours long, in any period of 24 days, the periods being taken consecutively or separated by on-duty time; and

(b) at least 72 consecutive hours of off-duty time after ending driving under the provisions of the permit and beginning driving under those sections.

(3) When the driver begins to drive again under sections 24 to 29 or 49 to 54, they begin to accumulate hours in the cycle.

(4) Waiting time and standby time at an oil or natural gas well site or ancillary facility shall not be included as on-duty time if

(a) the driver performs no work during the time;

(b) the time is fully and accurately recorded as off-duty time and denoted as waiting or standby time in the record of duty status or in the “Remarks” section of the daily log; and

(c) the time is not included in the mandatory minimum of 8 consecutive hours of off-duty time.

(5) None of the daily off-duty time shall be deferred to the next day.

APPLICATIONS FOR PERMITS

64 (1) A motor carrier may apply to a director for a permit by providing the following information and documents

(a) the name of the motor carrier;

(b) the names of the drivers who will drive a commercial vehicle for the motor carrier;

(c) the driver licence numbers of the drivers and the provinces of issuance;

(d) the list of the commercial vehicles operated by the motor carrier;

(e) a list of all accidents involving the motor carrier or any driver of the motor carrier that occurred during the 6 months before the date of the application if they are required by the laws of the province, state or country in which the accident occurred to be reported to the police;

(f) the requested duration of the permit;

(g) a detailed description of the load and the provinces in respect of which the permit is to apply;

(h) a detailed description of the routes in respect of which the permit is to apply;

(i) the requested schedule;

(j) the reasons for the application, with supporting evidence;

(k) a copy of every permit issued to the motor carrier under this Standard in the previous 5 years; and

(l) a signed declaration that discloses any other application for a permit under this Standard made by the motor carrier to any director within the 6 months before the date of the application.

(m) [Repealed]

(2) If requested by the director to do so, the motor carrier shall make available to the director the records of duty status or daily logs, as well as supporting documents or records of on-duty times, for the 6 months before the date of the application, of every driver who will drive a commercial vehicle of the motor carrier under the permit.

64.1 The director may, at any time after the application has been made, require an applicant to provide additional information in order for the director to evaluate whether the granting of a permit would be likely to jeopardize the safety or health of the public, the driver or the employees of the motor carrier.

APPROVAL OF OTHER DIRECTORS

65 (1) Before issuing a permit, a director shall obtain the written approval of the provincial directors of the provinces in which the commercial vehicle will be driven under the permit.

(2) A provincial director from whom approval is sought shall:

(a) respond to the request for approval within 30 days after receiving it; and

(b) give their approval if they have no reason to believe that the safety or health of the public, the driver or the employees of the motor carrier would be likely to be jeopardized by the granting of the permit.

ISSUANCE OF PERMITS

66 (1) A director who issues a permit shall specify in the permit:

(a) the reasons for issuing it;

(b) its duration, which shall not exceed one year;

(c) any terms or conditions required for the protection of the safety or health of the public, the driver or the employees of the motor carrier; and

(d) the province in respect of which the permit is to apply.

OBLIGATIONS OF PERMIT HOLDERS

67 (1) A motor carrier to whom a permit is issued shall:

(a) provide the director with a list of the commercial vehicles that will be operated under the permit before undertaking any activity under the permit;
(a.1) ensure that a copy of the permit is placed in each commercial vehicle in respect of which it applies;

(b) keep the director informed of any changes to the list of commercial vehicles that will be operated under this permit;

(c) make available for inspection by the director, on request, the records of duty status or the daily log and the supporting documents of the drivers of the commercial vehicles in respect of which the permit applies; and

(d) notify the director without delay of any accident involving any of the commercial vehicles to which the permit applies if it is required by the laws of the province, state or country in which the accident occurred to be reported to the police.

(2) [Repealed]

AMENDMENT, CANCELLATION AND SUSPENSION OF PERMITS

68 (1) A director who issues a permit may amend, cancel or suspend it, and a director who approves a permit issued by another director may withdraw the approval, on written notification to the motor carrier, if:

(a) the motor carrier or the driver contravenes this Standard or any term or condition of the permit; or

(b) the director determines that the safety and health of the public, the driver or the employees of the motor carrier are likely to be jeopardized.

(2) [Repealed]

(3) When a director withdraws approval for a permit issued by another director, the director who issued the permit shall amend it to remove the authority for a commercial vehicle to be operated under the permit in the province in respect of which approval is withdrawn.

[**69** to **75** reserved]

PART V

EMERGENCIES AND ADVERSE DRIVING CONDITIONS

76 (1) The requirements of this Standard in respect of driving time, on-duty time and off-duty time do not apply to a driver who, in an emergency, requires more driving time to reach a destination that provides safety for the occupants of the commercial vehicle and for other users of the road or the security of the commercial vehicle and its load.

(2) A driver who encounters adverse driving conditions while driving the vehicle during a trip south of latitude 60°N may extend the permitted 13 hours of driving time specified in sections 12 and 13 and reduce the 2 hours of daily off-duty time required by subsection 14(3) by the amount of time needed to complete the trip if:

(a) the driving, on-duty and elapsed time in the cycle the driver followed is not extended more than 2 hours;

(b) the driver still takes the required 8 consecutive hours of off-duty time; and

(c) the trip could have been completed under normal driving conditions without the reduction.

(3) A driver who encounters adverse driving conditions while driving the vehicle during a trip north of latitude 60°N may extend the permitted 15 hours of driving time specified in section 39(1) by the amount of time needed to complete the trip if:

(a) the extension of the driving time is no more than 2 hours;

(b) the driver still takes the required 8 consecutive hours of off-duty time; and

(c) the trip could have been completed under normal driving conditions without the extension.

(4) A driver who extends their driving, on-duty or elapsed time because of an emergency or adverse driving conditions shall record the reason for doing so in the record of duty status or in the “Remarks” section of the daily log.

PART VI

ELECTRONIC LOGGING DEVICE RECORDS OF DUTY STATUS

ELECTRONIC LOGGING DEVICE

77(1) A motor carrier shall ensure that each commercial vehicle that it operates is equipped with an ELD that meets the requirements of the Technical Standard, and shall ensure that it is mounted in a fixed position during the operation of the commercial vehicle and is visible to the driver when the driver is in the normal driving position, with the exception of commercial vehicles that are:

(a) operated by a motor carrier under a permit;

(b) operated by a motor carrier to which an exemption has been issued under the Act;

(c) the subject of a rental agreement of no longer than 30 days that is not an extended or renewed rental of the same vehicle; or

(d) manufactured before model year 2000.

(2) The motor carrier shall require the driver to record, and the driver shall record for each day, in accordance with this Standard and the Technical Standard, all the information associated with their record of duty status as their duty status changes.

(3) Subsections (1) and (2) do not apply if:

(a) the driver drives or is instructed by the motor carrier to drive a commercial vehicle within a radius of 160 km of the home terminal;

(b) the driver returns to the home terminal each day to begin a minimum of 8 consecutive hours of off-duty time; and

(c) the motor carrier maintains accurate and legible records showing, for each day, the cycle the driver followed and on-duty times and keeps those records and the supporting documents relating to those records for a minimum period of 6 months after the day on which each record was recorded.

(4) If a motor carrier authorizes a driver to operate a commercial vehicle for yard moves within a terminal, depot or port and that is not on a public road, the motor carrier shall ensure that the driver's ELD has been configured so that the driver can indicate those moves.

(5) A driver shall manually input or verify the following information in the ELD:

(a) the date and the start time, if different from midnight, and their driver identification number;

(b) the cycle that the driver is following;

(c) the commercial vehicle licence plates as well as the unit number or trailer number, if applicable;

(d) the names and the addresses of the home terminal and the principal place of business of the motor carrier by which the driver was employed or otherwise engaged during that day;

(e) the commercial vehicle's location description, if it is not automatically drawn from the ELD's geo-location database;

(f) if the driver was not required to keep a record of duty status immediately before the beginning of the day, the number of hours of off-duty time and on- duty time that were accumulated by the driver each day during the 14 days immediately before the beginning of the day;

(g) any deferral of off-duty time under section 16;

(h) if the driver was working for more than one motor carrier during the current day or the previous 14 days:

(i) for each day during the 14 days immediately before the current day, the total number of hours for each duty status that were accumulated by the driver, and the beginning and end time of each 16-hour period referred to in subsection 13(3);

(ii) the start and end times of each duty status in the current day, before the use of the ELD; and

(i) any annotation necessary to complete the record of duty status.

(6) No motor carrier shall request, require or allow a driver to use, and no driver shall use, more than one ELD at the same time for the same period.

(7) The motor carrier shall ensure that each commercial vehicle that it operates carries an ELD information packet containing a current version of the following documents:

(a) a user's manual;

(b) an instruction sheet for the driver describing the data transfer mechanisms supported by the ELD and the steps required to generate and transfer the data with respect to the driver's hours of service to an inspector;

(c) an instruction sheet for the driver describing the measures to take in the event that the ELD malfunctions; and

(d) a sufficient number of paper records of duty status to allow the driver to record the information required under section 82 for at least 15 days as set out by section 81.

(8) The motor carrier shall ensure that the driver records the information related to their record of duty status and the driver is required to record that information in a complete and accurate manner.

MALFUNCTION

78 (1) A motor carrier shall ensure that any ELD that is installed or used in a commercial vehicle that it operates is in good working order and is calibrated and maintained in accordance with the manufacturer's or seller's specifications.

(2) If a driver of a commercial vehicle becomes aware of the fact that the ELD is displaying a malfunction code set out in Table 4 of Schedule 2 of the Technical Standard, the driver shall notify the motor carrier that is operating the commercial vehicle as soon as the vehicle is parked.

(3) The driver shall record, in the record of duty status on the day on which the driver noticed the malfunction code, the following information:

(a) the malfunction code as set out in Table 4 of Schedule 2 of the Technical Standard;

(b) the date and time when the malfunction code was noticed; and

(c) the time when notification of the malfunction code was transmitted to the motor carrier.

(4) The driver shall record the code referred to in paragraph (3)(a) in each record of duty status following the day on which the code was noticed, until the ELD is repaired or replaced.

(5) A motor carrier shall, within 14 days after the day on which it was notified of an ELD malfunction code by the driver or otherwise became aware of it, or at the latest, upon return of the driver to the home terminal from a planned trip if that return exceeds the 14-day period, repair or replace the ELD.

(6) The motor carrier shall maintain a register of ELD malfunction codes for ELDs installed or used in commercial vehicles that it operates for which a malfunction was noticed, and that register shall contain the following information:

(a) the name of the driver who noticed the malfunction code;

(b) the name of each driver that used the commercial vehicle following the discovery of the malfunction code until the ELD was repaired or replaced;

(c) the make, model and serial number of the ELD;

(d) the licence plate of the commercial vehicle in which the ELD is installed or used, or the Vehicle Identification Number;

(e) the date when the malfunction code was noticed and the location of the commercial vehicle on that date, as well as the date when the motor carrier was notified or otherwise became aware of the code;

(f) the date the ELD was replaced or repaired; and

(g) a concise description of the actions taken by the motor carrier to repair or replace the ELD.

(7) The motor carrier shall retain the information set out in subsection (6) for each ELD for which a

malfunction was noticed for a period of 6 months from the day on which the ELD is replaced or repaired.

ACCOUNTS

78.1 A motor carrier shall create and maintain a system of accounts that is in compliance with the Technical Standard and that:

(a) allows each driver to record their record of duty status in a distinct and personal account; and

(b) provides for a distinct account for the driving time of an unidentified driver.

CERTIFICATION OF RECORD OF DUTY STATUS

78.2 A driver shall, immediately after recording the last entry for a day, certify the accuracy of their record of duty status.

VERIFICATION OF RECORDS OF DUTY STATUS

78.3 (1) A motor carrier shall verify the accuracy of the certified records of duty status that are forwarded by the driver according to the supporting documents provided and shall require from the driver those changes necessary to ensure the accuracy of the records.

(2) The driver shall either accept or reject the changes required by the motor carrier, make the necessary changes and recertify the accuracy of their record of duty status and forward the amended records of duty status to the motor carrier.

[79 reserved]

OTHER RECORDS OF DUTY STATUS

80 A requirement that a driver record time in a record of duty status is a requirement to record the time using the local time at the driver's home terminal.

REQUIREMENT TO FILL OUT A RECORD OF DUTY STATUS

81 (1) A motor carrier shall require every driver to fill out, and every driver shall fill out, a record of duty status each day that accounts for all of the driver's on-duty time and off-duty time for that day if:

(a) the driver is driving a commercial vehicle as set out in paragraphs 77(1)(a) to (d); or

(b) the ELD is displaying a malfunction code set out in Table 4 of Schedule 2 of the Technical Standard.

(2) This section does not apply if:

(a) the driver drives, or is instructed by the motor carrier to drive, a commercial vehicle within a radius of 160 km of the home terminal;

(b) the driver returns to the home terminal each day to begin a minimum of 8 consecutive hours of off-duty time;

(c) the motor carrier maintains accurate and legible records showing, for each day, the cycle the driver followed and the total on-duty times and keeps those records and the supporting documents relating to those records for a minimum period of 6 months after the day on which they were recorded; and

(d) the driver is not driving under a permit issued under this Standard or is driving under an exemption issued under the Act.

CONTENT OF RECORDS OF DUTY STATUS

82 (1) At the beginning of each day, a motor carrier shall require that a driver enters legibly, and the driver shall enter legibly, the following information in a record of duty status, using the grid in the form as set out in Schedule 2A:

(a) the date, the start time if different than midnight, the name of the driver and, if the driver is a member of a team of drivers, the names of the co-drivers;

(b) in the case of a driver who is not driving under an oil well service vehicle permit, the cycle that the driver is following;

(c) the commercial vehicle licence plates or unit numbers;

(d) the odometer reading of each of the commercial vehicles driven by the driver;

(e) the names and addresses of the home terminal and the principal place of business of every motor carrier by which the driver will be employed or otherwise engaged during that day;

(f) if the driver was not required to keep a record of duty status immediately before the beginning of the day, the number of hours of off-duty time and on-duty time that were accumulated by the driver each day during the 14 days immediately before the beginning of the day; and

(g) if applicable, a declaration in the record of duty status that states that the driver is deferring off-duty time under section 16 and that clearly indicates whether the driver is driving under day one or day two of that time.

(2) The motor carrier shall require that the driver records, and the driver shall record, in the record of duty status, using the grid set out in Schedule 2A, the following information as it becomes known:

(a) the beginning time and ending time for each duty status by drawing a continuous line between the time markers;

(b) the name of the municipality or legal subdivision and the name of the province or state where a change in duty status occurs or, if the change in duty status occurs at a location other than a municipality or legal subdivision, one of the following:

(i) the highway number and the nearest kilometer marker as well as the name of the nearest municipality or legal subdivision,

(ii) the highway number and the nearest service plaza as well as the name of the nearest municipality or legal subdivision, or

(iii) the numbers of the highways that meet at the nearest intersection as well as the name of the nearest municipality or legal subdivision; and

(c) the total number of hours of each period of duty status, which total must equal 24 hours.

(3) For greater certainty, nothing in subsection (2) prevents the driver from changing the hours at the top of the grid in order to reflect a different start time.

(4) The driver shall record in the record of duty status, as this information becomes known, the names and addresses of any other motor carriers by which they have been employed or otherwise engaged during the day.

(5) If a driver is engaged in making deliveries in a municipality that results in a number of periods of driving time being interrupted by a number of short periods of other on-duty time, the periods of driving time may be combined and the periods of other on-duty time may be combined on the grid.

(6) A motor carrier shall require that the driver records at the end of each day, and the driver shall record at the end of each day, on the grid, the total hours for each duty status and the total distance driven by the driver that day, excluding the distance driven in respect of the driver's personal use of the vehicle, as well as the odometer reading at the end of the day and the driver shall sign the record of duty status certifying the accuracy of the information recorded in it.

83 [Repealed]

POSSESSION OF RECORDS OF DUTY STATUS

84 No driver who is required to fill out a record of duty status shall drive, and no motor carrier shall request, require or allow the driver to drive unless the driver has in their possession:

(a) a copy of the record of duty status for the preceding 14 days and, in the case of a driver driving under an oil well service vehicle permit, for each of the required 3 periods of 24 consecutive hours of off-duty time in any period of 24 days;

(b) the record of duty status for the current day, completed up to the time at which the last change in the driver's duty status occurred; and

(c) any supporting documents that the driver received in the course of the current trip.

DISTRIBUTION AND KEEPING OF RECORD OF DUTY STATUS

85 (1) A driver shall, within 20 days after completing a record of duty status, forward the record of duty status and supporting documents to the home terminal and the motor carrier shall ensure that the driver does so.

(2) A driver who is employed or otherwise engaged by more than one motor carrier in any day shall forward, within 20 days after completing a paper record of duty status, and the motor carriers shall ensure that the driver forwards, the original record of duty status to the home terminal of the last motor carrier for which the driver worked and a copy of it to the home terminal of each other carrier for which the driver worked, as well as the supporting documents relating to that record to the home terminal of the carrier for which the driver worked during the periods referred to in those supporting documents.

(3) The motor carrier shall:

(a) deposit the records of duty status and the supporting documents relating to those records at its principal place of business within 30 days after receiving them; and

(b) keep them in chronological order for each driver or unidentified driver profile file for a period of at least 6 months after the day on which they are received.

TAMPERING

86 (1) No motor carrier shall request, require or allow a driver to keep and no driver shall keep more than one record of duty status in respect of any day.

(2) No motor carrier shall request, require or allow any person to enter and no person shall enter inaccurate information in a record of duty status or falsify, mutilate, obscure, alter, delete, destroy or deface the records or supporting documents.

(3) No motor carrier shall request, require or allow any person to, and no person shall, disable, deactivate, disengage, jam or otherwise block or degrade a signal transmission or reception, or re-engineer, reprogram or otherwise tamper with an ELD so that the device does not accurately record and retain the data that is required to be recorded and retained.

MONITORING BY MOTOR CARRIERS

87 (1) A motor carrier shall monitor the compliance of each driver with this Standard.

(2) A motor carrier that determines that there has been non-compliance with this Standard shall take immediate remedial action and record the dates on which the non-compliance occurred, and the action taken.

[**88** to **90** reserved]

OUT-OF-SERVICE DECLARATIONS

91 (1) A director or an inspector may issue an out-of-service declaration in respect of a driver if:

(a) the driver contravenes section 4(b);

(b) the driver fails to comply with any of the driving time or off-duty time requirements of sections 12 to 29 and 39 to 54 or a term or condition of a permit;

(c) the driver is unable or refuses to produce their record of duty status in accordance with section 98;

(d) there is evidence that shows that the driver has completed more than one record of duty status for a day, has entered inaccurate information in a record of duty status or has falsified information in a record of duty status; or

(e) the driver has falsified, mutilated, obscured, altered, deleted, destroyed or defaced a record of duty status or a supporting document in such a way that the director or inspector cannot determine whether the driver has complied with the driving time and off-duty time requirements of sections 12 to 29 and 39 to 54 or of a term or condition of a permit; or

(f) the driver uses an ELD that has a disabled, deactivated, disengaged, jammed or otherwise blocked or degraded signal transmission or reception, or uses an ELD that has been re-engineered, reprogrammed or otherwise tampered with so that it does not accurately record and retain the data that is required to be recorded and retained, in such a way that the director or inspector is unable to determine whether the driver has complied with the driving time and off-duty time requirements of sections 12 to 29 and 39 to 54 or of a term or condition of a permit.

(2) The director or inspector shall notify the driver and the motor carrier in writing of the reason that the driver has been made the subject of an out-of-service declaration and the period during which it applies.

(3) An out-of-service declaration applies:

(a) for 10 consecutive hours, if the driver contravenes section 4(b);

(b) for 10 consecutive hours, if the driver contravenes section 12;

(c) for 8 consecutive hours, if the driver contravenes section 13 or 39;

(d) for 72 consecutive hours, if the driver contravenes section 86; and

(e) for the number of hours needed to correct the failure, if the driver fails to comply with the off-duty time requirements of any of sections 14 to 29, 41 to 54 or of a term or condition of a permit or with the requirements of section 98.

(4) The out-of-service declaration in respect of a driver who contravenes section 86 continues to apply beyond the 72 hours until the driver rectifies the record of duty status, if applicable, and provides it to the director or inspector so that the director or inspector is able to determine whether the driver has complied with this Standard.

[**92** to **95** reserved]

INSPECTIONS

PROOF OF AUTHORITY

96 An inspector shall, at all times during the exercise of their functions, produce on request proof of their designation and title.

AUTHORITY TO STOP AND ENTER PREMISES FOR AN INSPECTION

97 (1) An inspector may, during business hours, enter a motor carrier's home terminal or principal place of business, other than living quarters, for the purpose of verifying compliance with the requirements of this Standard.

(2) An inspector may at any time enter a commercial vehicle, or stop and enter it, for the purpose of verifying compliance with the requirements of this Standard.

(3) An inspector may, at any time, enter a sleeper berth, or stop a commercial vehicle and enter its sleeper berth, for the purpose of verifying that the sleeper berth meets the requirements of Schedule 1.

(4) [Repealed]

OBSTRUCTION

97.1 No person shall obstruct or hinder, or knowingly make any false or misleading statements either orally or in writing to an inspector who is engaged in carrying out their duties and functions under this Standard.

PRODUCTION OF RECORDS OF DUTY STATUS AND SUPPORTING DOCUMENTS

98 (1) At the request of an inspector, a driver shall produce for inspection records of duty status for the current day and the preceding 14 days, the supporting documents for the current trip — in their existing format — as well as any permit under which the driver may be driving.

(2) If the records requested by the inspector are in electronic format, the driver shall produce either the display or a printout of the records and, if requested by the inspector to transmit the records of duty status, shall transmit them by the transfer method identified by the inspector that is provided for in the Technical Standard and is supported by the ELD.

(3) The driver shall, at the request of an inspector, give the inspector a copy of the paper records of duty status and supporting documents for the current day and the preceding 14 days, or the originals if it is not possible in the circumstances to make copies, as well as any permit under which the driver may be driving.

(4) The inspector shall provide the driver with a receipt in the form set out in Schedule 3 for the paper records of duty status and supporting documents received.

99 (1) A motor carrier shall, during business hours, at the request of an inspector, produce the following documents for inspection at the place specified by the inspector:

(a) records of duty status and the supporting documents relating to those records that are in its possession;

(b) records of driving time of an unidentified driver;

(c) the documents referred to in subsection 77(7);

(d) the register of ELD malfunction codes set out in subsection 78(6);

(e) any permit under which a driver is driving or was driving during the period for which the inspector makes the request; or

(f) the information recorded under subsection 87(2).

(2) The motor carrier shall transmit to the inspector the electronic records of duty status in the format, and using one of the transfer methods, prescribed in the Technical Standard.

(3) The inspector shall:

(a) immediately return the permit if it is still a current permit and provide a receipt in the form set out in Schedule 3 for any expired permit as well as for the paper records of duty status and supporting documents; and

(b) return the expired permits, paper records of duty status and supporting documents within 14 days after the day on which they were received.

PART VII

DAILY LOGS

100 A requirement that a driver record time in a daily log is a requirement to record the time using the local time at the driver's home terminal.

REQUIREMENT TO FILL OUT A DAILY LOG

101 (1) A motor carrier shall require every driver to fill out and every driver shall fill out a daily log each day that accounts for all of the driver's on-duty time and off-duty time for that day.

(2) This section does not apply if:

(a) the driver drives or is instructed by the motor carrier to drive a commercial vehicle within a radius of 160 km of the home terminal;

(b) the driver returns to the home terminal each day to begin a minimum of 8 consecutive hours of off-duty time;

(c) the motor carrier maintains accurate and legible records showing, for each day, the driver's duty status and elected cycle, the hour at which each duty status begins and ends, and the total number of hours spent in each status and keeps those records for a minimum period of 6 months after the day on which they were recorded; and

(d) the driver is not driving under a permit issued under this Standard.

CONTENT OF DAILY LOGS

102 (1) At the beginning of each day, a motor carrier shall require that a driver enters legibly, and the driver shall enter legibly the following information in a daily log:

(a) the date, the start time if different than midnight, the name of the driver and, if the driver is a member of a team of drivers, the names of the co-drivers;

(b) in the case of a driver who is not driving under the provisions of an oil well service vehicle permit, the cycle that the driver is following;

(c) the commercial vehicle licence plates or unit numbers;

(d) the odometer reading (if equipped) of each of the commercial vehicles driven by the driver;

(e) the names and the addresses of the home terminal and the principal place of business of every motor carrier by whom the driver was employed or otherwise engaged during that day;

(f) in the “Remarks” section of the daily log, if the motor carrier or driver was not required to keep a daily log immediately before the beginning of the day, the number of hours of off-duty time and on-duty time that were accumulated by the driver each day during the 14 days immediately before the beginning of the day; and

(g) if applicable, a declaration in the “Remarks” section of the daily log that states that the driver is deferring off-duty time under section 16 and that clearly indicates whether the driver is driving under day one or day two of that time.

(2) The motor carrier shall require that the driver records and the driver shall record in the daily log the hours in each duty status during the day covered by the daily log, in accordance with Schedule 2B, and the location of the driver each time their duty status changes, as that information becomes known.

(3) At the end of each day, the motor carrier shall require that the driver records and the driver shall record the total hours for each duty status and the total distance driven by the driver that day, excluding the distance driven in respect of the driver’s personal use of the vehicle, as well as the odometer reading at the end of the day and sign the daily log attesting to the accuracy of the information recorded in it.

USE OF ELECTRONIC RECORDING DEVICES

103 A driver may use an ERD for recording their duty status if:

(a) the driver is driving for a motor carrier in a jurisdiction that permits the use of ERDs for an intra-provincial truck or bus undertaking;

(*b*) the information contained in the electronic recording device is the same as the information that would have been provided if it had been submitted as a daily log in paper format;

(*c*) when requested to do so by a director or an inspector, the driver can immediately provide the information for the previous 14 days by producing it on a digital display screen of the electronic recording device or in handwritten form or on a print-out or any other intelligible output, or any combination of these;

(*d*) the device is capable of displaying:

(i) the driving time and other on-duty time for each day on which the device is used,

(ii) the total on-duty time remaining and the total on-duty time accumulated in the cycle being followed by the driver, and

(iii) the sequential changes in duty status and the time at which each change occurred for each day on which the device is used.

(*e*) the driver is capable, if so, requested by an inspector, of preparing a handwritten daily log from the information stored in the device for each day on which the device is used;

(*f*) the device automatically records when it is disconnected and reconnected and keeps a record of the time and date of these occurrences;

(*g*) the device records the time spent in each duty status of the driver;

(*h*) any hard copy of the daily log that is generated from the information that is stored in the device is signed on each page by the driver attesting to its accuracy and use; and

(i) The motor carrier shall ensure that each commercial vehicle equipped with an ERD shall have the sufficient number of paper logs to allow the driver to record the information required under section 103(b) and (c).

POSSESSION OF DAILY LOGS AND SUPPORTING DOCUMENTS BY DRIVERS

104 No driver who is required to fill out a daily log shall drive, and no motor carrier shall request, require or allow the driver to drive unless the driver has in their possession:

(a) a copy of the daily logs for the preceding 14 days and, in the case of a driver driving under an oil well service vehicle permit, for each of the required 3 periods of 24 consecutive hours of off-duty time in any period of 24 days;

(b) the daily log for the current day, completed up to the time at which the last change in the driver's duty status occurred; and

(c) any supporting documents or other relevant records that the driver received in the course of the current trip.

DISTRIBUTION AND KEEPING OF DAILY LOGS

105 (1) A driver shall, within 20 days after completing a daily log, forward the original daily log and supporting documents to the home terminal and the motor carrier shall ensure that the driver does so.

(2) A driver who is employed or otherwise engaged by more than one motor carrier in any day shall forward, within 20 days after completing a daily log, and the motor carriers shall ensure that the driver forwards, the original of the daily log to the home terminal of the last motor carrier for which the driver worked and a copy of it to the home terminal of each other carrier for which the driver worked, as well as the supporting documents relating to that daily log to the home terminal of the motor carrier for which the driver worked during the periods referred to in those supporting documents.

(3) The motor carrier shall:

(a) deposit the daily logs and supporting documents at its principal place of business within 30 days after receiving them; and

(b) keep the daily logs and supporting documents in chronological order for each driver for a period of at least 6 months after the day on which they were created.

TAMPERING

106 (1) No motor carrier shall request, require or allow a driver to keep and no driver shall keep more than one daily log in respect of any day.

(2) No motor carrier shall request, require or allow any person to enter and no person shall enter inaccurate information in a daily log, whether it is handwritten or produced using an electronic recording device, or falsify, mutilate or deface a daily log or supporting documents.

MONITORING BY MOTOR CARRIERS

107 (1) A motor carrier shall monitor the compliance of each driver with this Standard.

(2) A motor carrier that determines that there has been non-compliance with this Standard shall take immediate remedial action and record the dates on which the non-compliance occurred, the date of issuance of a notice of non-compliance and the action taken.

OUT-OF-SERVICE DECLARATIONS

108 (1) A director or an inspector may issue an out-of-service declaration in respect of a driver if:

(a) the driver contravenes section 4(b);

(b) the driver fails to comply with any of the driving time or off-duty time requirements of sections 12 to 29, sections 39 to 54 or a term or condition of a permit;

(c) the driver is unable or refuses to produce their daily log in accordance with section 111;

(d) there is evidence that shows that the driver has completed more than one daily log, has entered inaccurate information in the daily log or has falsified information in the daily log; or

(e) the driver has falsified, mutilated, obscured, altered or defaced a daily log or a supporting document in such a way that the director or inspector cannot determine whether the driver has complied with the driving time and off-duty time requirements of sections 12 to 29, sections 39 to 54 or a term or condition of a permit.

(2) The director or inspector shall notify the driver and the motor carrier in writing of the reason

that the driver has been made the subject of an out-of-service declaration and the period during which it applies.

(3) An out-of-service declaration applies:

(a) for 10 consecutive hours, if the driver contravenes paragraph 4(b);

(b) for 10 consecutive hours, if the driver contravenes section 12;

(c) for 8 consecutive hours, if the driver contravenes section 13 or 39;

(d) for 72 consecutive hours, if the driver contravenes section 106; or

(e) for the number of hours needed to correct the failure, if the driver fails to comply with the off-duty time requirements of any of sections 14 to 29 or 41 to 54 or of a term or condition of a permit or with the requirements of section 111.

(4) The out-of-service declaration in respect of a driver who contravenes section 106 continues to apply beyond the 72 hours until the driver rectifies the daily log, if applicable, and provides it to the director or inspector so that the director or inspector is able to determine whether the driver has complied with this Standard.

INSPECTIONS

PROOF OF AUTHORITY

109 An inspector shall, at all times during the exercise of their functions, produce on request proof of their designation and title.

AUTHORITY TO ENTER PREMISES FOR AN INSPECTION

110 (1) An inspector may, during business hours, enter a motor carrier's home terminal or principal place of business, other than living quarters, for the purpose of verifying compliance with the requirements with this Standard.

(2) An inspector may at any time enter a commercial vehicle, or stop and enter it, for the purpose of verifying compliance with the requirements with this Standard.

(3) An inspector may, at any time enter a sleeper berth, or stop a commercial vehicle and enter its sleeper berth, for the purpose of verifying that the sleeper berth meets the requirements of Schedule 1.

(4) No person shall obstruct or hinder, or knowingly make any false or misleading statements either orally or in writing to, a director or an inspector engaged in carrying out their duties and functions under this Standard.

PRODUCTION OF DAILY LOGS AND SUPPORTING DOCUMENTS

111 (1) At the request of an inspector, a driver shall immediately produce for inspection daily logs for the preceding 14 days, supporting documents and other relevant records for the current trip as well as any permit the driver may be driving under.

(2) If an electronic recording device is installed in the commercial vehicle, the driver shall retrieve the information stored by the device for each day that it was used.

(3) The driver shall, at the request of an inspector, immediately give the inspector a copy of the daily logs for the preceding 14 days and supporting documents and other relevant records for the current trip, or the originals if it is not possible in the circumstances to make copies, as well as any permit the driver may be driving under.

(4) The inspector shall provide a receipt in the form set out in Schedule 3 for the copy of the daily logs, supporting documents and other relevant records.

112 (1) A motor carrier shall, during business hours, at the request of an inspector, immediately make available for inspection at a place specified by the inspector daily logs, supporting documents and other relevant records as well as any permit a driver may be driving under or have been driving under during the period for which the inspector makes the request for the documents.

(2) The inspector shall:

(a) immediately return the permit if it is still a current permit and provide a receipt in the form set out in Schedule 3 for any expired permit as well as for the daily logs, supporting documents and other relevant records; and

(b) return the expired permits, daily logs, supporting documents and other relevant records within 14 days after receiving them.

SCHEDULE 1

(Paragraphs 18(1) (c.1). 19(1) (c), 41(1) (c.1), 42(1)(c), 97(3) and 110(3)

SLEEPER BERTHS

1 An area of a commercial vehicle is a sleeper berth if:

(a) it is designed to be used as a sleeping accommodation;

(b) it is located in the cab of a commercial vehicle or immediately adjacent to the cab and securely fixed to it;

(c) it is not located in or on a semi-trailer or a full trailer;

(d) if it is located in the cargo space, it is securely compartmentalized from the remainder of the cargo space;

(e) in the case of a bus:

(i) it is located in the passenger compartment;

(ii) it is at least 1.9 m in length, 60 cm in width and 60 cm in height;

(iii) it is separated from the passenger area by a solid physical barrier that is equipped with a door that can be locked;

(iv) it provides privacy for the occupant; and

(v) it is equipped with a means to significantly limit the amount of light entering the area;

(f) in the case of a commercial vehicle other than a bus, it is rectangular in shape with at least the following dimensions:

(i) 1.9 m in length, measured on the centre line of the longitudinal axis;

(ii) 60 cm in width, measured on the centre line of the transverse axis; and

(iii) 60 cm in height, measured from the sleeping mattress to the highest point of the area;

(g) It is constructed so that there are no impediments to ready entrance to or exit from the area;

(h) There is a direct a readily accessible means of passing from it into the driver's seat or compartment;

(i) It is protected against leaks and overheating from the vehicle's exhaust system;

(j) It is equipped to provide heating, cooling and ventilation within the range of household temperatures;

(k) It is sealed against dust and rain;

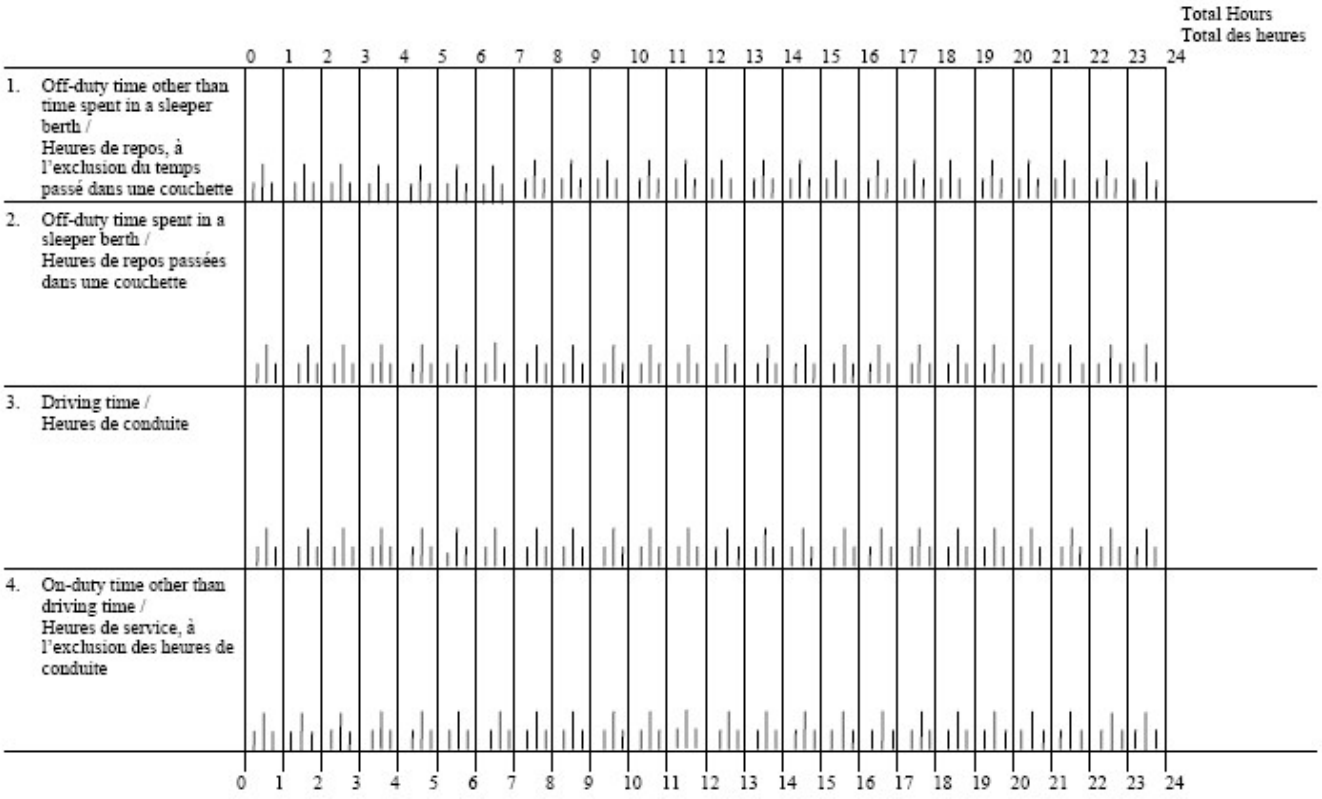
(l) It is equipped with a mattress that is at least 10 cm thick; and

(m) It is equipped with a means of preventing ejection of the occupant during deceleration of the commercial vehicle, the means being deigned, installed and maintained to withstand a total force of 2 700 kg applied toward the front of the vehicle and parallel to the longitudinal axis of the vehicle.

SCHEDULE 2A

DUTY STATUS GRID FOR RECORDS OF DUTY STATUS USE

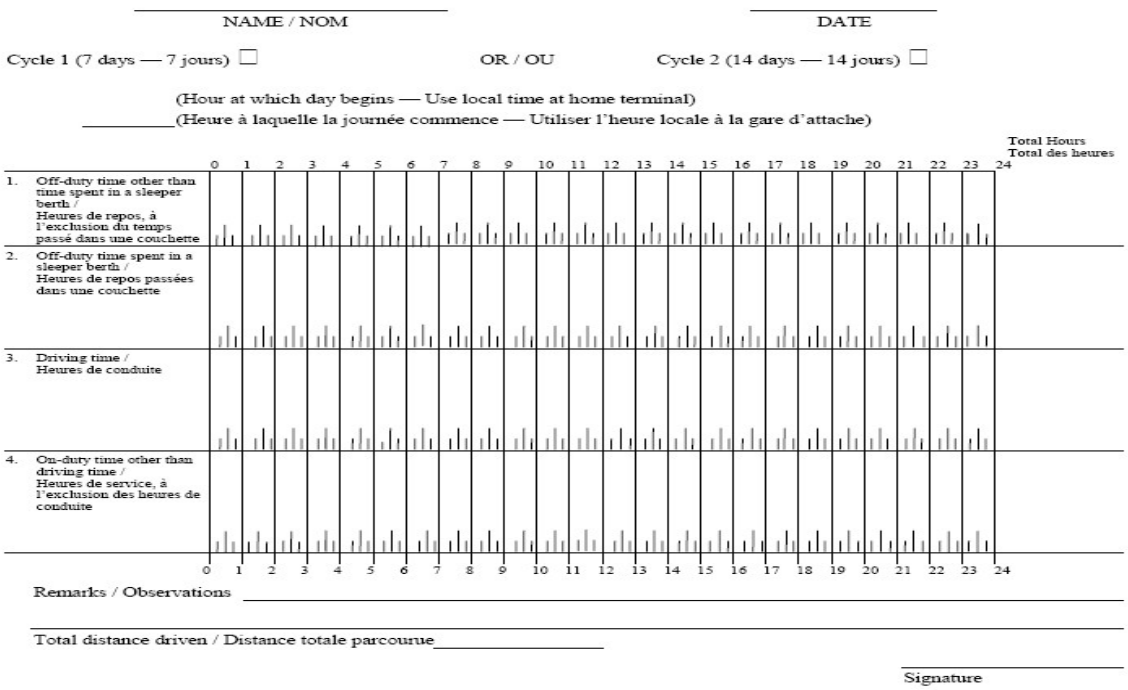
Subsection 82(1) and (2)



SCHEDULE 2B

DUTY STATUS GRID FOR DAILY LOG USE

Subsection 1 and 102 (2)



Instructions

Fill out the grid as follows:

NOTE: The hours at the top of the grid are only representative and may be amended to reflect a different start time.

(a) for each duty status:

(i) mark the beginning time and the end time, and

(ii) draw a continuous line between the time markers;

(b) record the name of the municipality or give the location on a highway or in a legal sub-division and the name of the province or state where a change in duty status occurs;

(c) if the driver is engaged in making deliveries in a municipality that result in a number of periods of driving time being interrupted by a number of short periods of other on- duty time, the periods of driving time may be combined and the periods of other on-duty time may be combined; and

(d) enter on the right of the grid the total number of hours of each period of duty status, which total must equal 24 hours.

SCHEDULE 3

RECEIPT

Subsection 98(4), paragraph 99(3)(a), Subsection 111(4) and Paragraph 112(2)(a)

Receipt/Reçu

It is hereby acknowledged that, pursuant to subsection 98(4) or paragraph 99(2)(a) of Part VI and Subsection 111(4) and Paragraph 112(2)(a) of Part VII of the Commercial Vehicle Drivers Hours of Service Standard, the following records of duty status or daily logs and supporting documents were provided by:

J'accuse réception des rapports d'activités ou fiche journalières et des documents justificatifs suivants fournis en vertu du paragraphe 98(4) ou de l'alinéa 99(2)*a*) de la partie VI et de l'article 111(4) et de l'alinéa 112 (2)a) de la *Norme sur les heures de service des conducteurs de véhicule utilitaire* par :

_____

(Name of person / Nom de la personne)

at / à

_____

(Number, street, municipality, location, province of motor carrier / Numéro, rue, municipalité, endroit, province du transporteur routier)

on / le

_____

(Day, month, year / Jour, mois, année)

namely / à savoir :

_____

(Description of records of duty status or daily logs and supporting documents received / Description des rapports d'activités ou fiche journalières et des documents justificatifs)

_____

_____

_____

_____

Dated at / Fait à

_____

(Municipality, location / Municipalité, lieu)

on / le

_____

(Day, month, year / Jour, mois, année)

_____

Inspector's signature de l'inspecteur

Commercial Vehicle Drivers Hours of Service Regulations

Application Guide

September 28, 2006

Disclaimer

The guidance in the Applications Guide is offered for convenience only. For accurate reference, please consult the Federal Commercial Vehicle Driver Hours of Service Regulations.

Please note: This Applications Guide is an interpretation/guidance based on the specific sections contained in the Federal Hours of Service Regulations.

ISBN 0-921795-82-3

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INTERPRETATION (Section 1)

"adverse driving conditions"

1. Do adverse driving conditions include road conditions, unforseen delays at border crossings or accidents?
Guidance: Adverse driving conditions mean snow, sleet, fog, other adverse weather conditions, a highway covered with snow or ice, or unusual road conditions, none of which were apparent on the basis of information known to the person dispatching the run at the time it was begun. This does not include delays at border crossings. (See also question 105, example 3.)

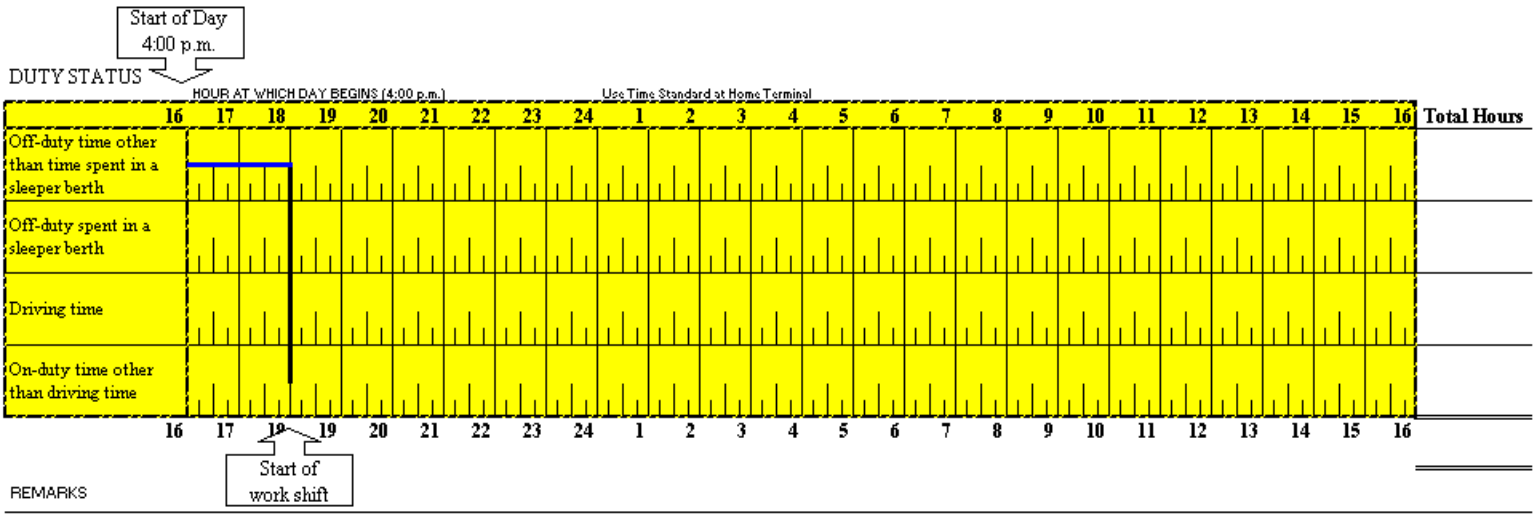
"daily log"

2. Must the "daily log" contain the information in the same format as set out in Schedule 2 and the information required by Section 82?
Guidance: All the information required by Section 82 must be contained in the daily log. A motor carrier may use its own version of the daily log and the graph grid must contain all the information as specified in Schedule 2. A carrier may print a graph grid with a start hour other than midnight if it routinely designates the start of the day as sometime other than midnight (e.g.: a noon start time for the day).

"day"

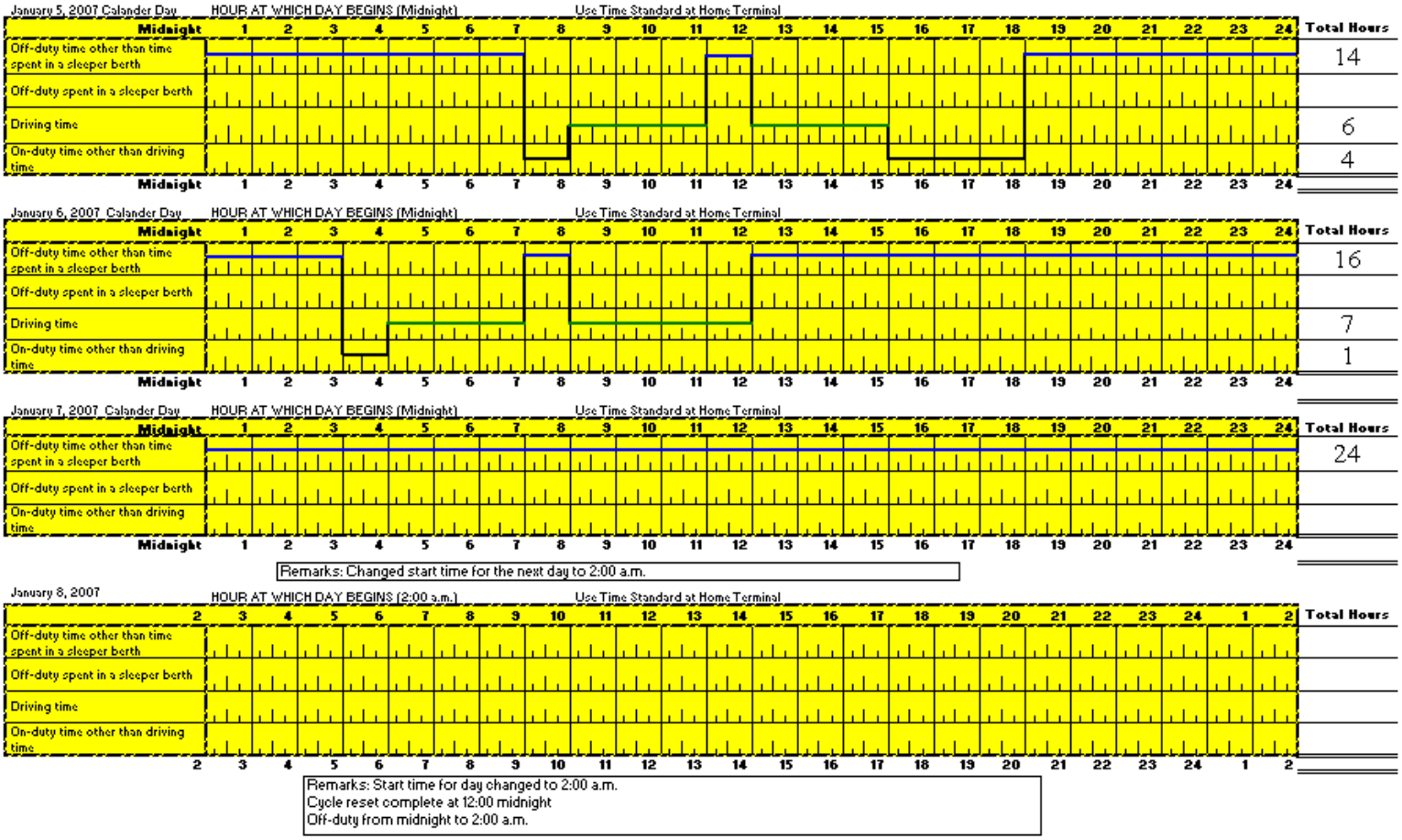
3. What happens if a driver works for more than one motor carrier during the same day or the same cycle?
Guidance: The driver must respect the start time of the day determined by the motor carrier that he was working for at the time he started a cycle. The start time of the day cannot be changed until the driver has reset the cycle. The driver must provide each carrier with a copy of the daily log.

4. How is the definition of a day being interpreted for purposes of the Regulations?
Guidance: Day means a 24-hour period that begins at the time designated by the motor carrier. If the start time is different than the calendar day, it must be recorded in the applicable duty status record, either the daily log or duty status time records.

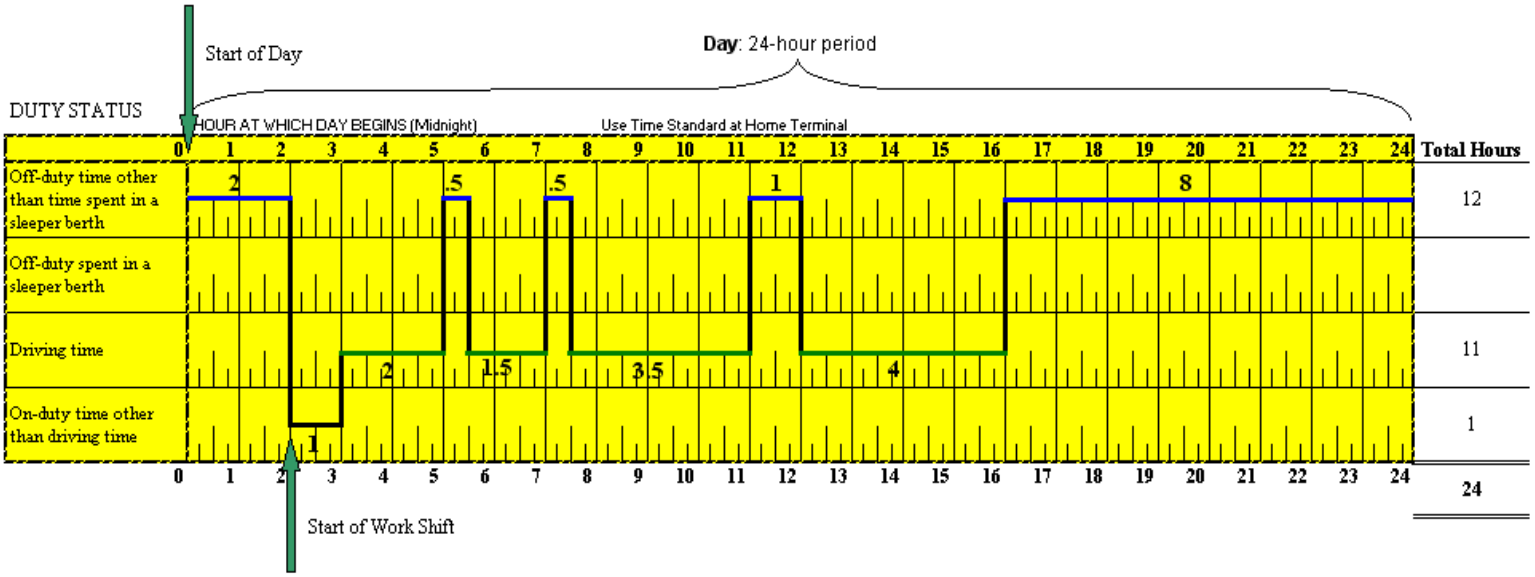


5. Does the carrier have the ability to determine the daily start time of each driver or does the same start time apply to all drivers?
Guidance: Each driver.

6. Can the start time of the day be changed to a different time?
Guidance: Yes, after a driver has taken a cycle reset and has indicated in the daily log the new start time for the day or in the on-duty status records (local drivers). During the same cycle the day begins at the same time every day.

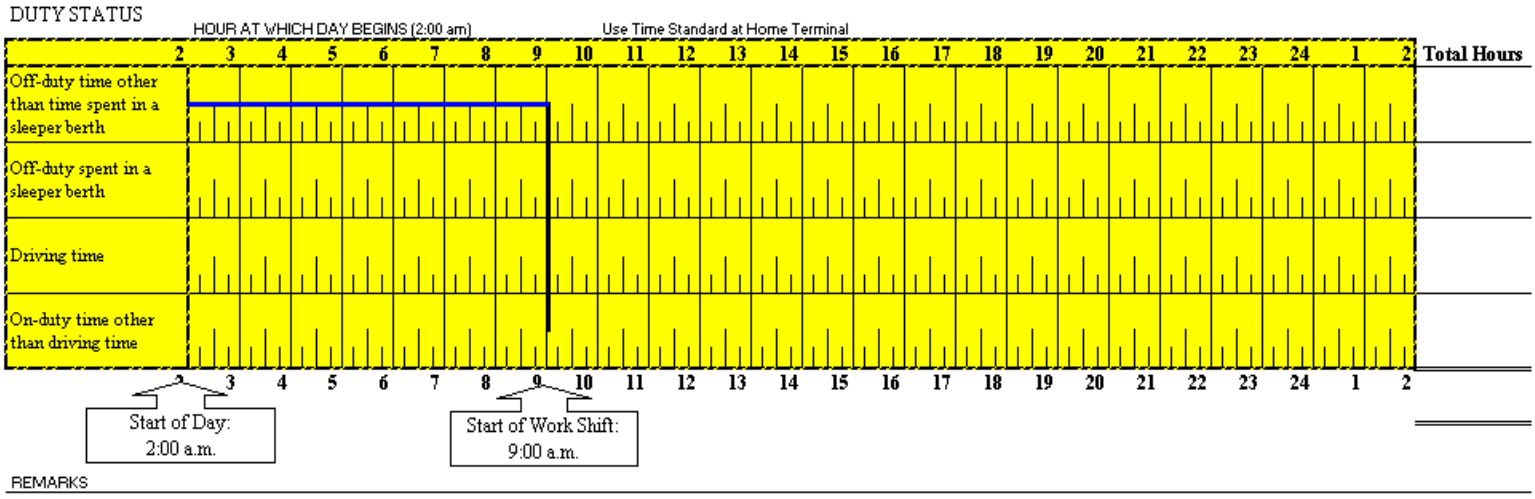


7. A day means a 24-hour period that begins at the hour designated by the motor carrier for the duration of the driver's cycle. Drivers have not traditionally viewed the Regulations as a series of "days," but rather as a rolling succession of on- and off-duty intervals. How are the rules being administered for the day?
Guidance: A day is like a page of a daily log. It is important to remember that the start time of the day is independent of the start time for the work shift.



8. How does a motor carrier designate the shift starting time?
Guidance: The motor carrier is only required to designate the start time for the day. The driver must indicate on the graph grid the change in duty status and the time at which the change occurred. The work shift starts after the driver has taken at least 8 consecutive hours off-duty and at the moment the driver performs any activity for the motor carrier. The work shift ends when the driver begins to take at least 8 consecutive hours off-duty.

Example 1:



Example 2:

Driver's Name: _____ Month: February 27 Year: 2007

Start time for the day: 2 a.m.

Date	Duty Status		Time Block from/to (every hour of the day must be accounted for) ◄ 24 hour day ►									Total hours for each duty status
	Started @		2.00									
	Finished @		9.00									
	Time spent	Off-duty	7.00									Off-duty:
		Driving										Driving:
		On-duty *not* driving										On-duty *not* driving:
Remarks:								Cycle 1 [X] Cycle 2				**Total:**

"driver"

9. When is a person deemed to become a "driver" for the purpose of the Regulation. For example, an individual (a part-time driver) that spends 90% of the time performing other work for the motor carrier, such as warehouse work?
Guidance: A driver is a person who has operated, operates or intends to operate a commercial vehicle and as such may have past, present and future obligations under the Regulations. For the purposes of Section 81 (2) (c), it is expected records be kept for 14 days prior to driving.

10. Do these Regulations apply to commercial vehicle activities on all roads, both public and private (e.g.: forestry roads)?
Guidance: Yes.

"home terminal"

11. Who designates the location of a driver's home terminal?
Guidance: The motor carrier, as the employer, would determine where a driver ordinarily reports for work, including temporary work sites. These sites could include location such as the driver's residence or a shipper's facility, etc.

12. What is considered "temporary" with respect to the definition of "home terminal"?
Guidance: A temporary work site is a location that lasts or is meant to last for a limited time provided it meets Section 81(2).

"off-duty time"

13. What conditions must be met for a commercial vehicle driver to record meal and other routine stops made during a work shift as off-duty time?

Guidance: 1. The driver must have been completely relieved of all duty, responsibility and obligation for the care and custody of the vehicle, its accessories, and any passengers or cargo it may be carrying.

2. During the stop, and for the duration of the stop, the driver must be at liberty to pursue activities of his/her own choosing and to leave the premises where the vehicle is situated.

3. It should be noted the motor carrier is not required to provide a driver with a letter stating that they are authorized to record meal or work breaks as "off-duty".

14. Do telephone calls to or from the motor carrier or other short disruptions that momentarily interrupt a driver's off-duty period constitute a change of the driver's duty status?
Guidance: These brief interruptions can be flagged. Telephone calls of this type will not be considered as interrupting the off-duty period.

15. If a driver is required by a motor carrier to carry a pager/beeper to receive notification to contact the motor carrier for a duty assignment, how should this time be recorded?
Guidance: Off-duty. Waiting to be assigned work refers to a driver at home or at some other location or carrying a pager/beeper and waiting for a possible work assignment and is considered off-duty time.

16. May a sleeper berth be used for a period of less than 2 hours duration?
Guidance: Yes. Periods of time spent in a sleeper berth of less than 2 hours but greater than 30 minutes may be used to satisfy the daily 10 hours off-duty requirement (other 2 hours). However, this time cannot be credited towards the periods of time that must be spent in the sleeper berth to satisfy the splitting of the daily off-duty time.

17. Can a driver book off-duty during any extensive period of waiting?
Guidance: Yes. If the driver is in the sleeper berth or is relieved by the motor carrier from responsibility for the vehicle and load and allowed to pursue personal activities.

18. How should time spent in transit on a ferryboat be recorded?
Guidance: As off-duty time if the driver is completely relieved from work and all responsibility to the motor carrier for which he/she drives. This relief must be consistent with existing regulations of the ferry operator and Canadian Coast Guard.

19. If a driver spends 8 consecutive hours resting in a stationary commercial vehicle will this be considered as satisfying the requirements for resetting the work shift?
Guidance: No.

"On-duty time"

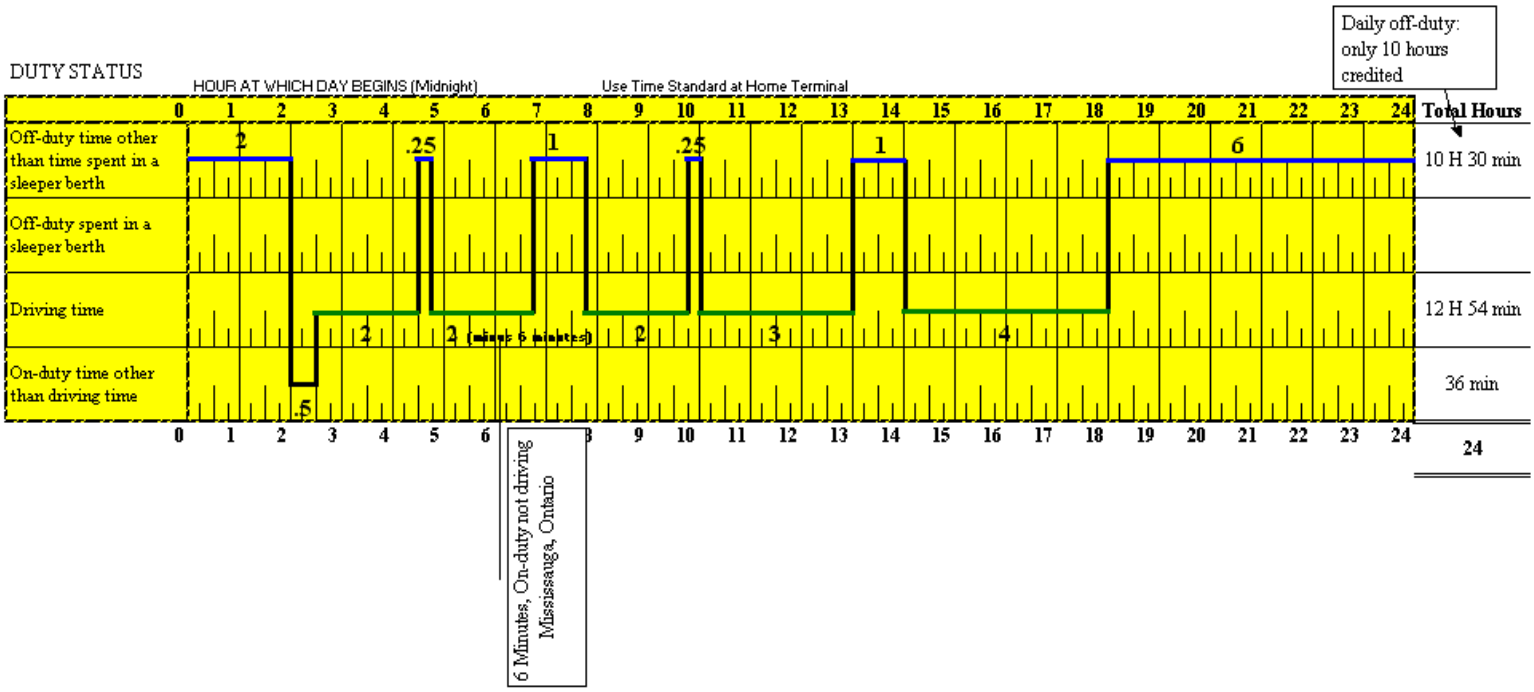
20. On-duty time means the period that begins when the driver begins work or is required by the motor carrier to be available for work, except where the driver is waiting to be assigned to work. (e) of this definition, states "waiting for a commercial vehicle to be serviced, loaded, unloaded or dispatched" What is the difference between "waiting to be assigned to work" and "waiting to be dispatched"?

Guidance: Waiting to be assigned work refers to a driver at home or at some other location or carrying a pager/beeper and waiting for a possible work assignment and is considered off-duty time. A driver waiting for a commercial vehicle to be dispatched would likely be at a carrier or shipper facility with the expectation of imminent dispatch and is considered to be on-duty time.

21. A company told all of its drivers that it would no longer pay for driving from the last stop to home and that this time should not be shown on the time cards. Is it a violation of the Regulations to operate a commercial vehicle from the last stop to home and not show that time on the time cards?
Guidance: Being paid is not relevant. Location of home terminal determines if the travel time is on-duty or off-duty. If the driver is returning to his home terminal the travel time is on-duty, driving; if the driver is traveling and using the vehicle as a personal conveyance (maximum 75 km per day), in most instances the time can be considered as off-duty. The driver must be in compliance with Section 2(1)(e).

22. How is a driver to record periods of less than 15 minutes. For example, if the stop is 8 minutes or less? If the stop is greater that 8 minutes, but less than 15 minutes, should the stop be shown as 15 minutes?
Guidance: If it is less than 15 minutes, it should be flagged and if it is greater than 15 minutes it must be recorded as on-duty, not driving. If the stop is greater than 8 minutes or more, the stop should be logged as 15 minutes. If the stop is less than 8 minutes, the driver needs only to flag the stop.

Example: Compliant



23. How is the time logged for Customs inspections/clearance to be considered?
Guidance: The driver is firstly required to record the inspection. It should be indicated as driving if the driver is not stopped for inspection (fast track), or on-duty, not driving for occasions in which he/she has to be cleared by Customs or Immigration.

24. A person is hired as a driver during the week and as a salesman on weekends for a firm considered a "motor carrier" where he was never hired to drive a commercial vehicle. Must the hours worked on weekends be considered on-duty time?
Guidance: Yes. All work activity performed for a motor carrier is considered on-duty time.

25. If a person is attending a driver training school, how are the hours spent in class and practicing driving a commercial vehicle to be recorded?
Guidance: The time spent in class is considered on-duty and the time during which the driver was at the controls of the commercial vehicle must be recorded as driving.

26. If a “driver trainer” occasionally drives a commercial vehicle, thereby becoming a “driver” (regardless of whether he/she is paid for driving), must the driver record all non-driving (training) time as on-duty (not driving)?
Guidance: Yes.

27. A driver drives on highways during the week and jockeys commercial vehicles in the yard (private property) on weekends. How is the yard time to be recorded?
Guidance: On-duty, driving.

28. How does compensation relate to on-duty time?
Guidance: No relationship.

29. Must all work (e.g., sweeping floors, washing dishes, etc.) for a motor carrier be recorded as on-duty time?
Guidance: Yes.

30. What is the duty status of a passenger who is riding seated next to the driver and who will become a driver of a commercial vehicle?
Guidance: On-duty (not driving) if the passenger does not take 8 consecutive hours off-duty prior to driving. Off-duty if the passenger complies with the provisions under Section 10.

31. Would drivers doing their own repair or maintenance work on a day off be required to log that time as on-duty, not driving?
Guidance: Yes.

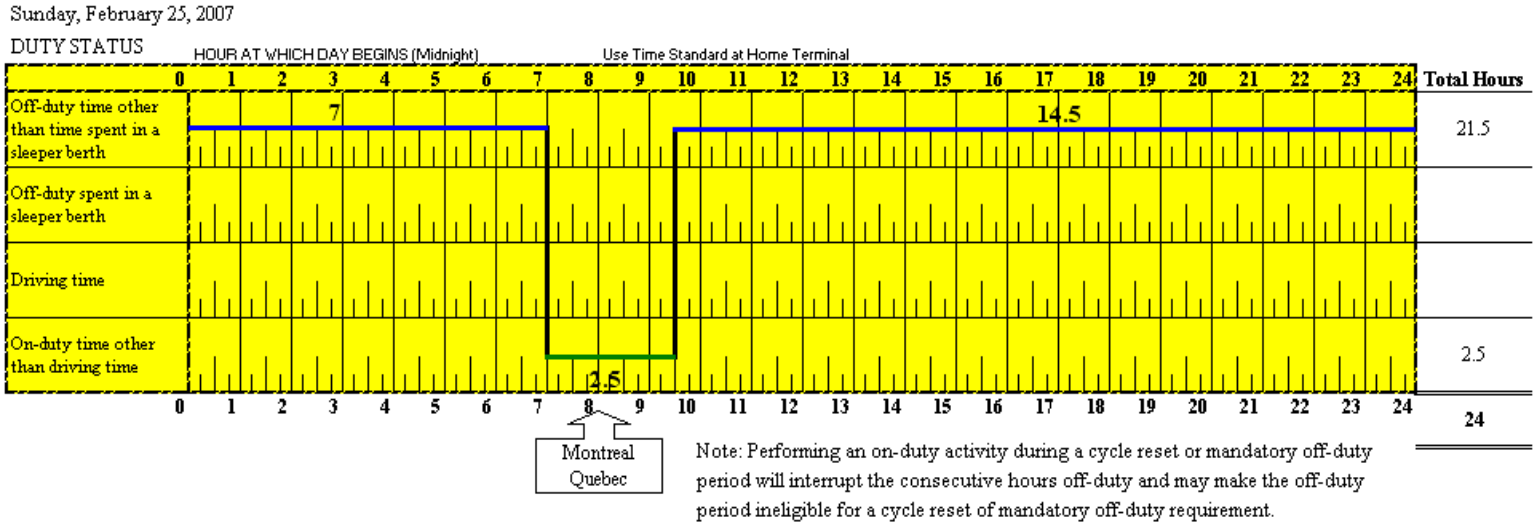
32. A driver is told by dispatch to report at 16:00. The driver shows up on time. However, once arrived at the terminal, the driver is told the load will not be ready for another 5 hours. Does this mean the driver is now off-duty until the load is ready, or is the waiting time considered as part of his or her 16 hour work shift? Can the driver now postpone reporting time to whenever the load is ready?

Guidance: The driver's work shift has started and therefore, the waiting time will be considered as part of the 16 hours total elapsed time. If the motor carrier relieves the driver from responsibility and the driver can pursue an activity of his/her choosing, the time can be shown as off-duty.

33. Can it be taken that it is now permissible for a driver to earn compensation for some activity other than work performed for a motor carrier without logging that time on-duty?
Guidance: Yes. If a driver performs work for a non-motor carrier, this time is not considered on-duty; the driver must be in compliance with Section 4 and not be fatigued.

34. Does the work performed by a driver for a non motor carrier have to be recorded as on-duty? Is it acceptable then for a driver to work an eight hour shift at a factory on each of his days off from his motor carrier employer?
Guidance: No, work performed for a non motor carrier does not have to be recorded as on-duty. Yes, it is acceptable for a driver to work an eight hour shift at a factory on each of his days off from his motor carrier employer. (However, the motor carrier should be practicing good fatigue management and must never allow a driver to drive a commercial vehicle if a driver's faculties are impaired to a point where it is unsafe to drive or would jeopardize or likely to jeopardize the safety or health of any person, including themselves.)

35. If a driver was not compensated for a particular activity, would he or she still be required to log a particular activity on-duty?
Guidance: Yes. The following illustration shows how a driver, in this case an owner-operator, is required to show in the daily time spent over the weekend, performing maintenance activities on his/her commercial vehicle.



36. Can time spent in sleeping facilities being transported as cargo (e.g., boats, campers, travel trailers) be recorded as sleeper berth time?

Guidance: No. The sleeping facilities would not qualify as a sleeper berth as defined in Section 1 of the Regulations. Also, Sections 18 and 19 are specific to the type of commercial vehicle and the terms on which the rules are applied. Reference: Section 18(1)c), Section 1 definition of "sleeper berth" and Schedule 1.

37. If a bus is not equipped with a sleeper berth, can the driver stretch out on the back seat to rest/sleep and claim sleeper berth time?
Guidance: No.

APPLICATION (Section 2)

38. Is there a maximum amount of time that a driver can use a commercial vehicle for personal use?
Guidance: No. There is no limitation on the amount of time, only on the distance traveled (75 km).

39. Are emergency vehicles exempt?
Guidance: Yes.

40. Are drivers utilizing a commercial vehicle responding to emergency situations such as winter storms, hurricane or tornado damage, flooding, etc., exempt?
Guidance: Yes. Drivers utilizing a commercial vehicle, responding to provide relief in case of a public welfare emergency are exempt. It may be prudent to document the circumstances and the reason for exercising the emergency exemption as one may be required to produce this information to an inspector during a facility audit or investigation.

41. Are tow trucks considered to be emergency vehicles?
Guidance: No. A tow truck is not defined as an emergency vehicle.

42. If a driver is permitted to use a commercial vehicle for personal reasons, how must the driving time be recorded?
Guidance: Off-duty provided in compliance with Section 2(1)(e).

43. If a driver uses a commercial vehicle as a personal vehicle for the week end, how must the driving time be recorded?
Guidance: Off-duty provided in compliance with Section 2(1)(e).

44. The expression "commercial vehicle when driven for personal use" excludes use, by the driver, of the vehicle in the course of business as a motor carrier.

Must personal use time still be within the prescribed daily or weekly limits?
Guidance: No. A commercial vehicle may be used for personal use for a maximum of 75 km within a day.

45. Is the 75 km distance measured by the actual distance traveled or by a radius distance?
Guidance: Actual distance traveled.

46. While a driver is using the commercial vehicle for personal use, is there a requirement for the driver to log fueling, location stop, etc?
Guidance: Yes, fueling is on-duty.

RESPONSIBILITIES OF MOTOR CARRIERS, SHIPPERS, CONSIGNEES AND DRIVERS (Section 4)

47. **Guidance:** This Section encourages the responsibility for due-diligence. It is not 'just in time' at all costs.

A shipper or carrier, in their opinion, must refuse to let a driver drive if they deem the driver to be under the influence, etc. This Section also protects the driver who has made the decision not to drive, due to fatigue.

48. If a motor carrier, shipper, consignee or other person notices that the driver's faculties are impaired to the point where it is unsafe for the driver to drive, (by alcohol, drugs, health or unknown causes - the cause is not important) must the driver be prohibited from driving?
Guidance: Yes.

49. What are the responsibilities of shippers, consignees, and other persons (user of service)?
Guidance: Shippers, consignees and other persons are responsible to ensure compliance with the Regulations through due diligence and not knowingly allow a motor carrier or driver to break the law.

TRAVELING AS A PASSENGER – OFF-DUTY TIME (Section 10)

50. If a person, under the direction of a motor carrier, is traveling as a passenger in a car, train, aircraft or boat (not a commercial vehicle) allowed to record this time as off-duty?
Guidance: Yes, provided the driver takes eight consecutive hours off-duty upon reaching destination and prior to driving a commercial vehicle.

51. Can a co-driver (who is deemed to be a team driver) sleep in the passenger seat, while the vehicle is being operated, and claim off-duty?
Guidance: No.

SCHEDULING – DRIVING SOUTH OF LATITUDE 60º N (Sections 11 - 19 and 24 - 29)

Daily Driving and On-duty Time (Section 12)

52. What are the rules for the day?
Guidance: See illustrations below.

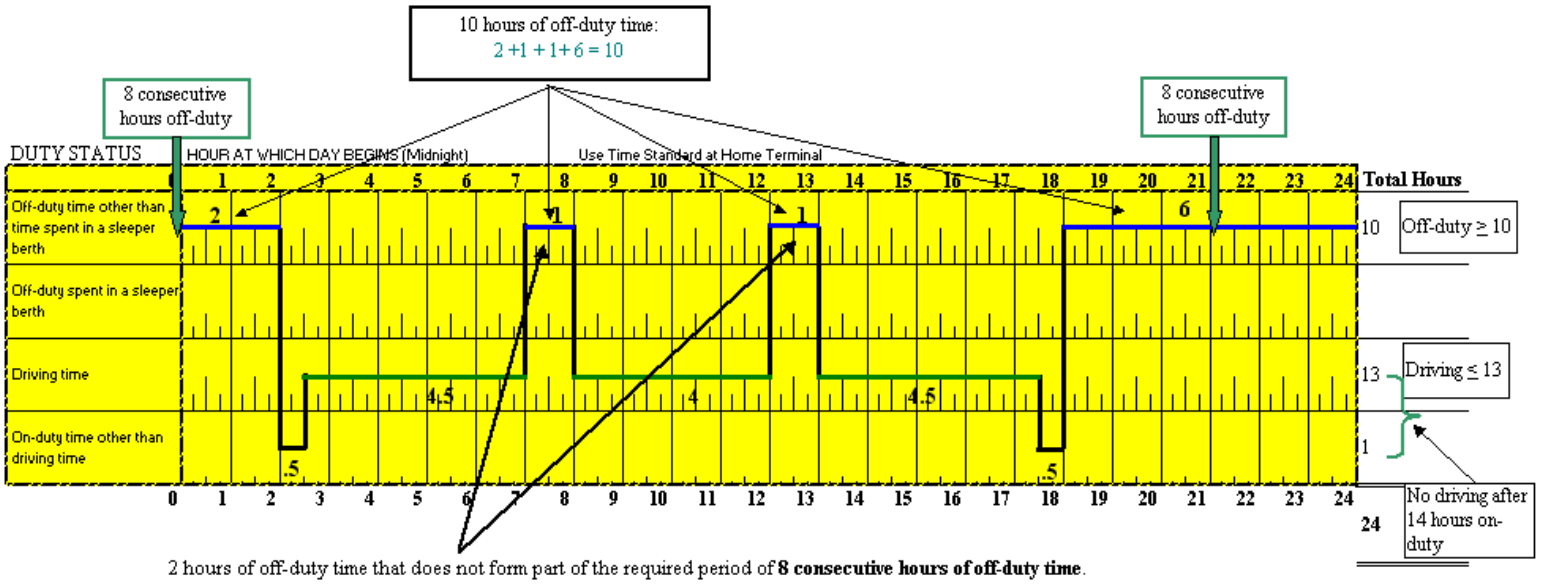
No driver shall drive after he/she has accumulated:
- 13* hours of driving time in a day

- 14* hours of on-duty time in a day
  * Exception for “Deferral of Daily Off-duty Time”

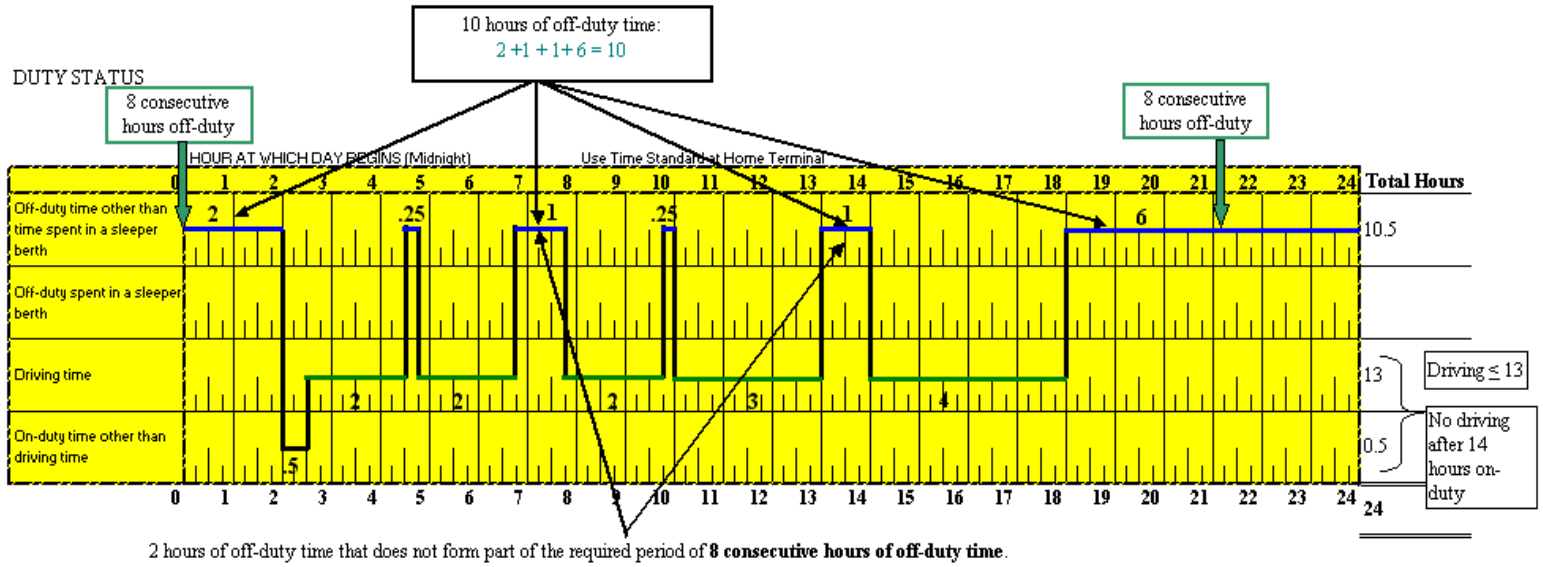
Off-duty requirements:
- minimum of 10 hours off-duty must be taken throughout the day
- only off-duty periods of 30 minutes or more can be included in the 10 hours off-duty requirement. Reference: Section 14.
- take at least 2 hours off-duty time that does not form part of a period of 8 consecutive hours

(Note: not necessary to have 8 consecutive hours in a day)

Example 1: Compliant



Example 2: Compliant

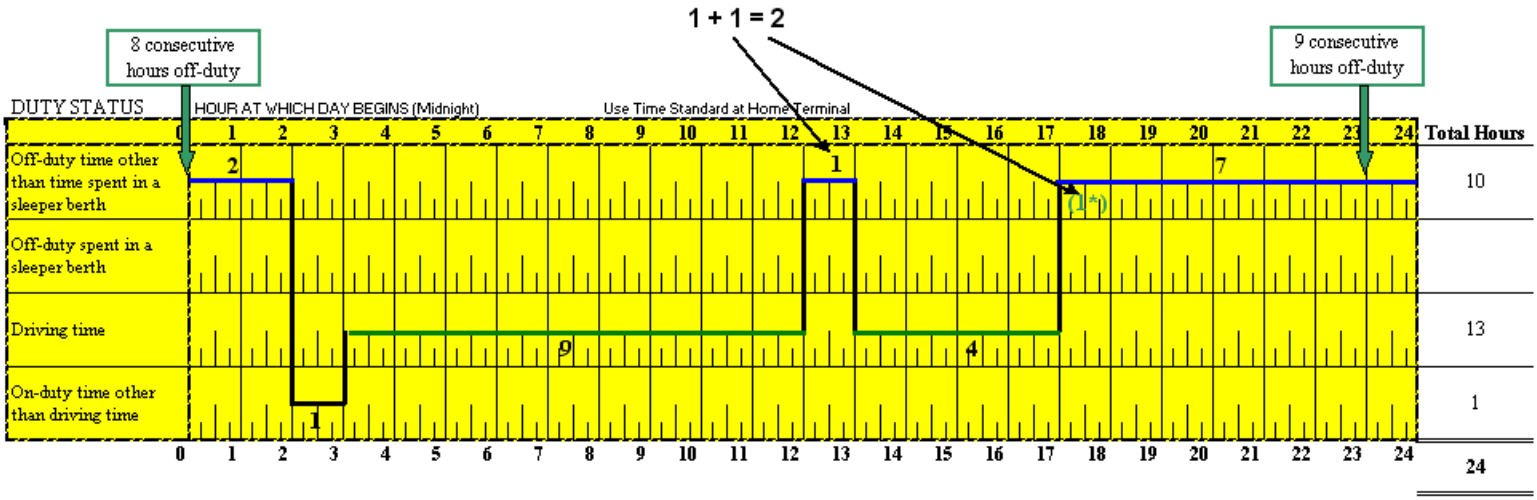


Example 3: Compliant

Daily Requirements - Off-duty

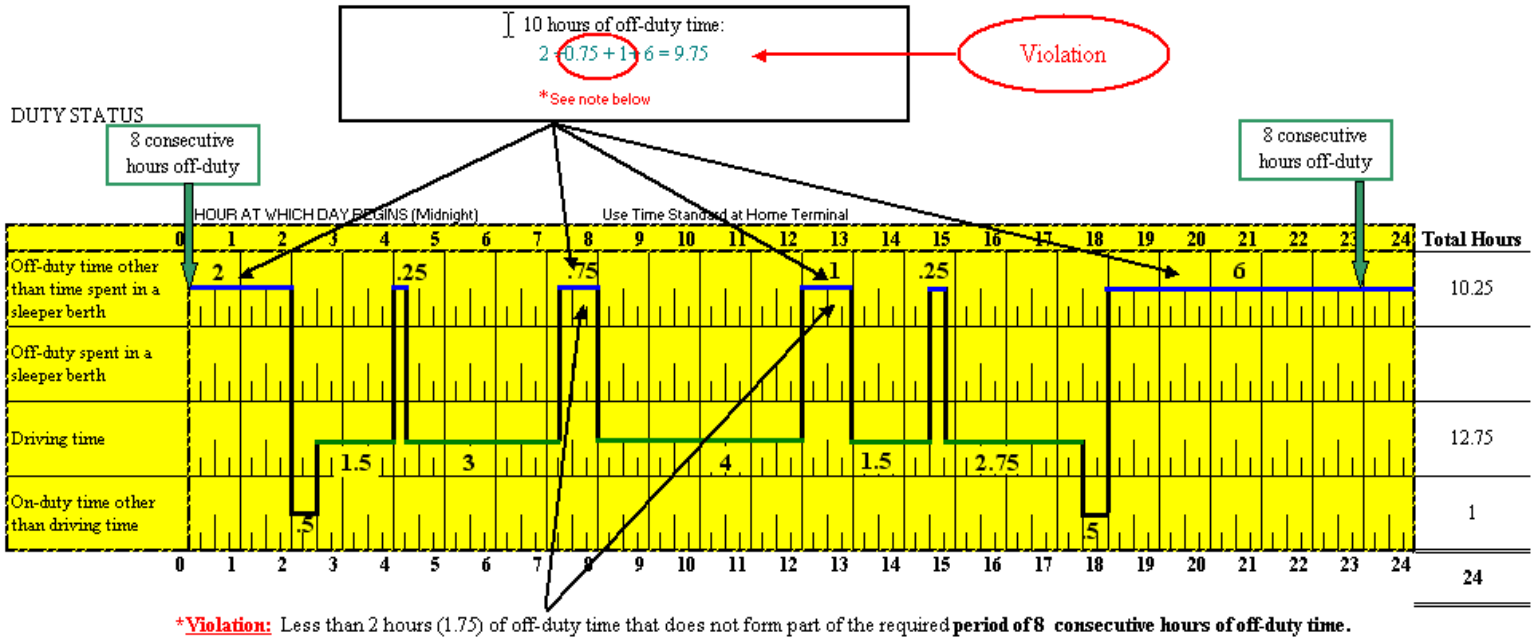
Step 1: Daily off-duty time must total at least 10 hours (consisting of off-duty periods ≥30 minutes) (2+1+7=10)

Step 2: Daily off-duty time must include 2 hours that do not form part of an 8 consecutive hour off-duty period required by Section 14(3).



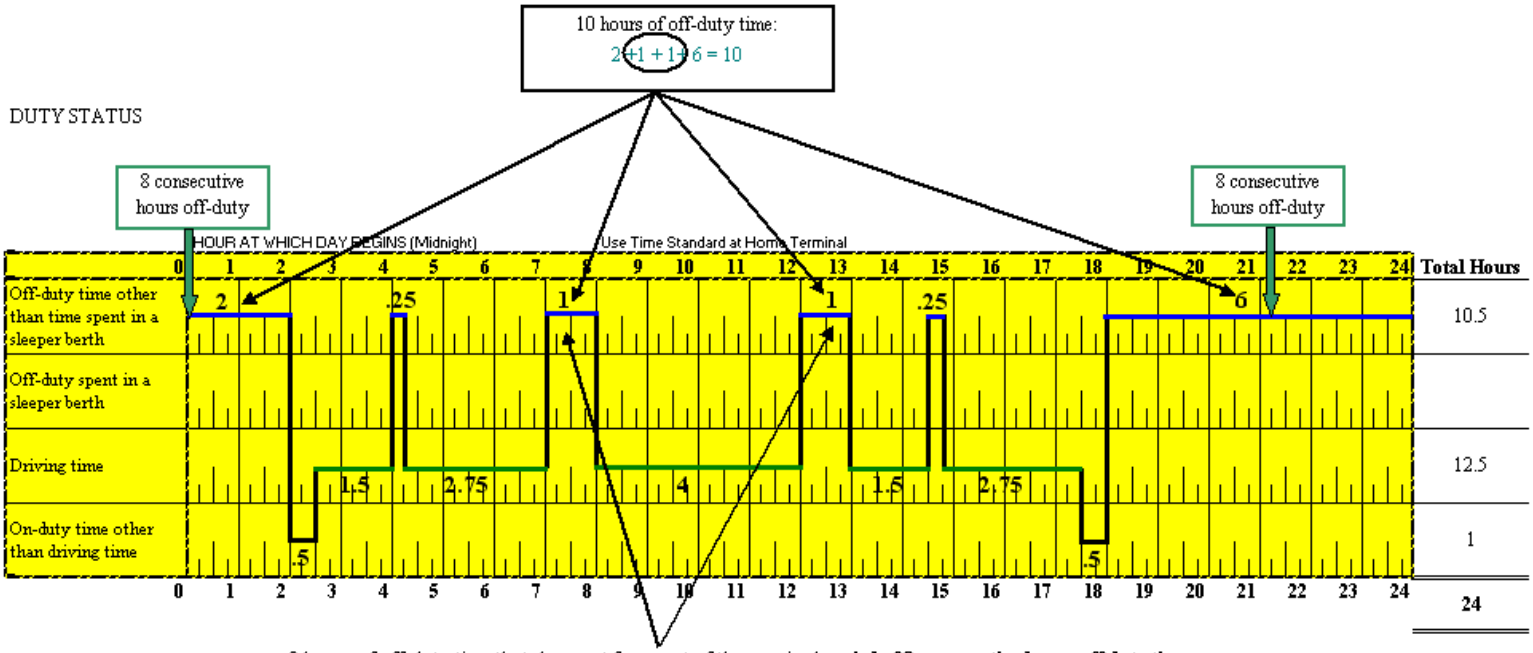
* Note: In this case, 1 hour of the 9 consecutive hours can be used to satisfy the requirement to take 2 other hours off-duty during the day that do not form part of an 8 consecutive hours off-duty period required by Section 14(3).

Example 4: Violation



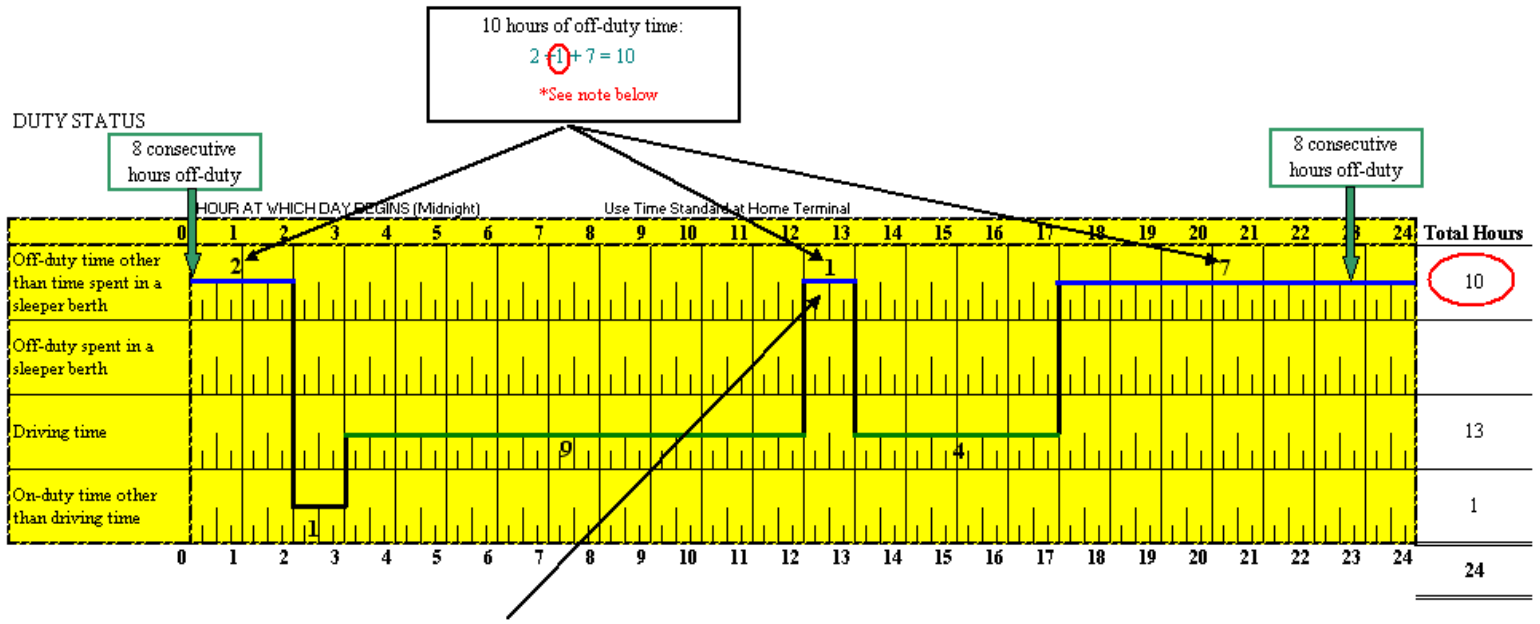
***Violation:** Less than 2 hours (1.75) of off-duty time that does not form part of the required **period of 8 consecutive hours of off-duty time.**

Example 5. Compliant



2 hours of off-duty time that does not form part of the required **period of 8 consecutive hours off-duty time.**

Example 6: Violation



*<u>**Violation:**</u> Less than 2 hours (one only) of off-duty time that does not form part of the required **period of 8 consecutive hours of off-duty time.**

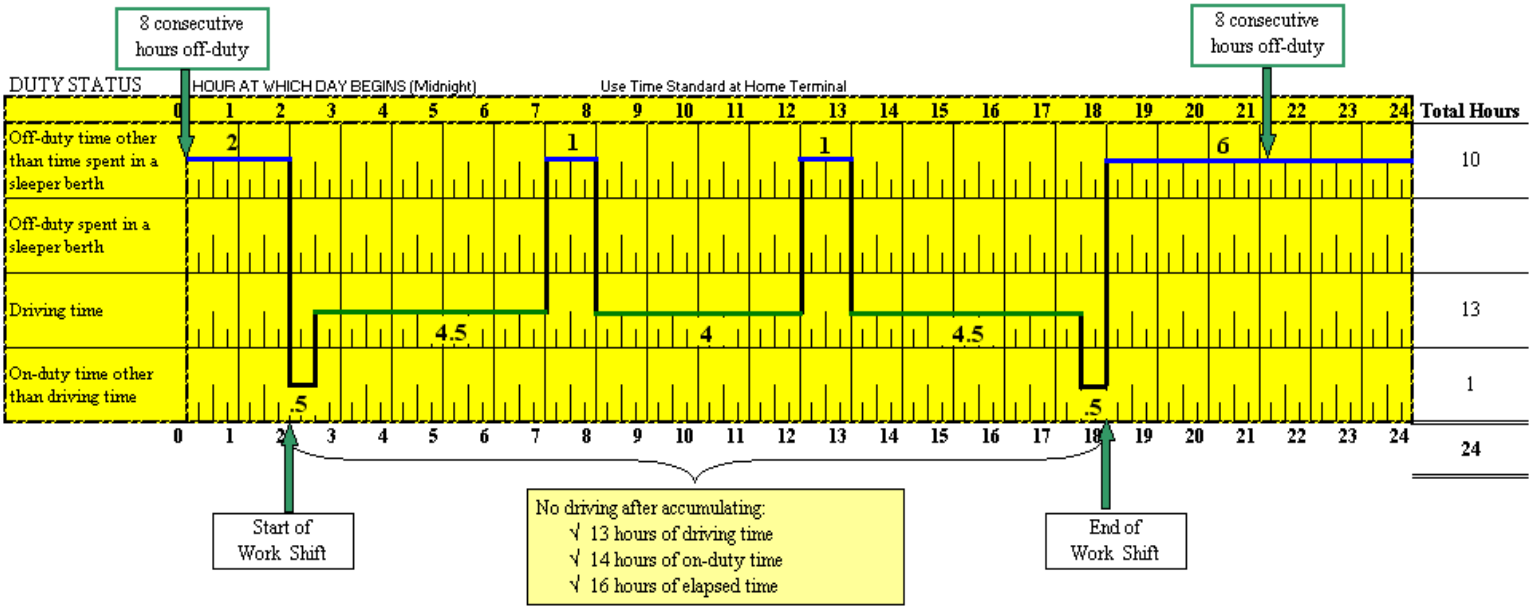
Mandatory Off-duty Time (Section 13)

53. What is meant by the term "work shift" and what is the maximum length of time of a work shift?
Guidance: Work shift means the elapsed time between two off-duty periods of at least 8 consecutive hours. Every off-duty period consisting of 8 consecutive hours or more resets the work shift. The length of a work shift is determined by counting the time spent in all duty statuses from the time you reported for work following an off-duty period of 8 consecutive hours or more to the time you are released from work and take another off-duty period of 8 consecutive hours or more. Reference: Section 13.

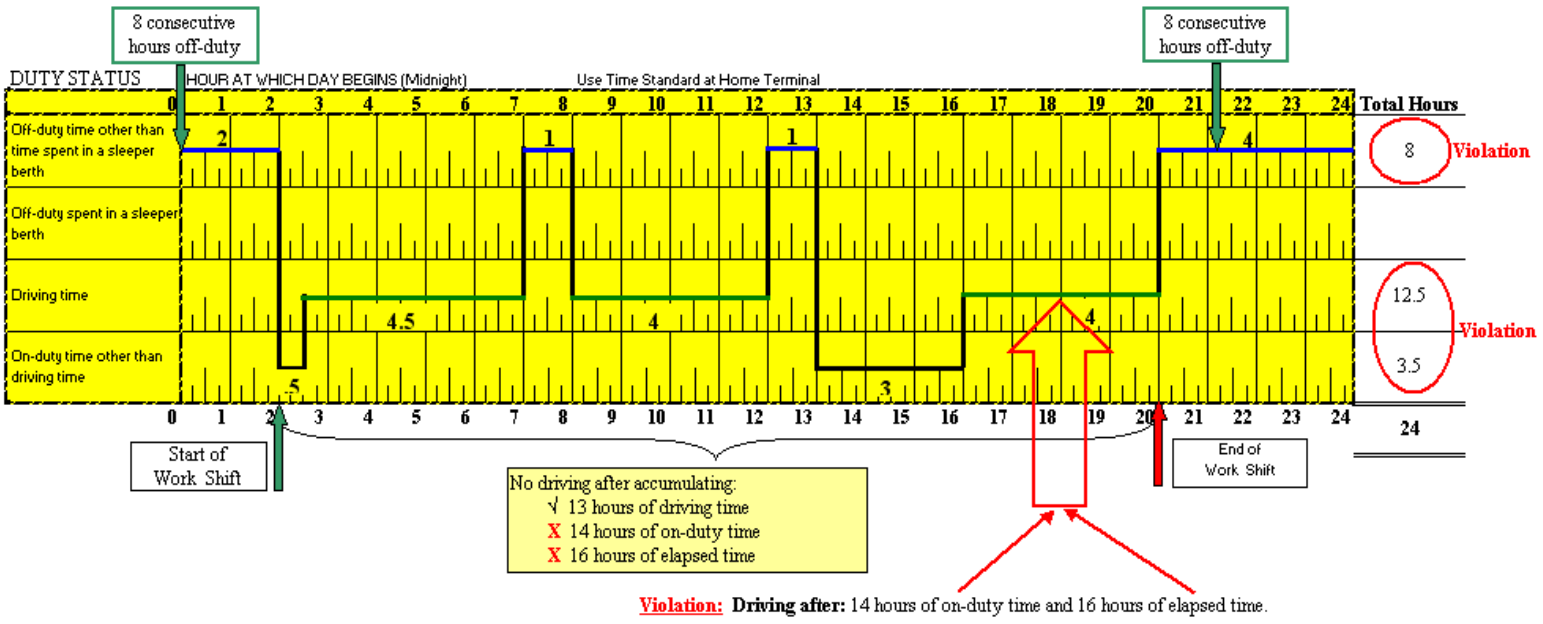
54. What conditions are imposed in the 16 hour work shift?
Guidance: No driver shall drive from the beginning of the work shift after accumulating:
- 13 hours of driving time
- 14 hours of on-duty time
- 16 hours of elapsed time from start of the work shift.

A driver may drive if he/she takes at least 8 consecutive hours of off-duty time and obeys the rules for daily driving (for example, 13 hours of driving time by day).

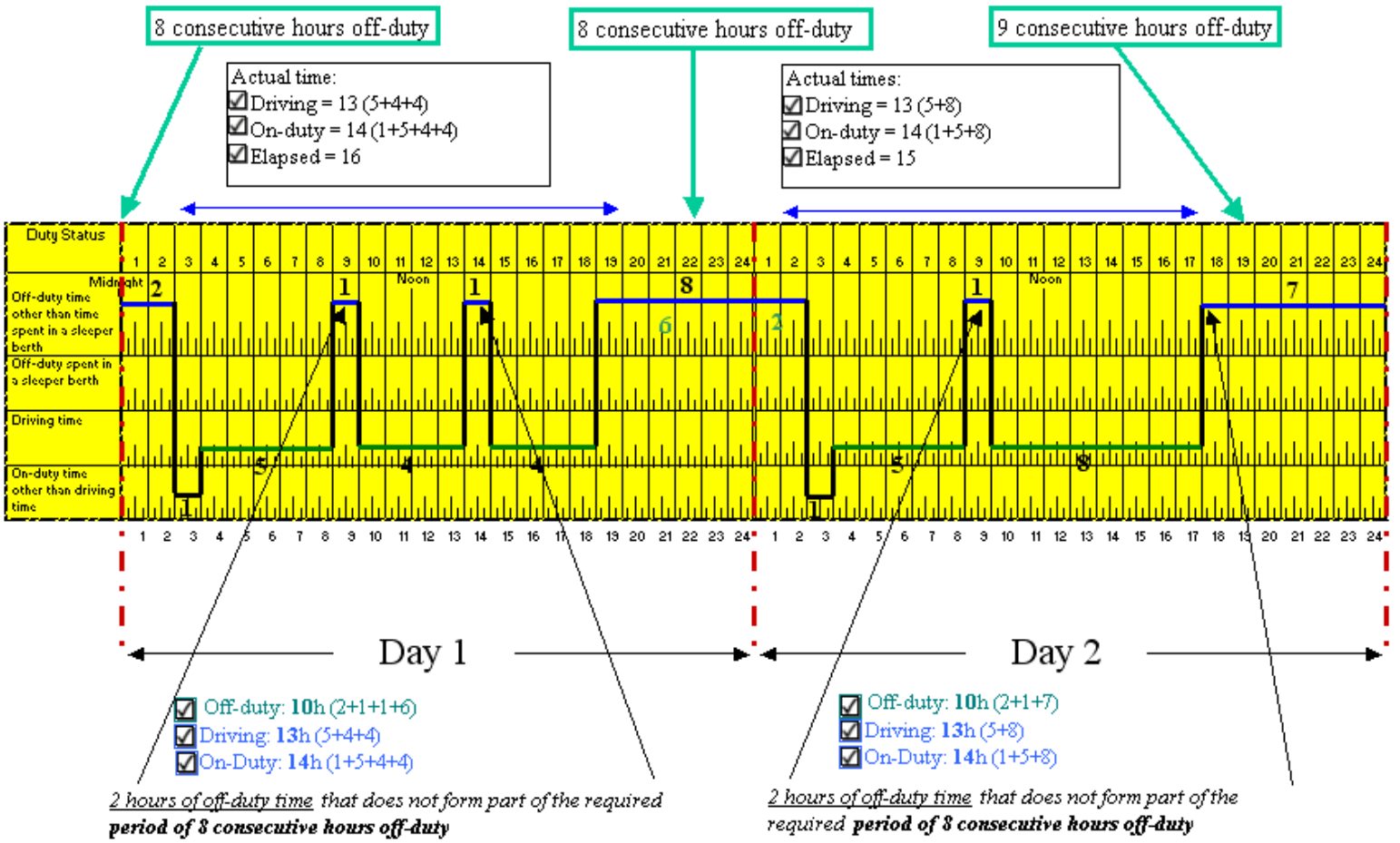
Example 1: **Compliant**



Example 2: Violation

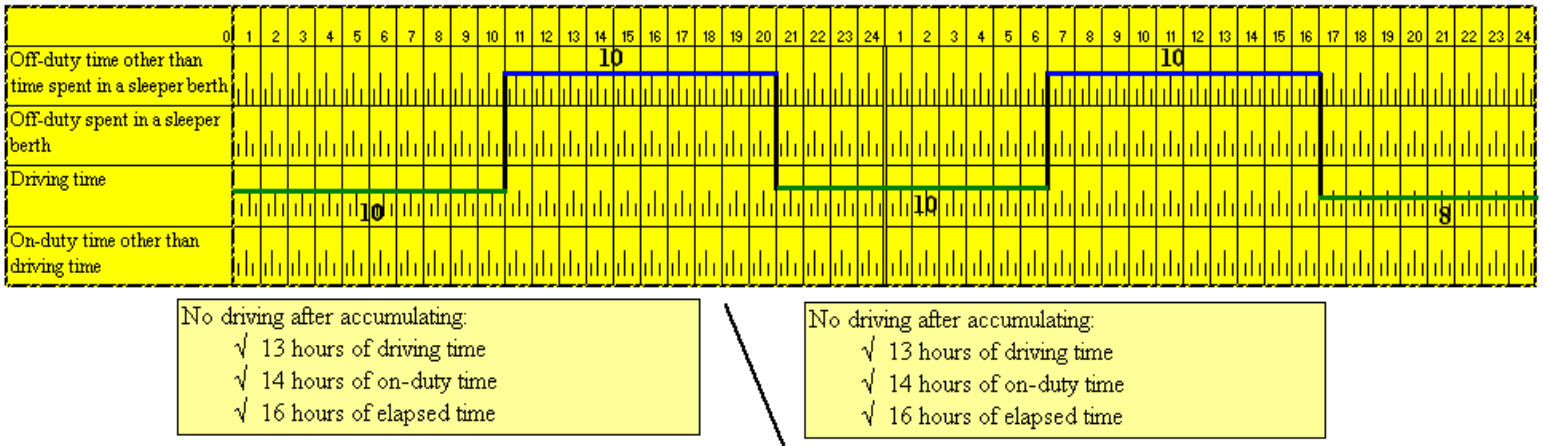


Example 3: Compliant

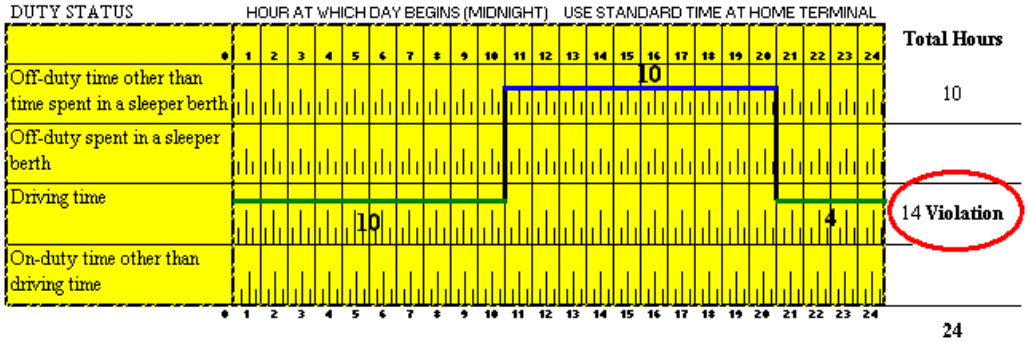


Example 4: Violation

Requirements for the Work Shift

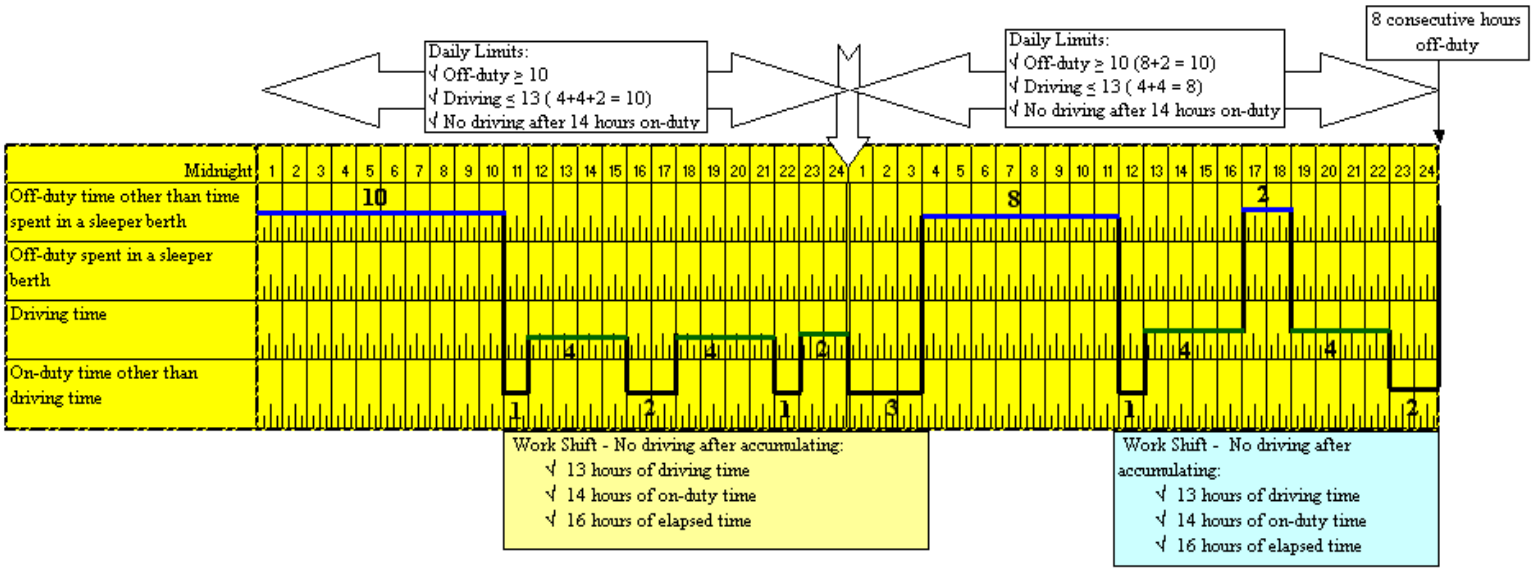


Requirements for the Day

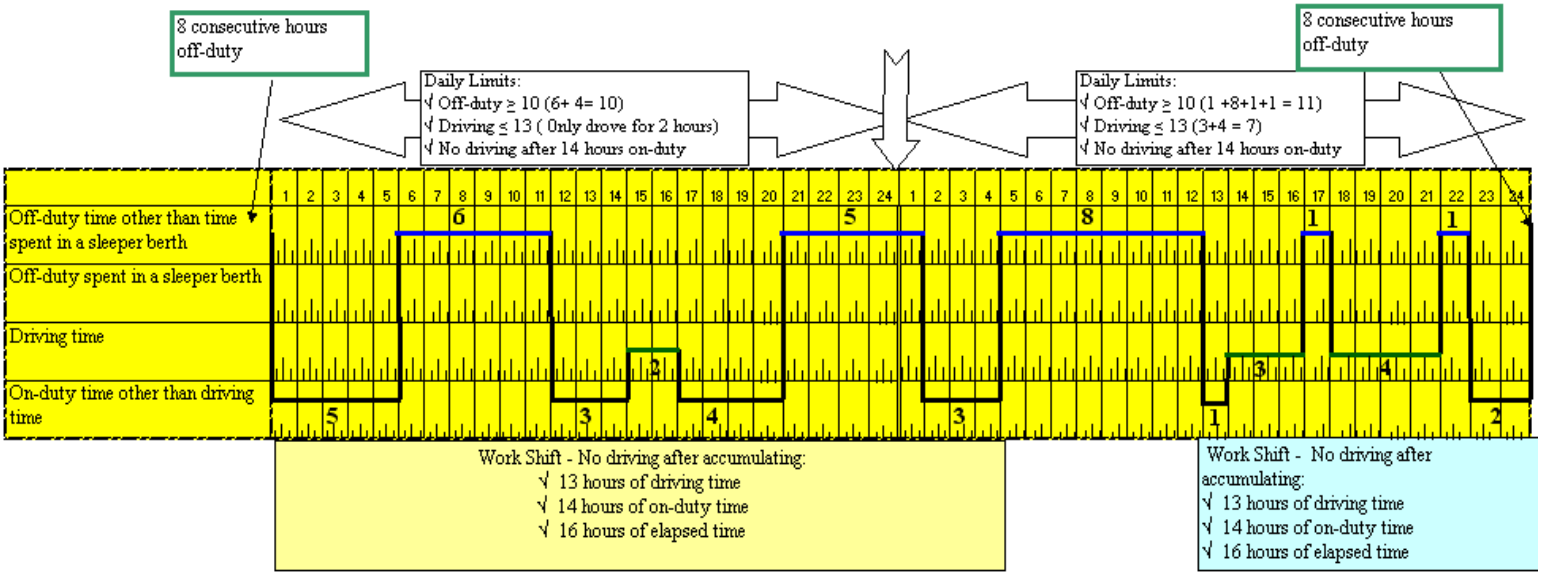


55. There are different opinions expressed about what a driver is required (or not required) to do upon reaching 14 hours on-duty or 16 hours have elapsed since going on-duty. A driver who reaches one of these limits must go off-duty for 10 hours in the day.
Guidance: Not in all cases; drivers may be allowed to work providing they comply with the daily 10 hours off-duty requirement. Drivers must ensure that in addition to the rules for the work shift, they satisfy the requirements for the day. Illustrations.

Example 1: Compliant



Example 2: Compliant



56. Can a driver reduce the 8 consecutive hours when off-duty time is required to be taken?
Guidance: No.

57. A driver can drive for 13 consecutive hours following 8 consecutive hours off-duty. Can the driver also drive for 13 consecutive hours following 8 hours off-duty taken in 2 sleeper berth periods that have been separated by driving?
Guidance: No.

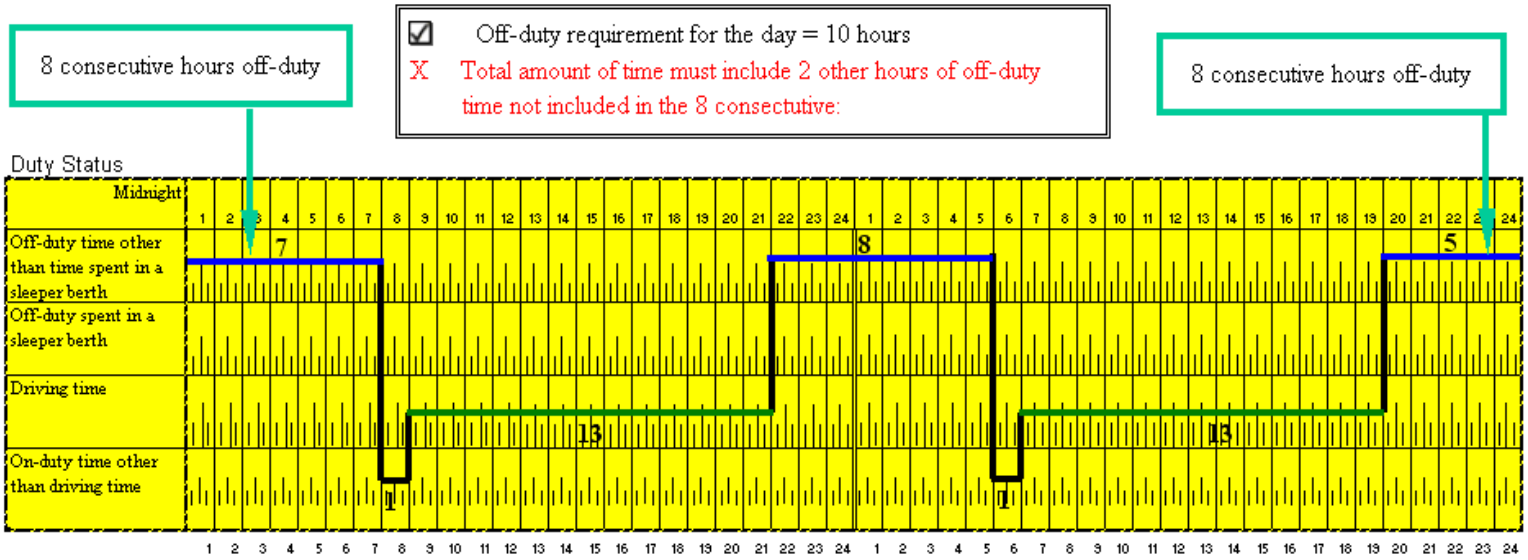
58. Can the 8 consecutive off-duty hours be comprised of a combination of off-duty time and time spent in the sleeper birth?
Guidance: Yes, provided the time is continuous.

59. How is the "work shift" applied to short haul driving operations. If a driver drives for an hour to haul a load of aggregate to a site, then takes a two hour break to unload, then drives back to the plant for another hour, then takes another break to load again, and so forth, how do the Regulations affect that driver?
Guidance: The rules for the work shift are the same for short and long haul operations. When a driver has reported for work, after having taken at least 8 consecutive hours off-duty, he/she must ensure he/she does not drive a commercial vehicle after 16 hours has elapsed. Also, after accumulating 13 hours driving and 14 hours on-duty, the driver must ensure he/she is in compliance with the rules for the day.

Daily-Off-duty Time (Section 14)

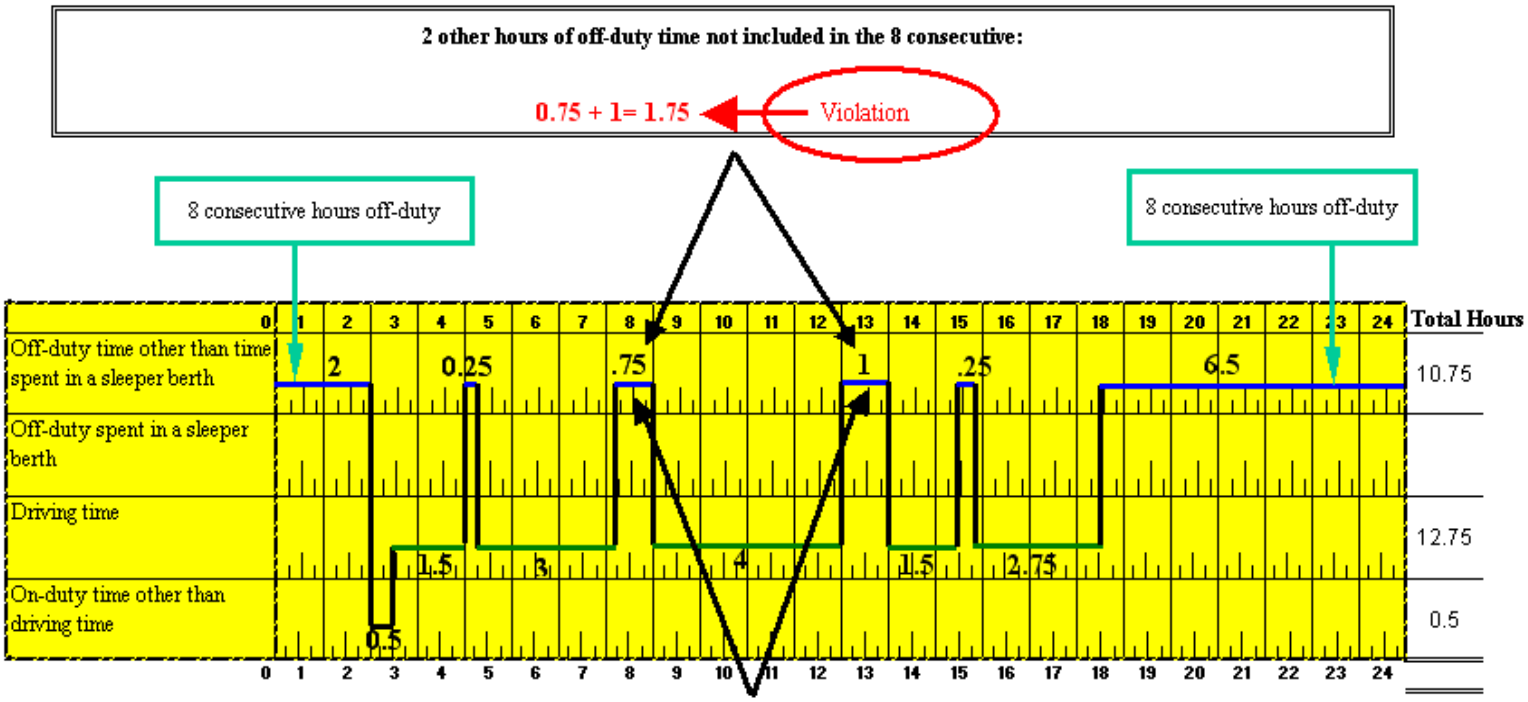
60. What is the purpose of Section 14(3)? Does it mean that team driver must take 10 hours off in a day?
Guidance: Section 14(3) is intended to ensure a driver does not use an 8 consecutive off-duty period to satisfy two requirements, i.e.: if the 8 hours is used to reset the work shift, you can not use any of the 8 for the other 2 hours required to satisfy the 10 hour daily off-duty requirement. A driver must take 10 hours off-duty every day and the total amount of off-duty time taken by a driver in a day shall include at least 2 hours of off-duty time that does not form part of a period of 8 consecutive hours of off-duty time required by Section 13.

Example 1: Violation: In this example, the driver is attempting to use the 8 consecutive hours of off-duty time (core rest period) to satisfy two requirements: resetting the work shift and satisfying the other two hours required to be taken each day to satisfy the 10 hour daily off-duty requirement.



Violation: Off-duty time in a day does not include at least 2 hours that do not form part of a period of 8 consecutive hours off-duty time required by subsection 14(3). Requirement was introduced to make sure that sufficient opportunity was provided to obtain recuperative sleep and to reduce phase advancing. This eliminated the possibility of using two hours of core rest period consisiting of only 8 consecutive hours to satisfy two requirements; work shift reset and daily off-duty requirements.

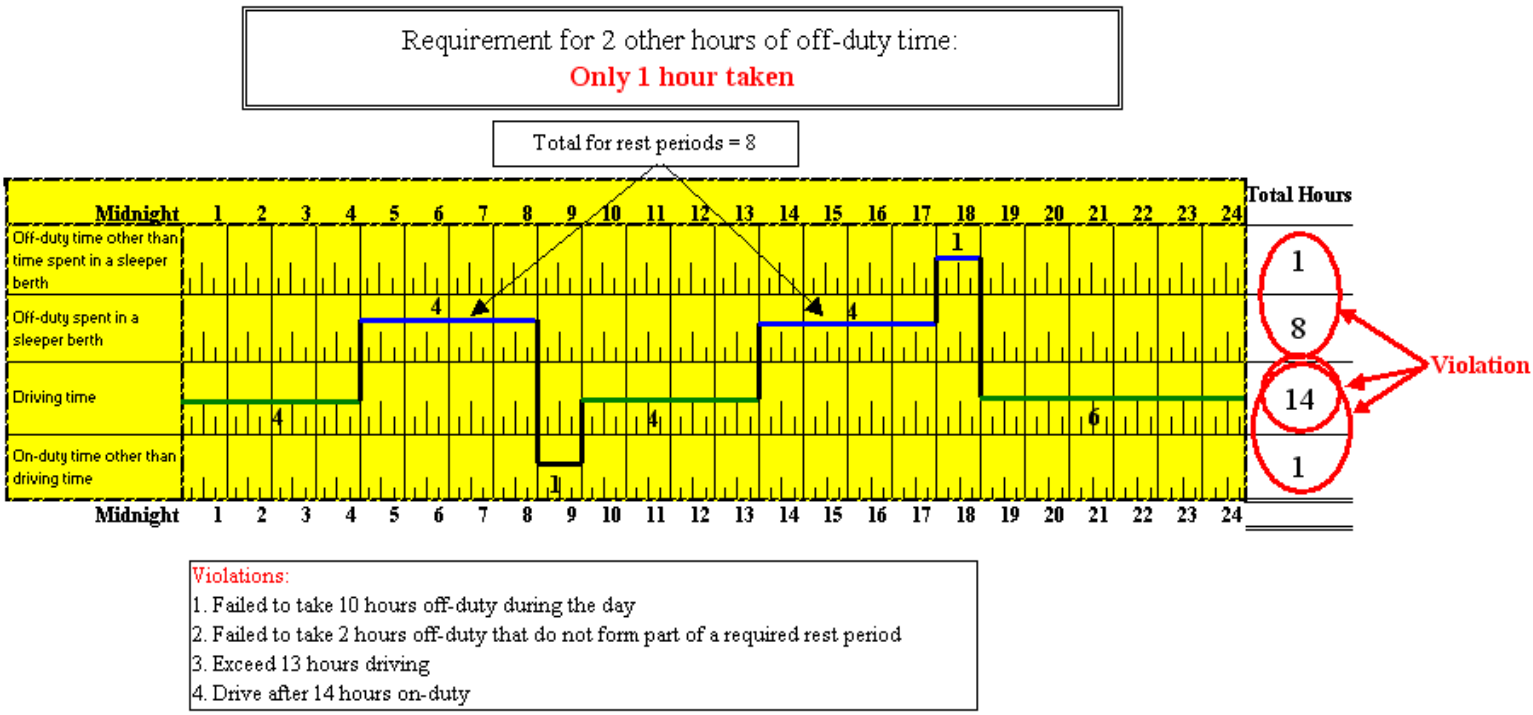
Example 2: Violation



Violation: off-duty time in a day does not include at least 2 hours that do not form part of a period of 8 consecutive hours of off-duty time required by Section 14(3).

Example 3: Violation

Rules for the Day - Team



Violations:
1. Failed to take 10 hours off-duty during the day
2. Failed to take 2 hours off-duty that do not form part of a required rest period
3. Exceed 13 hours driving
4. Drive after 14 hours on-duty

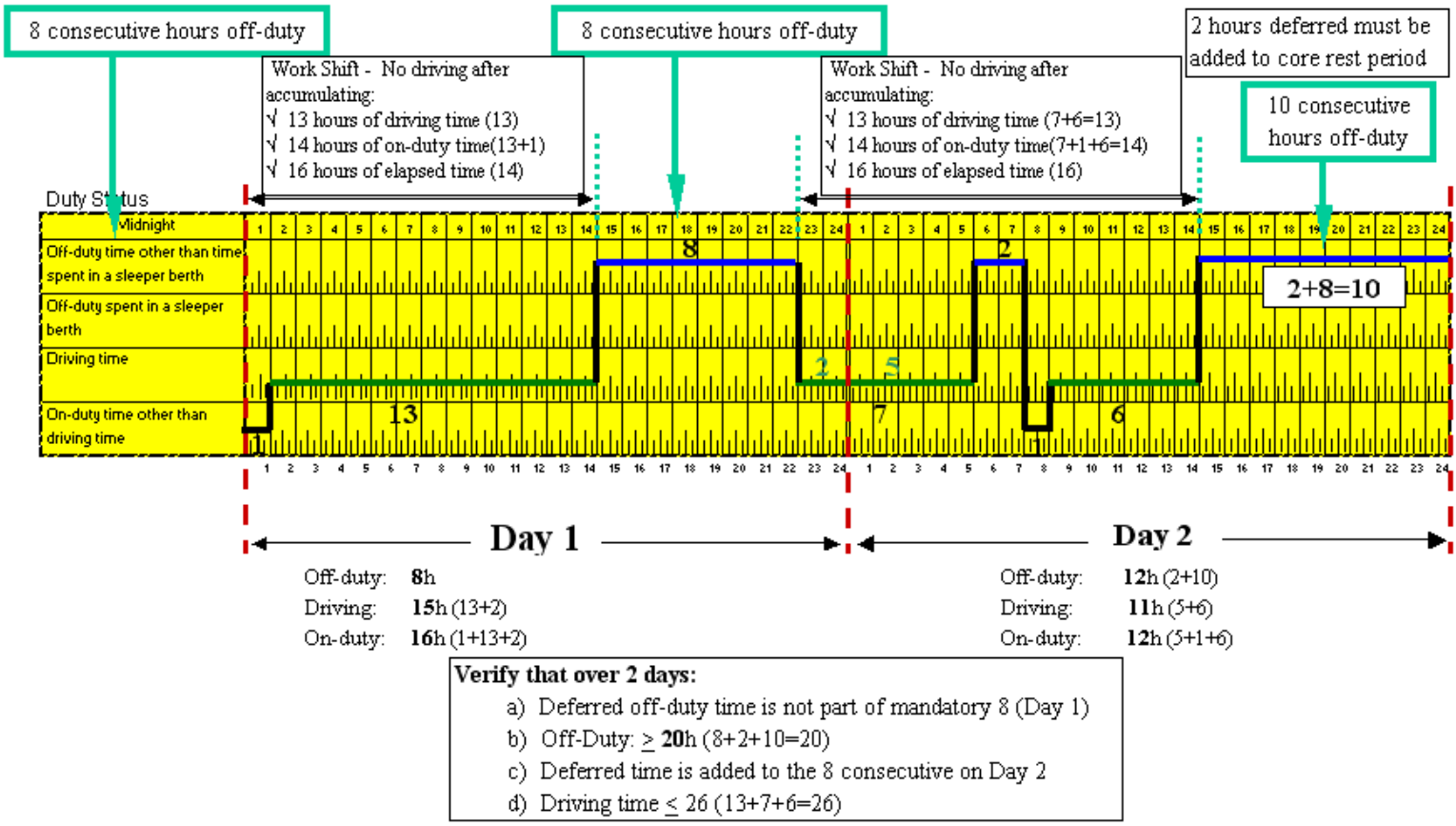
61. If a person only took 9 hours off-duty but did not drive a commercial vehicle during the previous day, however, today, he is driving a commercial vehicle, would the driver be in violation for failing to take 10 hours off-duty the day before?
Guidance: Yes.

Deferral of Daily Off-duty Time (Section 16)

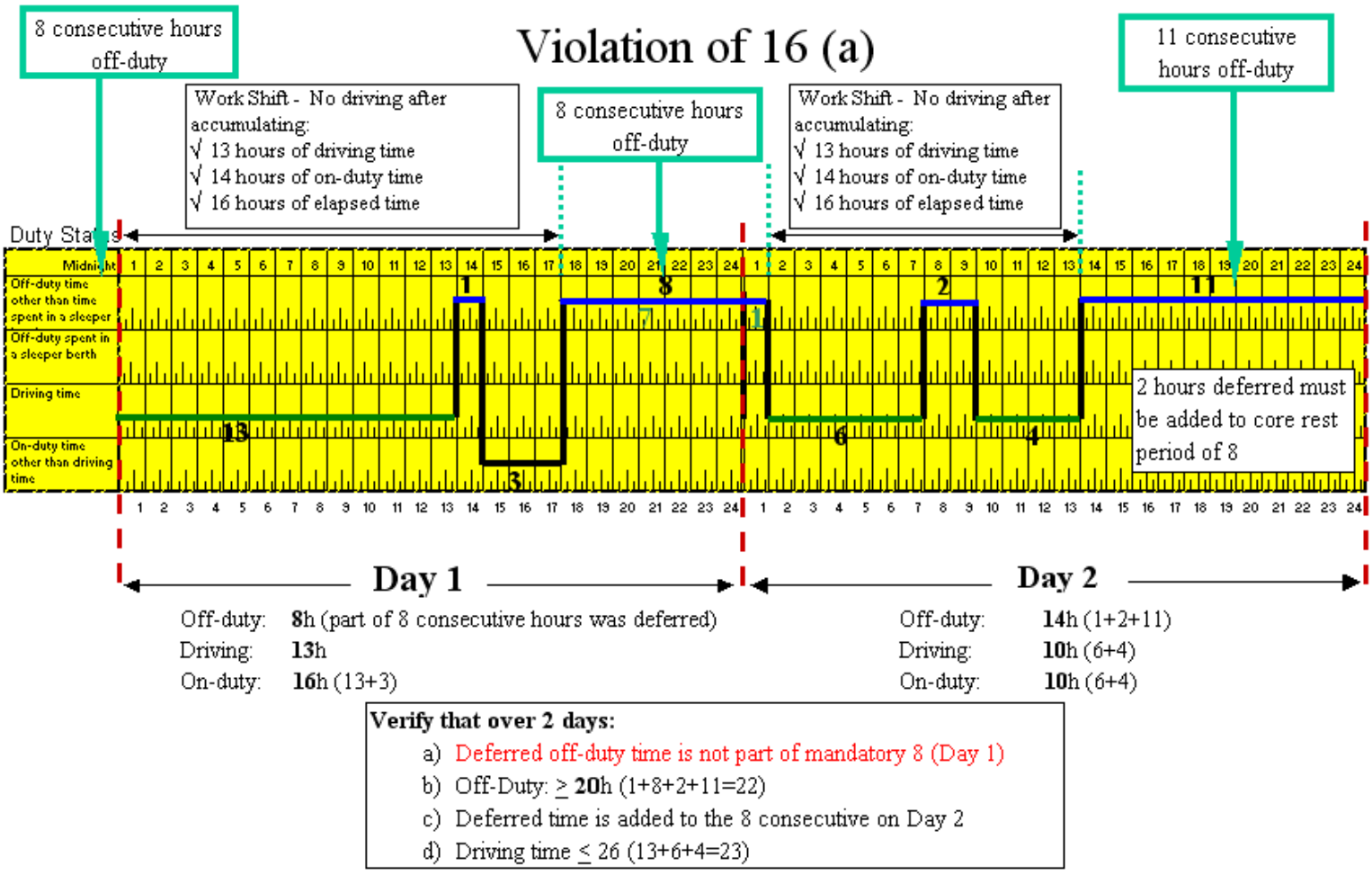
62. Would the driver be eligible for the "deferral of off-duty time" provision, if the driver exceeded 13 hours of driving in the immediately preceding on-duty period?
Guidance: No, the driver having exceeded the driving limitation is in violation of Sections 12(1) or 13(1). The driver would be declared out-of-service by an inspector and would be required to take a minimum of 10 consecutive hours off-duty. Reference: Section 91(3)(b).

63. Can the driving time be extended to 15 hours and on-duty time to 16 hours *into the* work shift?
Guidance: No. The rules for the work shift continue to apply and can not be modified.

Example 1: Compliant



Example 2: **Violation**



Off-duty: **8**h (part of 8 consecutive hours was deferred)
Driving: **13**h
On-duty: **16**h (13+3)

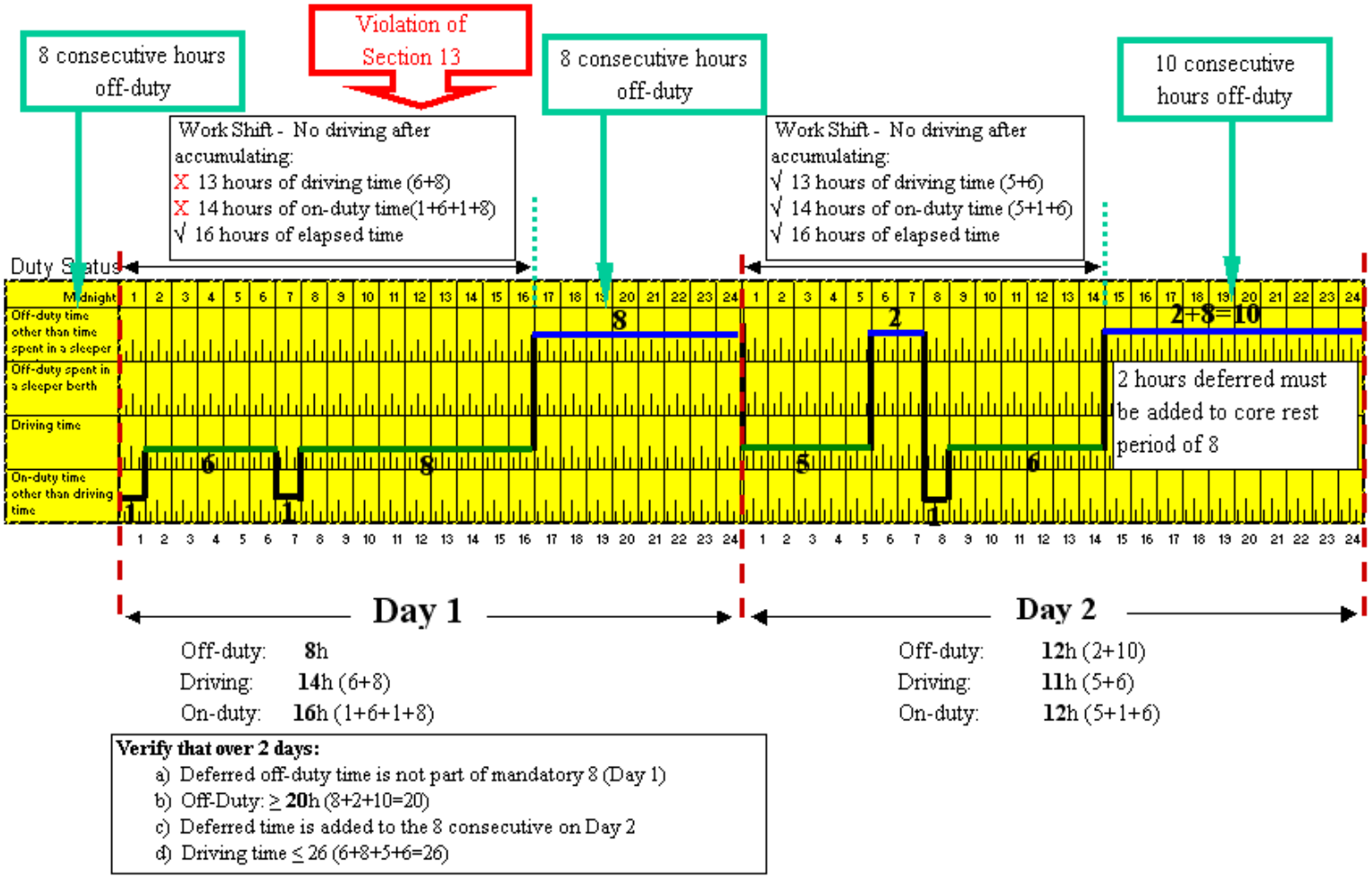
Off-duty: **14**h (1+2+11)
Driving: **10**h (6+4)
On-duty: **10**h (6+4)

Verify that over 2 days:

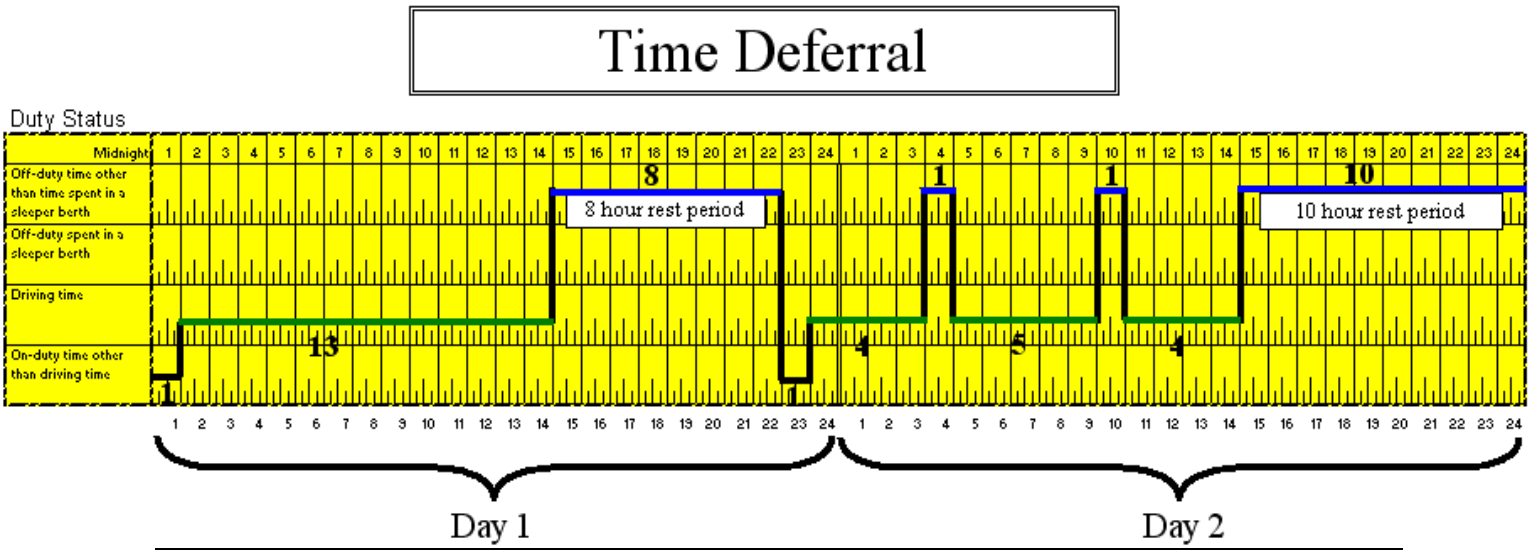
a) Deferred off-duty time is not part of mandatory 8 (Day 1)
b) Off-Duty: ≥ **20**h (1+8+2+11=22)
c) Deferred time is added to the 8 consecutive on Day 2
d) Driving time ≤ 26 (13+6+4=23)

Note: To exercise the deferral option, the 8 consecutive hours must be completed in the first day.

Example 3: Violation

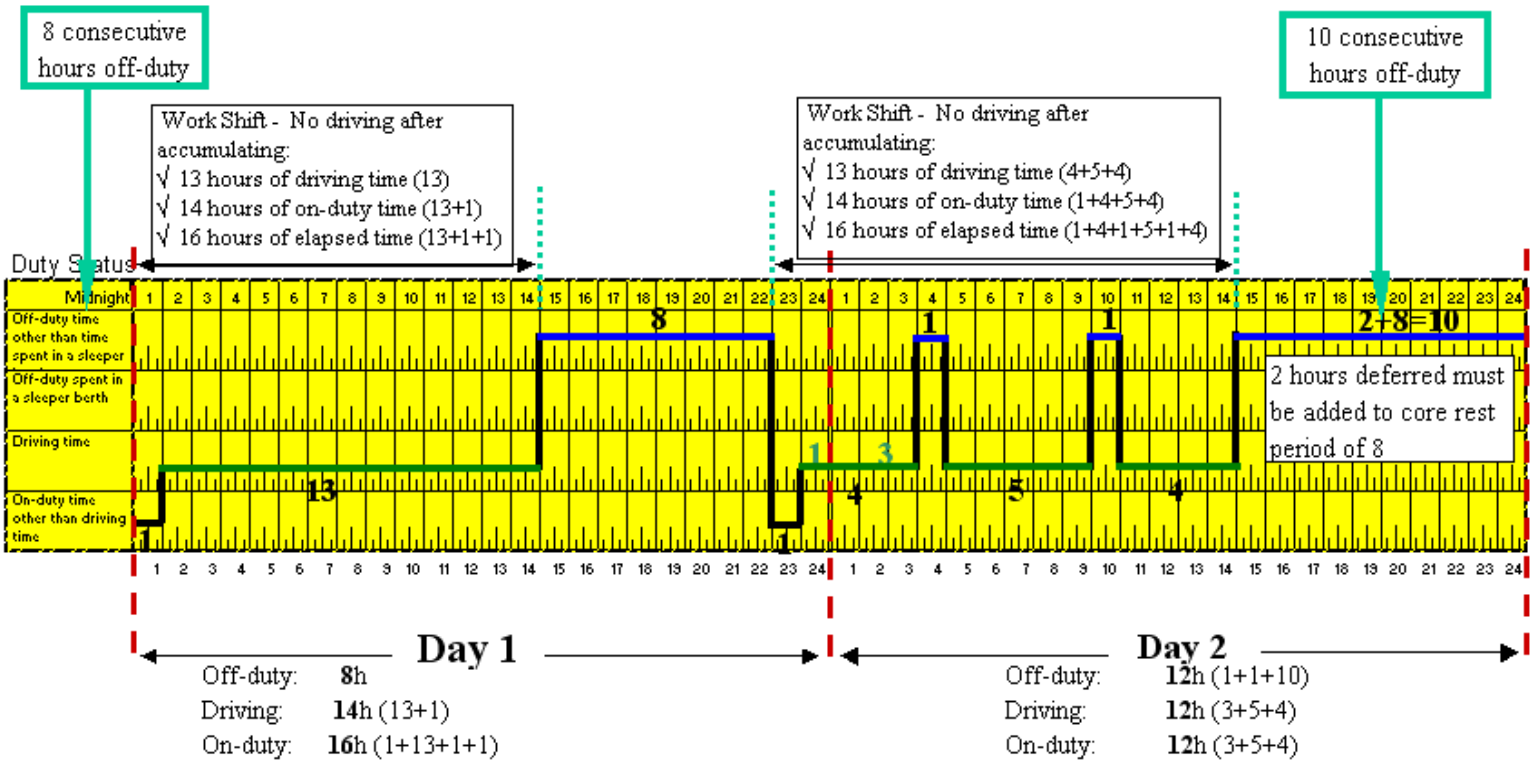


64. Is there a limit as to how often a driver can take the deferral of daily off-duty time?
Guidance: Yes, every second day.
Example: Compliant



65. When is a driver utilizing the deferral of off-duty time required to take the deferred time off?
Guidance: During day 2; as well, the deferred time must be added to the required 8 consecutive hours of off-duty time. The off-duty time deferral is added to the 8 consecutive hours of off-duty time taken in the second day.

Example: Compliant



Verify that over 2 days:

a) Deferred off-duty time is not part of mandatory 8 (Day 1)
b) Off-Duty: ≥ **20**h (8+1+1+10=20)
c) Deferred time is added to the 8 consecutive on Day 2
d) Driving time ≤ 26 (13+4+5+4=26)

66. With respect to Section 16(e) will daily log-sheets require special "declaration" boxes in the remarks section to avoid confusion during enforcement?
Guidance: No. When a driver has exercised the deferral option, this notation should be made in the remarks section of the daily log. The driver must make sure it is clearly understood that he/she has exercised the deferral option and the appropriate day (day 1 or day 2).

67. How is the deferral option required to be recorded if the driver does not retain a log book?
Guidance: The carrier is required to retain accurate time records. Therefore, the carrier will be required to identify any time the driver used the deferral option.

68. Deferral hours of off-duty are added to the 8 consecutive hours of off-duty time taken on day 2. If a driver used that deferral on the last day of his/her cycle, does he/she have to take 38 consecutive hours off-duty instead of 36?
Guidance: No.

Ferries (Section 17)

69. Are the "5 hours" based on the actual scheduled departure/arrival times, or the "check-in/check-out" duration? Actual "propeller-churning" time might be 4.5 hours, but the vehicle usually must arrive at the pier at least 60 minutes ahead of departure, and until the vehicle is off-loaded at the other end, it usually takes another 30 minutes or so.
Guidance: Based on the actual scheduled departure/arrival times.

70. Shorter ferry runs (5 hours) do not usually offer "accommodation" as defined in Section 17(a). Would a boarding pass be sufficient to qualify for this exemption on shorter scheduled trips that run longer than 5 hours?
Guidance: No.

71. What is the protocol for drivers using ferries under circumstances other than crossings of five hours or more?
Guidance: It depends on what the driver is doing. If he is working (selling tickets), he is on-duty. If he is having lunch, he is off-duty.

72. If the combined duties as stated in Section 17(a) are to be recorded as off-duty time spent in the sleeper berth (as per Section 17(b)) how does the driver account for the mileage driven if no drive time is recorded.
Guidance: The time spent driving from the point of disembarkation to the rest facility which is no more than 25 km, will be recorded as on-duty driving.

Splitting of Daily Off-duty Time (Sections 18 and 19)

73. How are the sleeper berth rules for single and team drivers applied?
Guidance: Motor carriers and drivers must respect the requirements.

The amount of off-duty time to split and the duration period are different for single and team drivers:

Requirement	Single	Team
Rest period (minimum)	2 hours	4 hours
Total for 2 rest periods	10 hours	8 hours

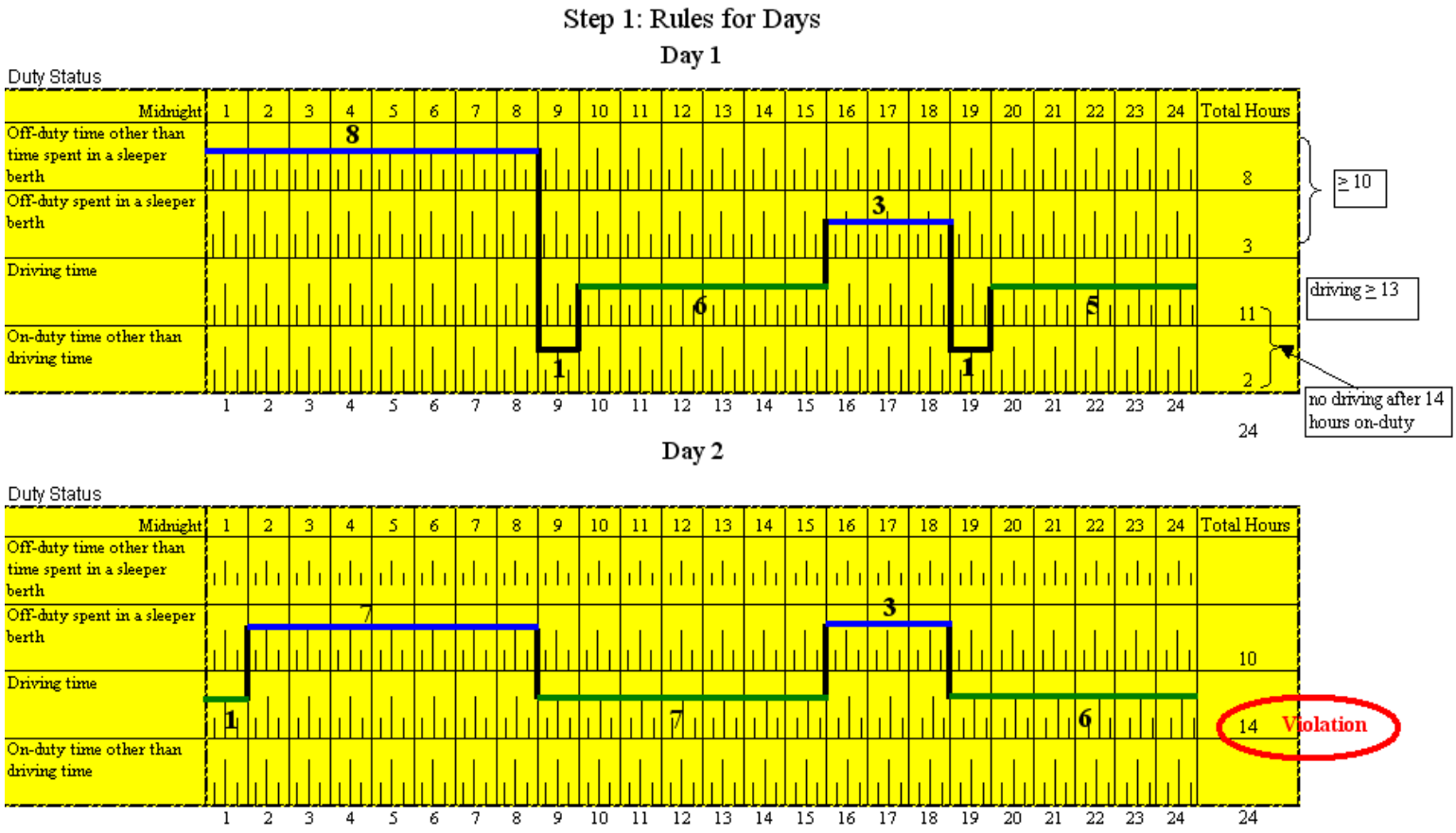
Other rules are almost the same for single and team drivers:

1. Must meet daily requirements:

   - Take at least 10 hours off-duty time:

   - off-duty time other than the mandatory 8 consecutive hours may be distributed throughout the day in blocks of no less than 30 minutes each.
   - take at least 2 hours of off-duty time that does not form part of the period of 8 consecutive hours (team only)
   - No driver shall driver after he/she has accumulated:
     -13 hours of driving time in a day
     -14 hours of on-duty time in a day

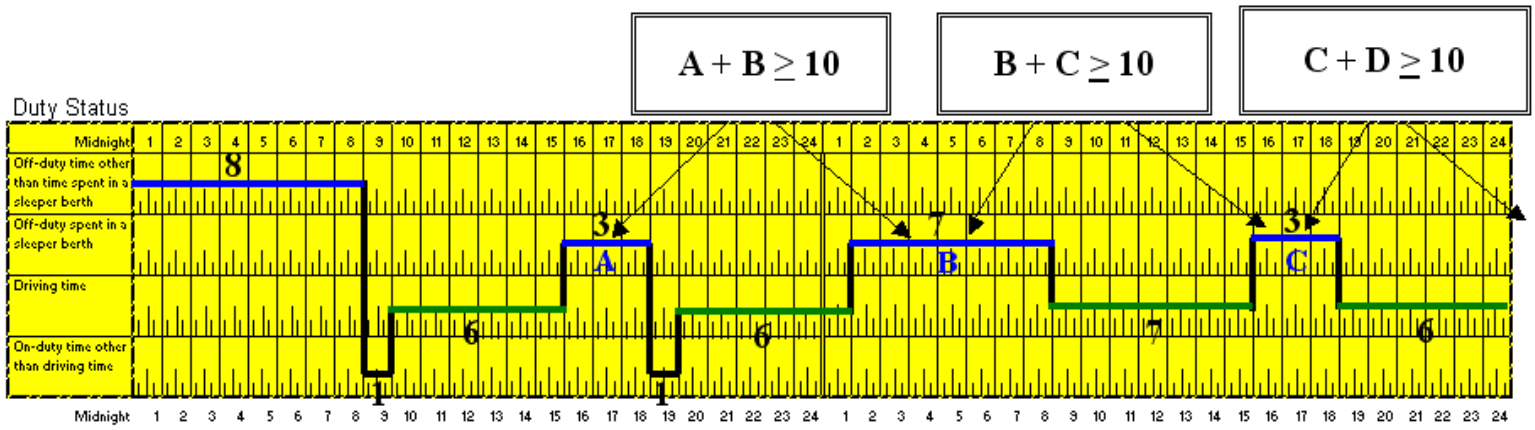
Example 1: Sleeper Berth - Single



Violations:

1. Exceed 13 hours driving time
2. Identify sleeper berth rest periods
   - neither period is shorter than 2 hours; and
   - the total of the two periods is at least 10 hours (single driver)

Example 2: Rules for the work shift
Step 2: Identify rest periods

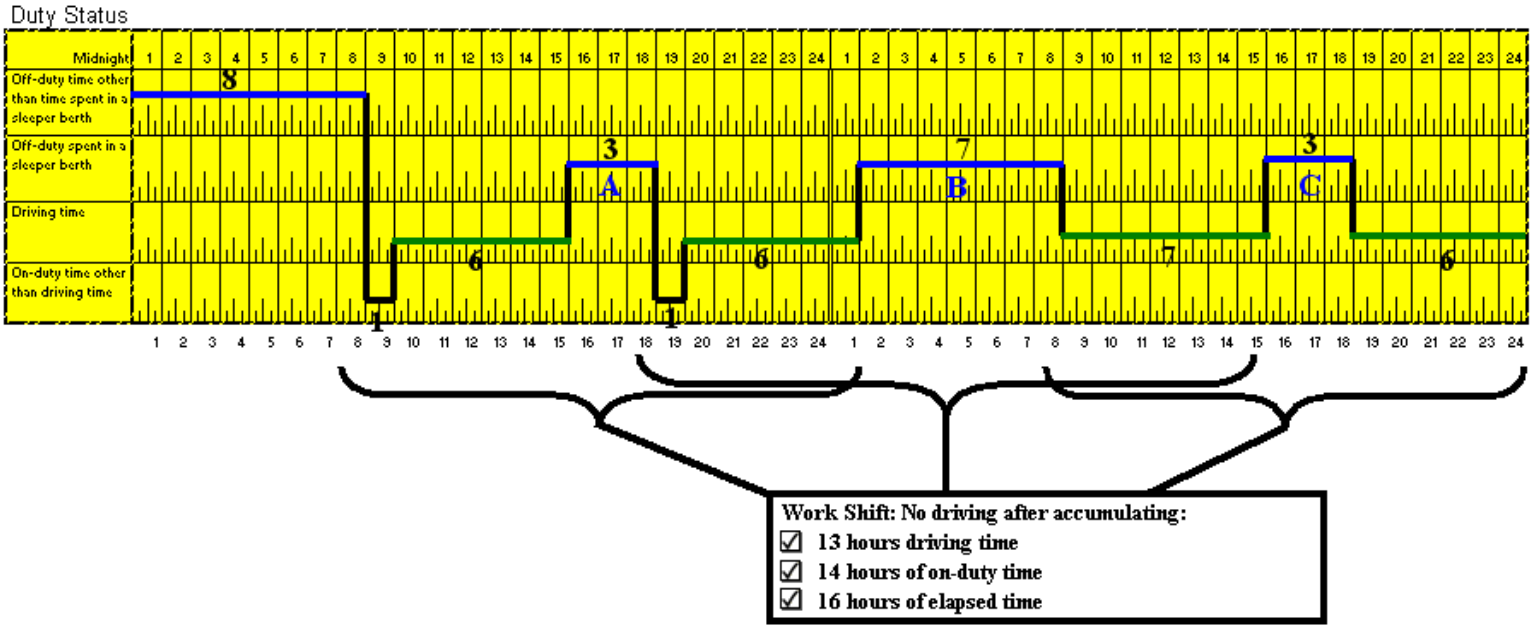


3. A driver may not drive after having accumulated in the periods immediately before and after each of the period of off-duty time:

- 13 hours driving
- 14 hours on-duty
- 16 hours elapsed time

None of the daily off-duty time is deferred to the next day.

Example 3: Rules for the work shift
Step 3: Verify driving times



* Note: the 16th hour is calculated by:

a) excluding the period spent in the sleeper berth that is 2 hours or more in duration and that, when added to a subsequent period in the sleeper berth, totals at least 10 hours; and

b) including

i) all on-duty time,

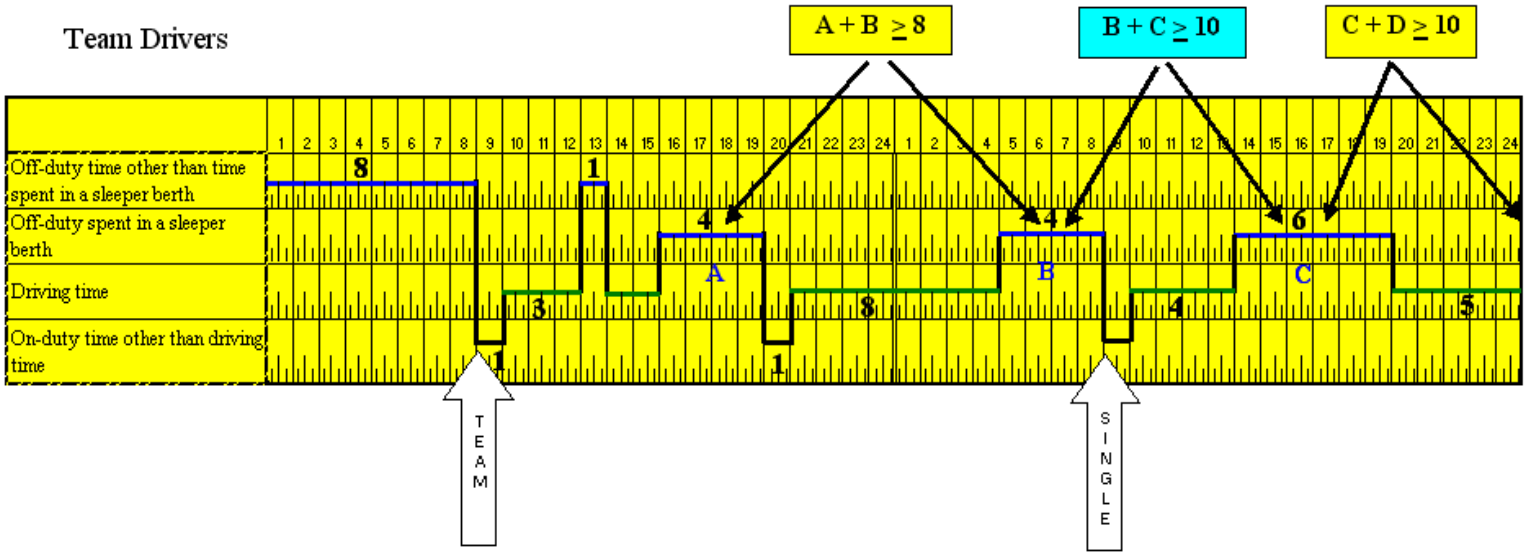
ii) all off-duty time not spent in the sleeper berth,

iii) all periods of less than 2 hours spent in the sleeper berth, and

iv) any other period spent in the sleeper berth that does not qualify as counting towards meeting the requirements of this Section.

74. Can a driver combine a consecutive sleeper berth rest period and an off-duty period to obtain 8 hours off-duty?
Guidance: Yes. The driver may combine sleeper berth time and other off-duty time to meet the minimum 8 consecutive hours of off-duty time. The driver can not combine sleeper berth time and other off-duty time to meet the minimum split sleeper berth requirements.

75. Do the Regulations allow drivers to switch from a team environment to a single driver and vice-versa?
Guidance: Yes, providing the driver records in the daily log when this occurred and complies with the requirements for the (team or single) situation in which they are now engaged.

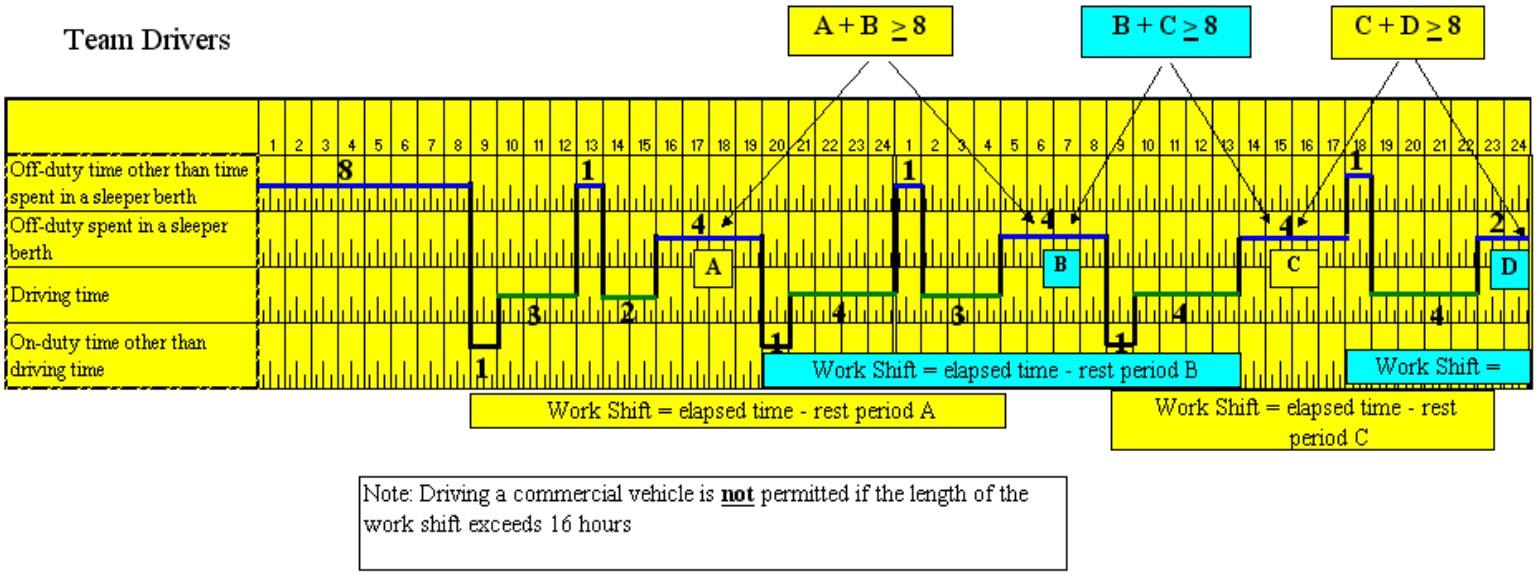


76. With regard to calculating the 16 hour rule for single drivers in utilizing the sleeper berth provisions (Section 18(2), if the driver takes two periods of off-duty in the sleeper berth, one being 2 hours and other being 8 hours, would the calculation of the 16 hour rule revert back to normal off-duty provisions under Section 13(3)?
Guidance: Yes. Any period of at least 8 consecutive hours automatically resets the work shift.

77. If a commercial vehicle is not equipped with a sleeper berth, can a driver stop the vehicle and "make" a sleeper berth using the driver/passenger seat area and claim split sleeper berth?

Guidance: No. A suitable sleeping accommodation must satisfy the specifications prescribed in Schedule 1 in order to be considered a sleeper berth.

78. How is the 16 hours of elapsed time reflected when using the sleeper berth provision?
Guidance: The following illustration provides clarification. It is important to remember drivers are not allowed to drive a commercial vehicle after accumulating 16 hours during the work shift.



79. After accumulating 8 consecutive hours of off-duty time, a driver spends 3 hours in the sleeper berth. The driver then drives a commercial vehicle for 13 hours, then spends 7 hours in the sleeper berth. Can the driver combine the two sleeper berth periods to meet the required 10 hours of off-duty time as per Section 18, and then drive for up to 13 more hours after the last 7 hours in the sleeper berth?
Guidance: No, as the total of the driving time in the periods immediately before and after each of the sleeper berth periods can not exceed 13 hours.

Cycles (Sections 24 - 27)

80. In Sections 26 and 27, what is meant by “during the period of the cycle that was ended”?
Guidance: The period of time in a cycle can be less than 7 or 14 days. A cycle can reset at any time. If a driver has reset cycle 1 (70 hours/7 days) then a new cycle is opened and the first day of the cycle is the only day included in the elected cycle (cycle 1 or cycle 2). The duration of a cycle is less than 7 days or 14 days when a driver resets a cycle after less than 7 or 14 days. For example, the duration of a cycle could be only one day if the driver was off-duty for more than 36 hours, drives only one day, and takes 36 hours off-duty. In that case, the duration of the cycle is one day.

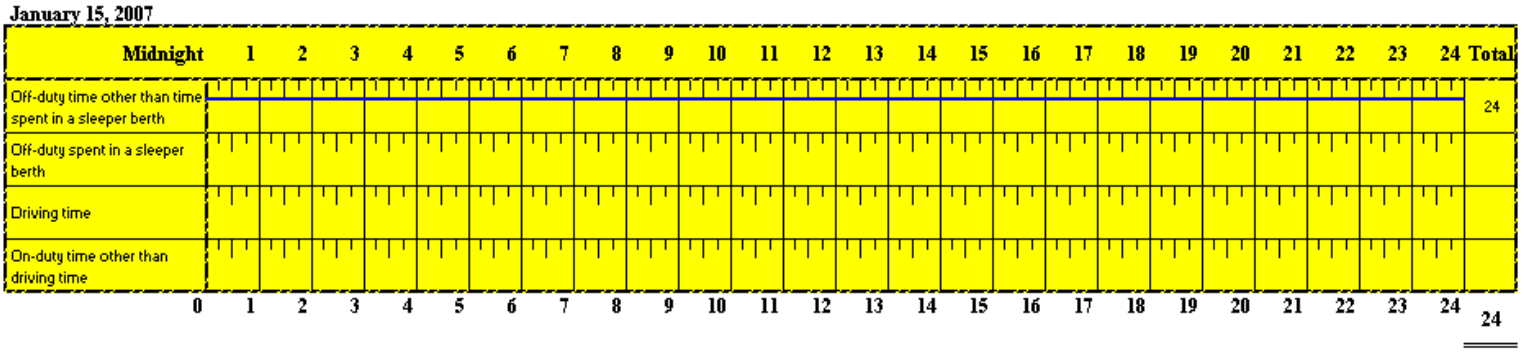
81. When does a “cycle” start? Does it start at 00:01 on the first day of the cycle or at the time the first work shift starts in the “cycle”?

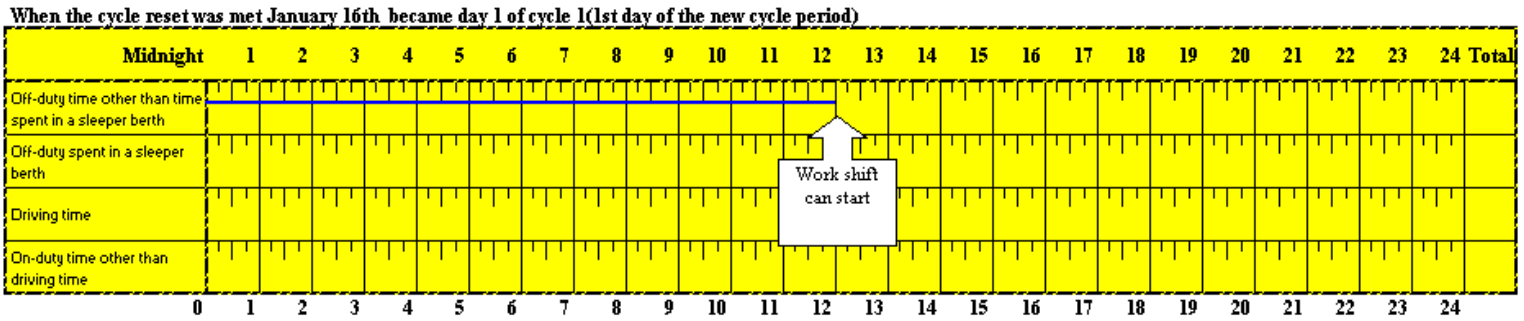
Guidance: It starts at the time determined by the motor carrier as the start time for the day. If a motor carrier has declared a start time for the day to be different than the calendar day, then the day starts at the declared time and stays at that time for the rest of the cycle.

82. Does a driver, employed full time by one motor carrier using cycle 1, (70-hours in 7-days), and part-time by another motor carrier using cycle 2, (120-hours in 14-days), have the option of using either rule in computing his hours of service?
Guidance: No. The driver has the option of electing to work either on cycle 1 (70 hours in 7 days) or cycle 2 (120 hours in 14 days) and during this period the driver must adhere to that cycle. However, the motor carrier and /or driver has the option of switching cycles if he takes the following off-duty time: at least 36 hours off-duty for cycle 1; or at least 72 hours off-duty for cycle 2 (reset).

83. If a driver has elected cycle 1(70 hours/7 days) but reaches the 70 hours in only 5 days, how does he record the 36-hour continuous off-duty time?
Guidance: Must be recorded as off-duty on the graph grid or in the record of duty status.. See illustration.

Example 1:





Example 2:

2007 Record of Duty Status

Duty Status:
1 = Off Duty
2 = Driving
3 = On Duty,not-Driving

Driver's Name:_____ **Month:** **February**

Start time for the day: Mid-night

Date	Status	1										Total Time	
27	Started @	0:00										Off-duty:	24.0
	Finished @	24:00										Driving:	
	Time spent	24.0										On-Duty *not* driving:	
Remarks:									**Elected Cycle: 1**			**Total:**	**24.0**

Date	Duty Status	1										Total Time	
28	Started @	0:00										Off-duty:	
	Finished @	12:00										Driving:	
	Time spent	12.0										On-Duty *not* driving:	
Remarks:									**Elected Cycle: 1**			**Total:**	

When the cycle reset was met, day 7 became day 1 for the new cycle 1
Work shift can start anytime after 12:00 noon

84. Is it a violation if a driver fails to declare the cycle that he/she is operating on, in the daily log?
Guidance: Yes.

85. Can a driver combine off-duty and sleeper berth times to accumulate 24 consecutive hours off-duty time in order to either satisfy the requirement to have taken 24 consecutive hours off-duty within the previous 14 days or if following cycle 2, before having accumulated 70 hours?
Guidance: Yes.

86. Would the 24 hours mandatory rest period required in cycle 2 be included in the 14 days thereby reducing the 336 hrs available to 312 hrs, of which 120 hrs could be on-duty?
Guidance: Yes. Also, depending on when the driver took the 24 consecutive hours off-duty, there may be an additional requirement to take another 24 consecutive hours off-duty for cycle 2.

Example: Cycle 2: Off-duty requirements

24-hour off-duty period

24-hour off-duty period

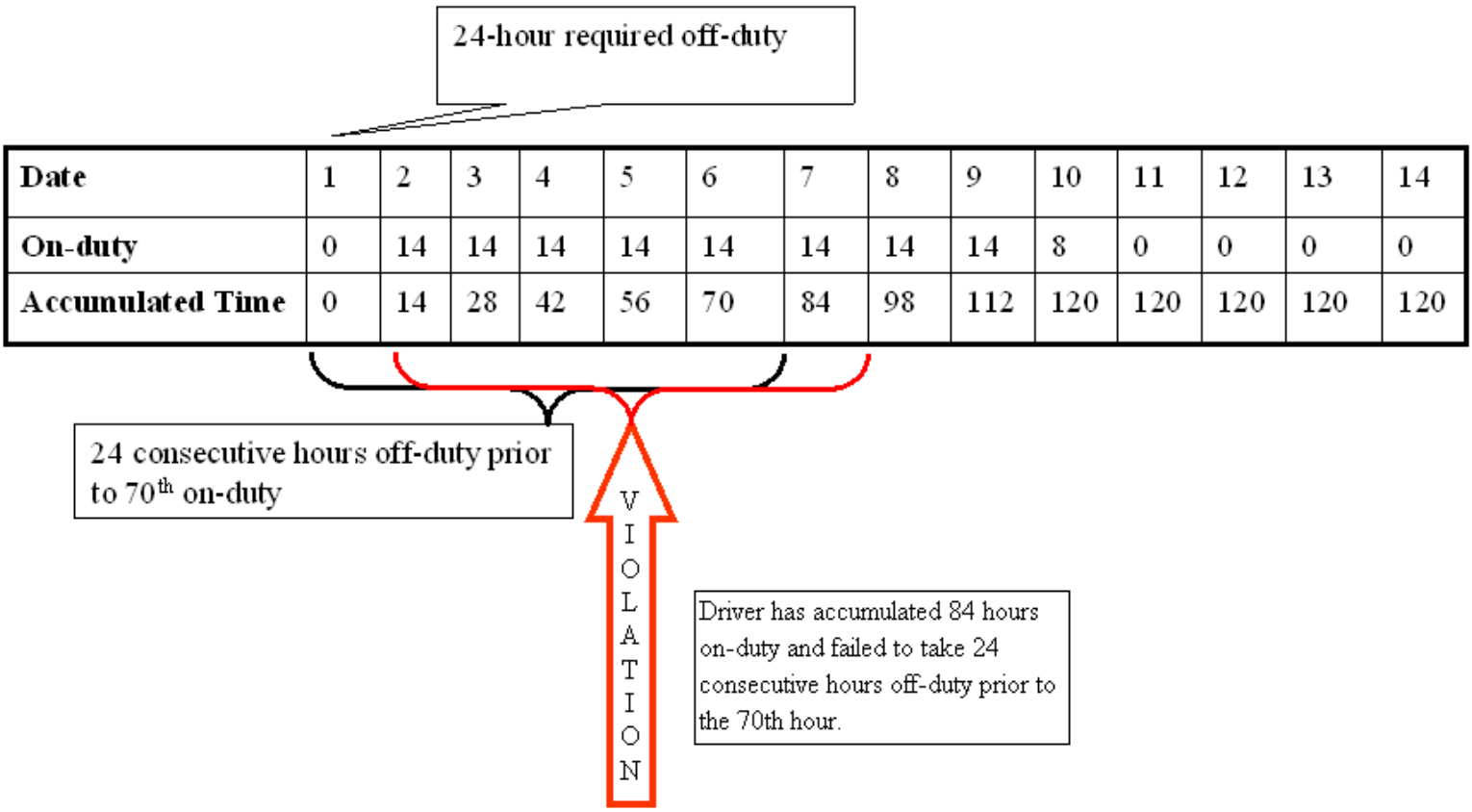
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14
On-duty	0	10	10	10	10	10	10	10	0	10	10	10	10	10
Accumalted Time	0	10	20	30	40	50	60	70	70	80	90	100	110	120

24 consecutive hours off-duty prior to 70th on-duty (any period)

87. Would a driver driving less than 10 hours a day ever be required to take 24 consecutive hours off-duty time?
Guidance: Yes. A prerequisite to driving a commercial vehicle on any given day is the driver must have taken at least 24 consecutive hours off-duty in the previous 14 days. Reference: Section 25.

88. Section 27 requires the driver when operating on cycle 2 (120/14) to have a consecutive off-duty period of 24 hours starting no later than the 70th hour of on-duty time in the cycle. Can a cycle commence with 24 hours off-duty, thereby allowing the driver to subsequently accumulate a period of 120 hours on-duty without any further restrictions?
Guidance: No. 24 hours off-duty must be taken in each time that 70 hours on-duty has been accumulated without having taken at least 24 consecutive hours off-duty time.

Example: Cycle 2: Off-duty Requirements



Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14
On-duty	0	14	14	14	14	14	14	14	14	8	0	0	0	0
Accumulated Time	0	14	28	42	56	70	84	98	112	120	120	120	120	120

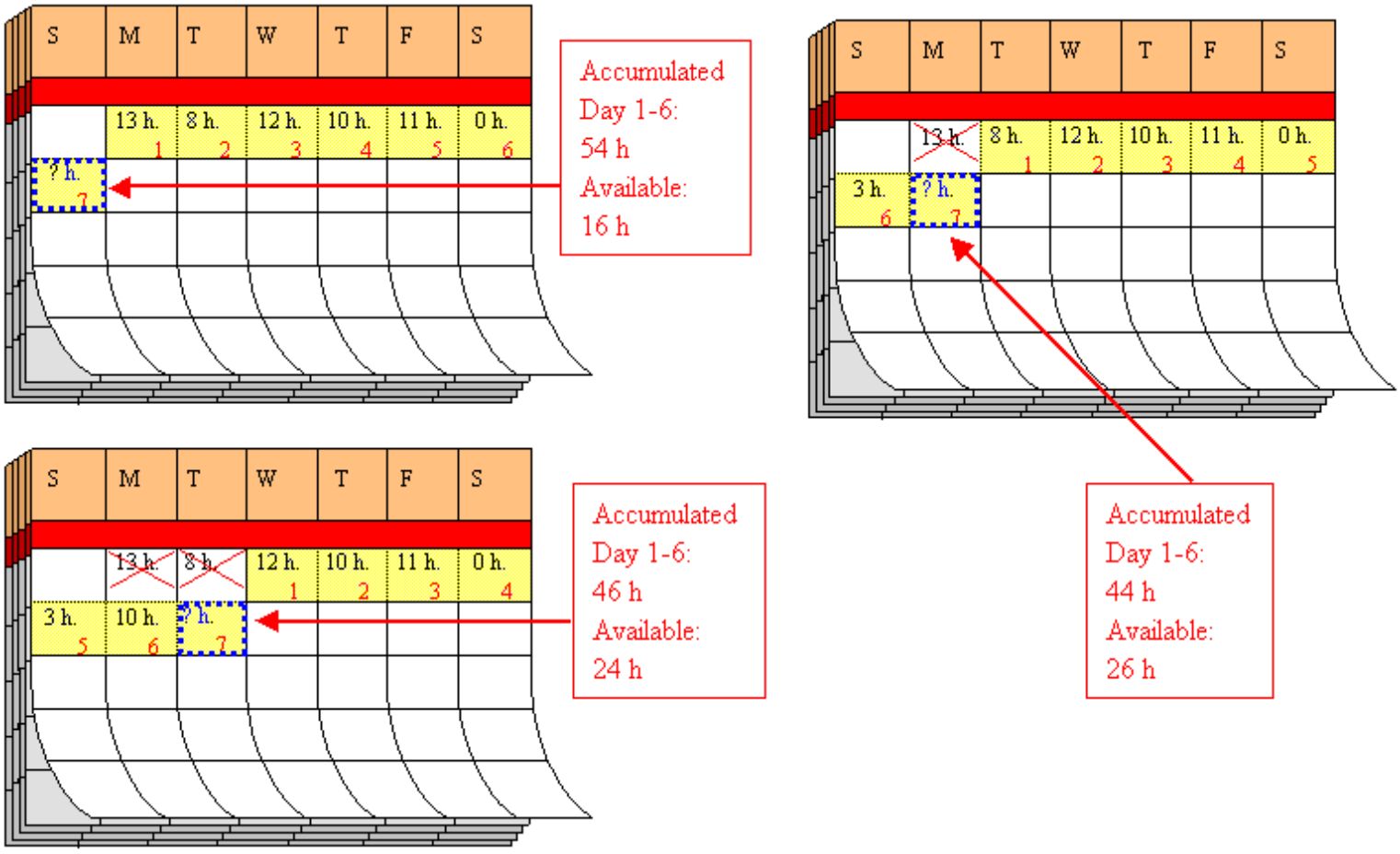
Cycle Reset – Off-duty Time (Section 28)

89. Can a driver reset the hours in cycle 1 and in cycle 2?
Guidance: Yes. The driver must take 36 consecutive hours off-duty to reset the hours in cycle 1 and 72 consecutive hours off-duty to reset the hours in cycle 2.

90. When a driver resets his cycle, do both driving and on-duty times reset to zero?
Guidance: Yes.

91. Are the cycles considered sliding windows?
Guidance: Yes.

Example 1: Illustration of Cycle 1 (70 hours / 7 days)

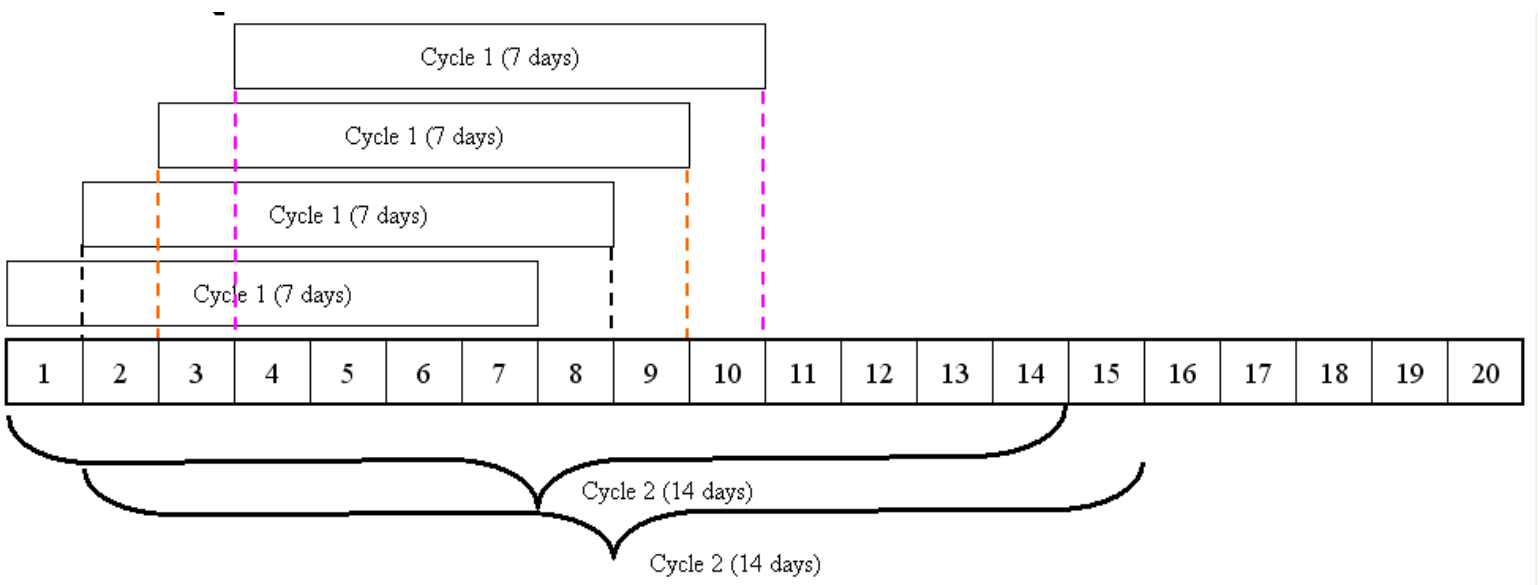


Example 2: Illustration of Cycle 1 (70 hours /7 days)

Cycle 1: sliding window concept

Date	1	2	3	4	5	6	7	8	9	10	1	12	13	14
On-duty	10	9	10	9	14	0	0	10	14	8	10	14	0	2
	Accumulated on-duty time = 52													
		Accumulated on-duty time = 52												
			Accumulated on-duty time = 57											
				Accumulated on-duty time = 55										
					Accumulated on-duty time = 56									
						Accumulated on-duty time = 56								
							Accumulated on-duty time = 56							
								Accumulated on-duty time = 58						

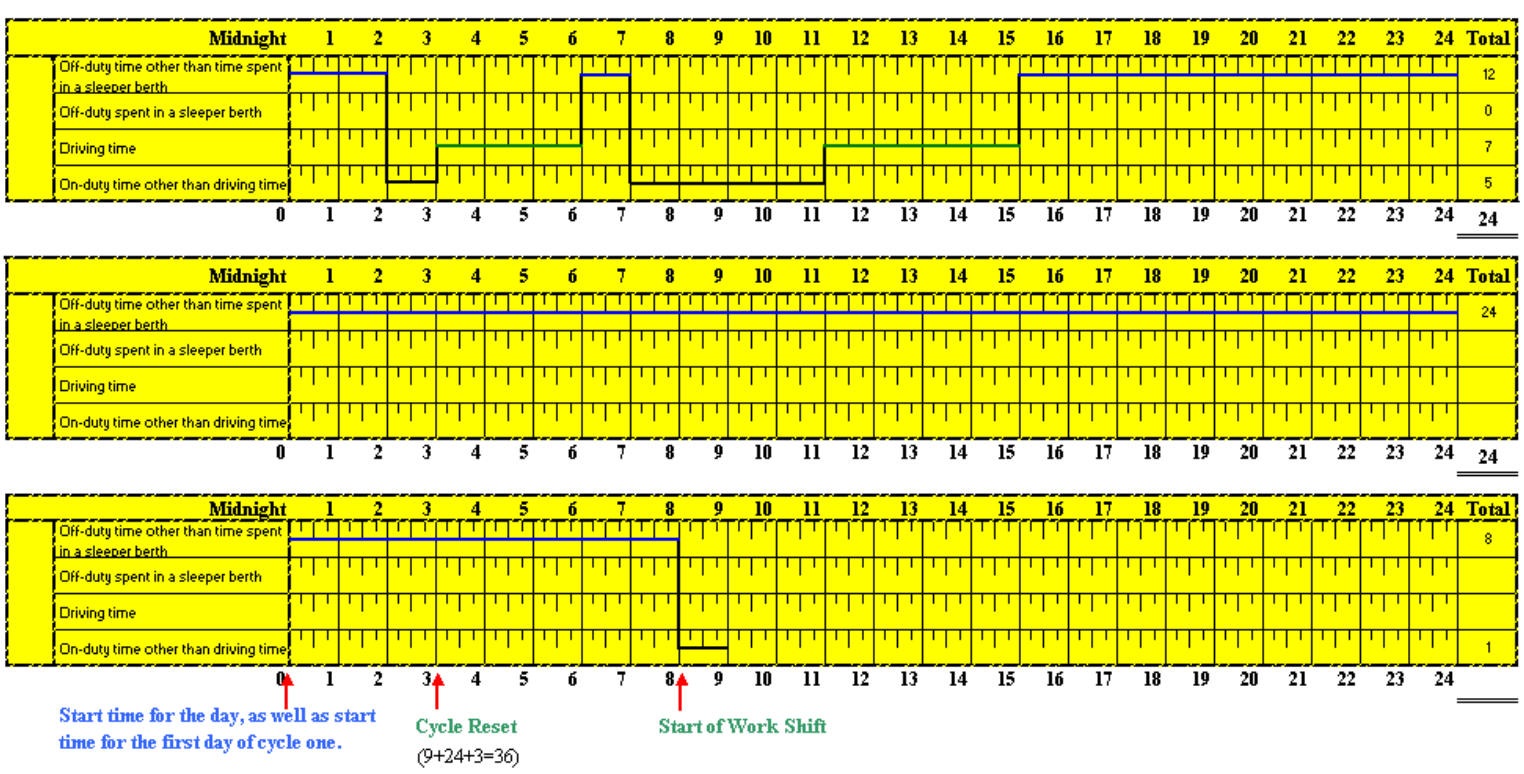
Example 3:



92. Who makes the decision as to which cycle a driver operates under?
Guidance: The motor carrier and the driver. Reference: Section 24.

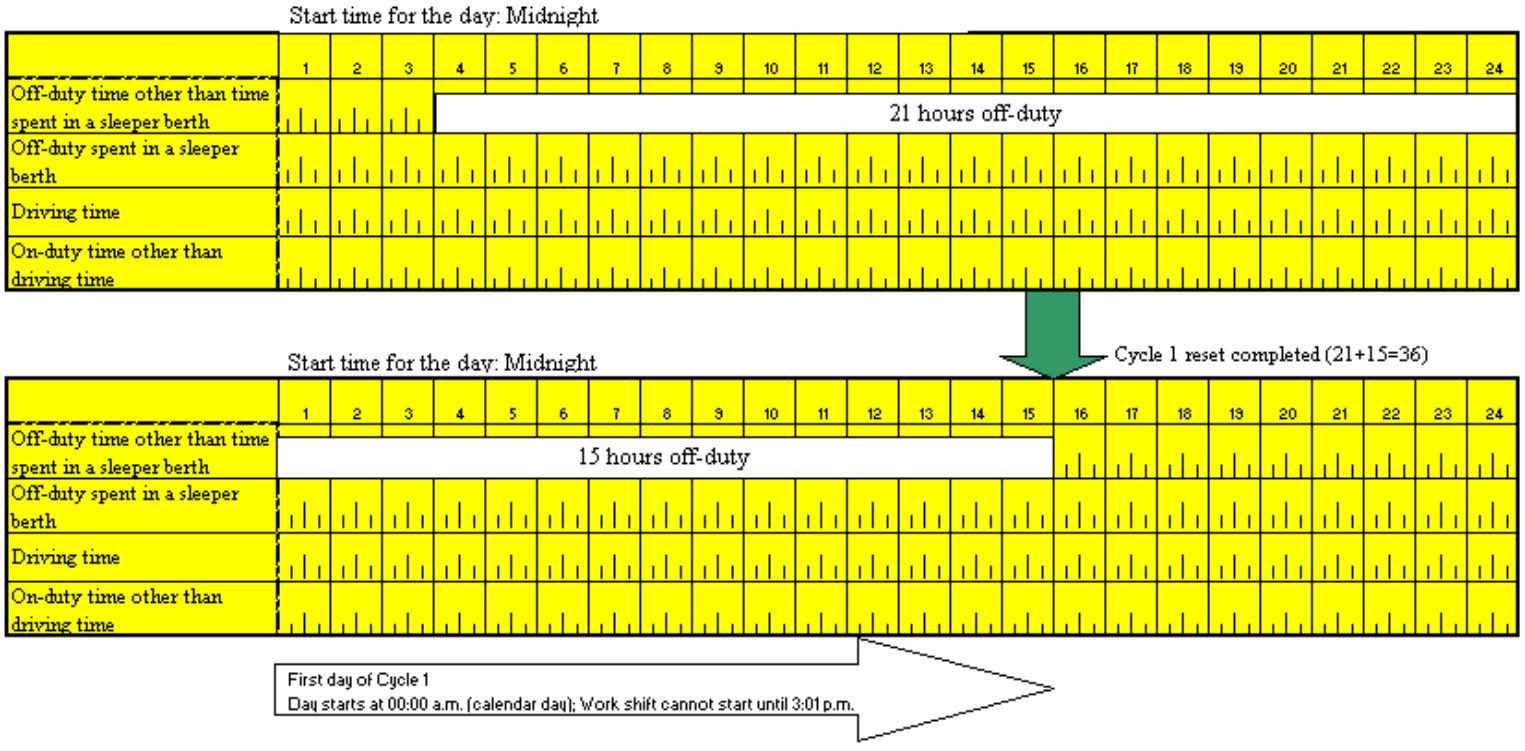
93. Refer to the following three examples.

Example 1: A driver finishes a work shift at 15:00 on day 1, and the next work shift starts at 03:00 on day 3. The driver has had 36 hours off-duty and therefore can reset the cycle. Does the new cycle start at 00:01 on day 3?
Guidance: The cycle starts at the commencement of the day for which the motor carrier has determined the start time. See illustration:

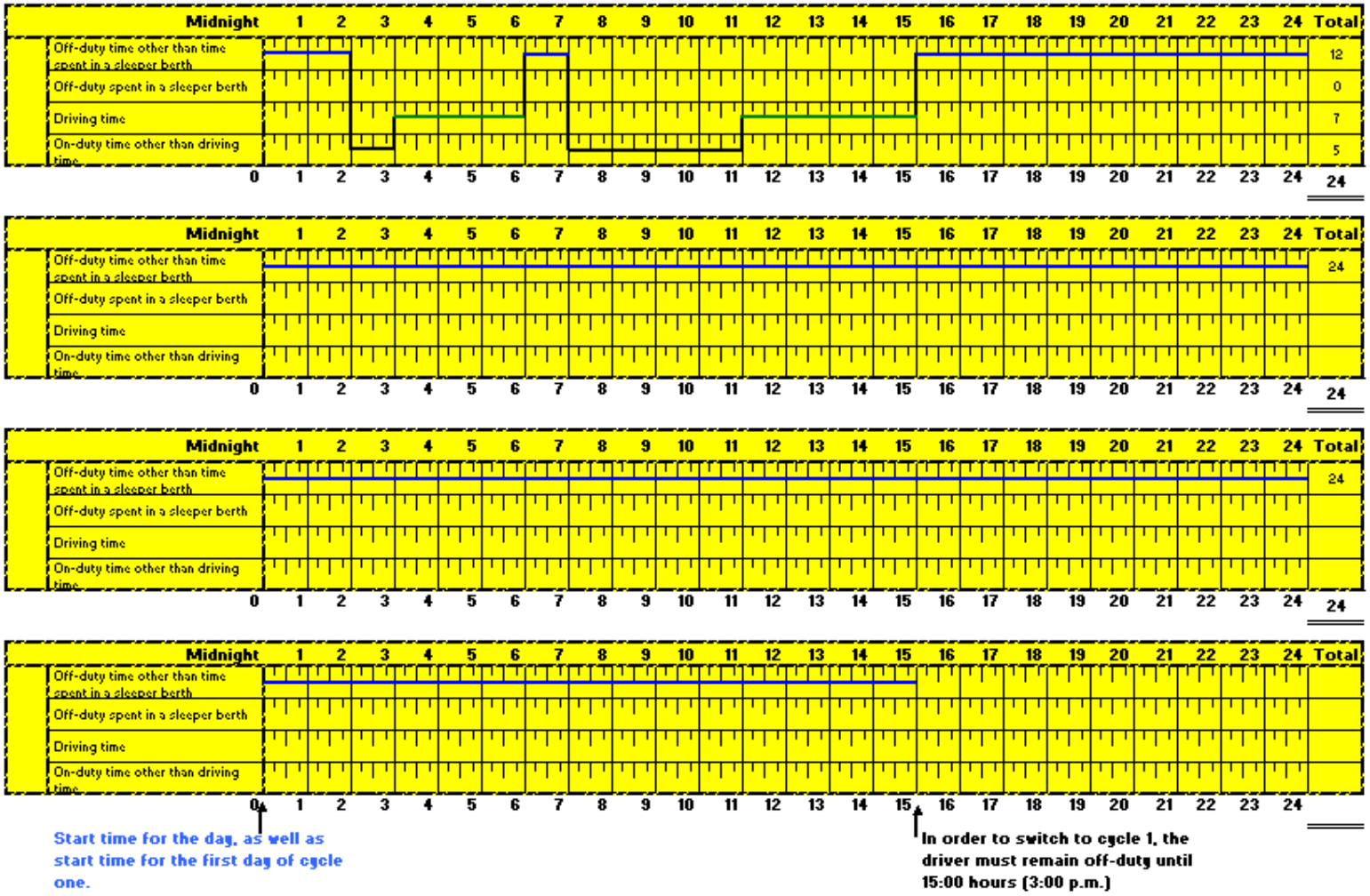


Example 2: A driver finishes a work shift at 03:00 on day 1, and the next work shift starts at 15:00 on day 2. The driver has had 36 hours off-duty and therefore can reset the cycle. Does the new cycle start at 00:01 on day 2?

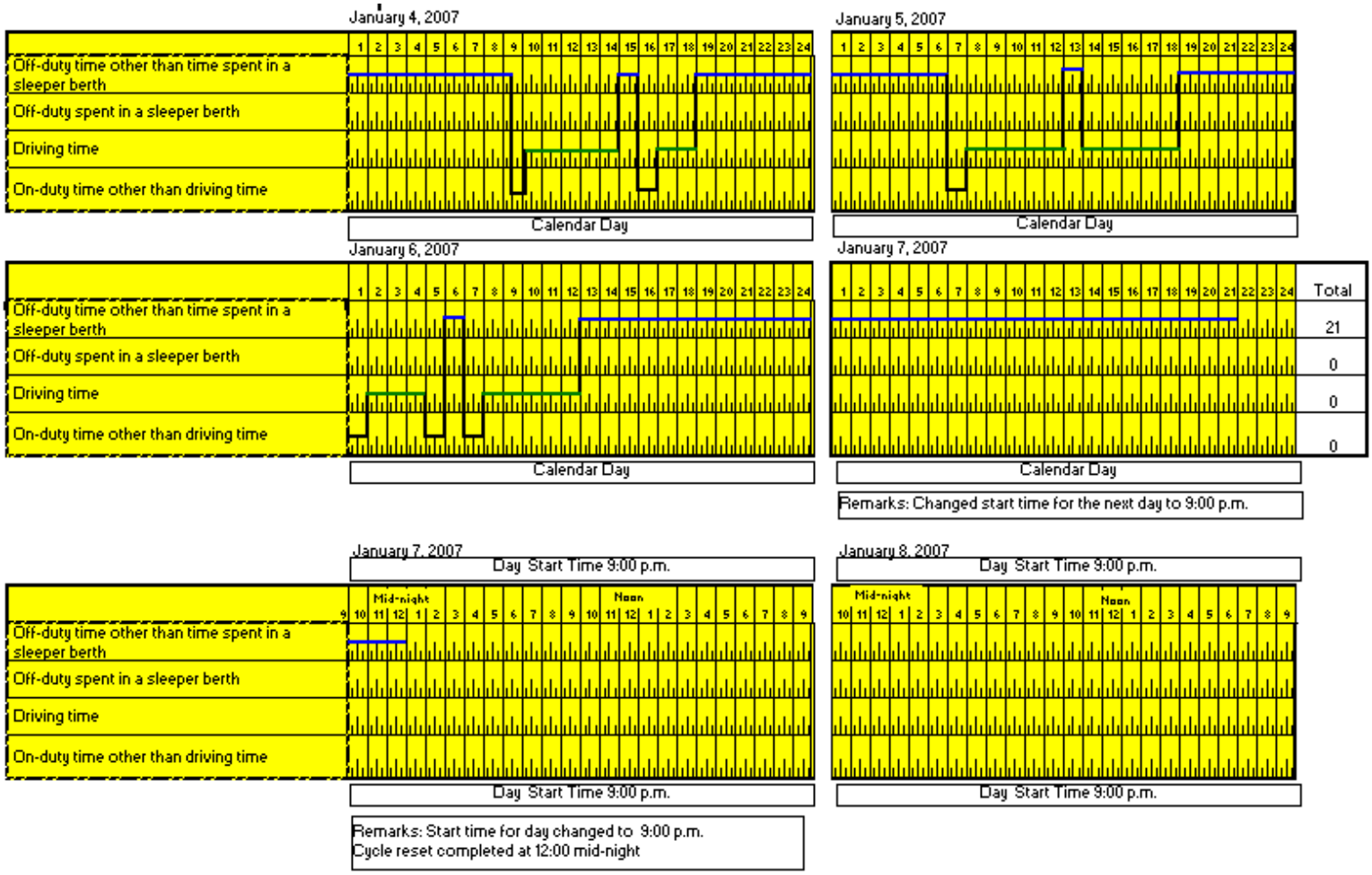
Guidance: Yes. See illustration.



Example 3: A driver is operating under cycle 2 and finishes a work shift at 15:00 on day 1, and the next work shift starts at 15:00 on day 4. The driver has had 72 hours off-duty and therefore can reset to cycle 1. Does the new cycle 1 start at midnight on Day 4?
Guidance: Yes, see illustration.



94. What is the procedure to switch from a calendar day to a 9:00 pm start? A driver received instructions from the motor carrier that he would no longer be working days, but would be working evenings starting Monday, January 8. In addition, his day would begin at 9:00 pm.
Guidance: See illustration.



SCHEDULING – DRIVING NORTH OF LATITUDE 60º N
(Sections 37-42, 49-54)

95. When crossing the Latitude 60^0 North, is the driver required to indicate this on the daily log to account for the differences in daily and cycle duty times.
Guidance: No.

96. A driver is driving in the Yukon and now enters BC - does the driver have to reset before entering BC?
Guidance: No.

PERMITS (Sections 61 - 68)

Oil Well Service Permits **(Section 63)**

97. Is the driver required to leave his/her commercial vehicle in order to be considered on standby?
Guidance: No.

98. Can standby time be included as the time required for the 10 hours "off-duty" requirement for the day?
Guidance: Yes, but not for the 8 consecutive hours; the 8 hours does not have to be part of the 10 hours but it can.

EMERGENCIES AND ADVERSE DRIVING CONDITIONS (Section 76)

99. Can a driver use the emergency exception if he/she will exceed 13 hours driving time and 14 hours on-duty time, that would put the driver over 14 hours or over the permitted hours in the elected cycle?
Guidance: Yes. Providing that the driver did not drive beyond the first location that was capable of accommodating the passengers, or providing a secure area for the vehicle and its load. Reference: Section 76(1).

100. What is considered to be an "emergency" for the purposes of Section 76(1) in order to be permitted to drive beyond the prescribed driving periods?
Guidance: An emergency is a situation or impending situation where the safety or security of people is at risk or likely to be in jeopardy. The term "in any emergency" shall not be construed as encompassing such situations as a driver's desire to get home, shippers' demands, market declines or shortage of drivers.

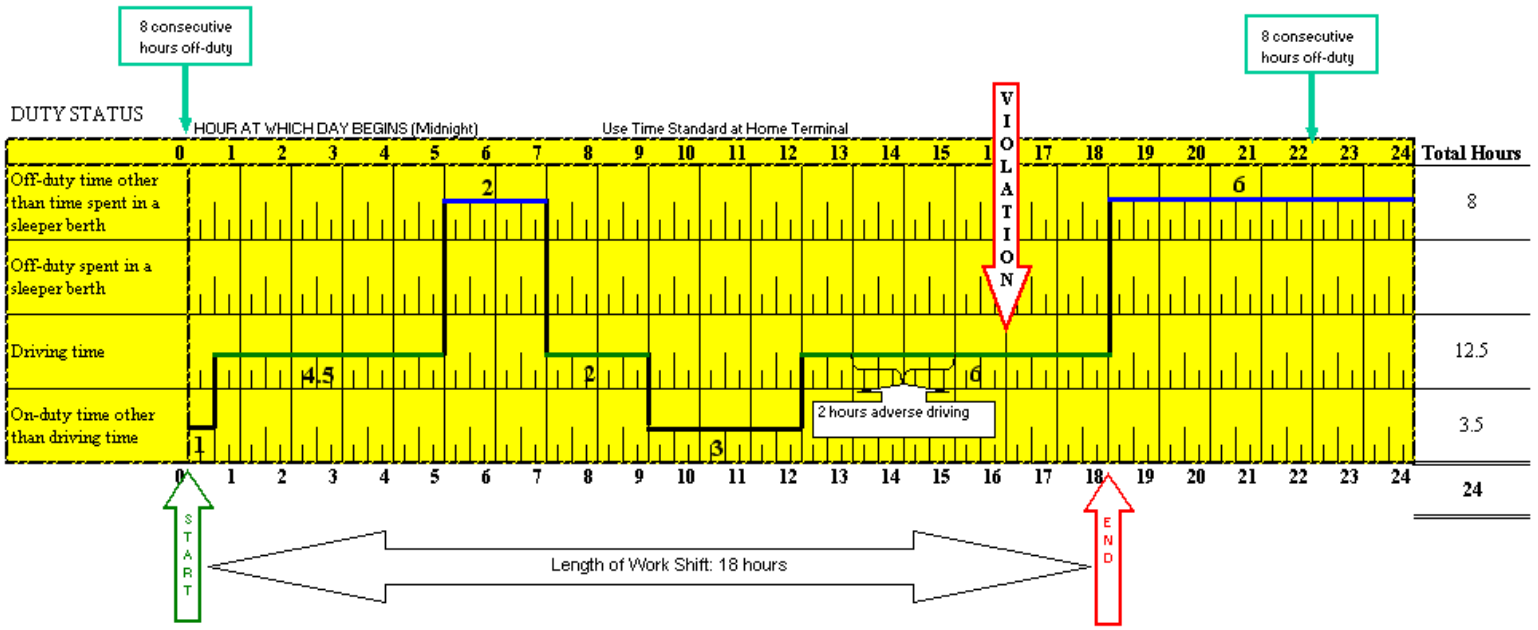
101. If a driver invokes the exception for adverse driving conditions, does a supervisor need to sign the driver's record of duty status when he/she arrives at the destination?
Guidance: No. However, the driver must record the reason for doing so in the remarks section of the daily log. Reference: Section 76(4).

102. Are there allowances made in the Regulations for delays caused by loading and unloading?
Guidance: No. The Regulations only make allowances for unforeseen contingencies such as in Section 76(1), adverse driving conditions and emergency conditions; loading and unloading delays are not covered by this Section. However, the 16-hour work shift allows drivers, if they are relieved from responsibility to log the time towards the two "other" hours (min. of 30 minutes) required for the daily off-duty time.

103. Does the term "the security of……and its load" include the temperature of the load?
Guidance: No. The rule has not changed in this respect. However, other legislation may apply, such as the Federal Health of Animals Regulations, Explosive Act, etc.

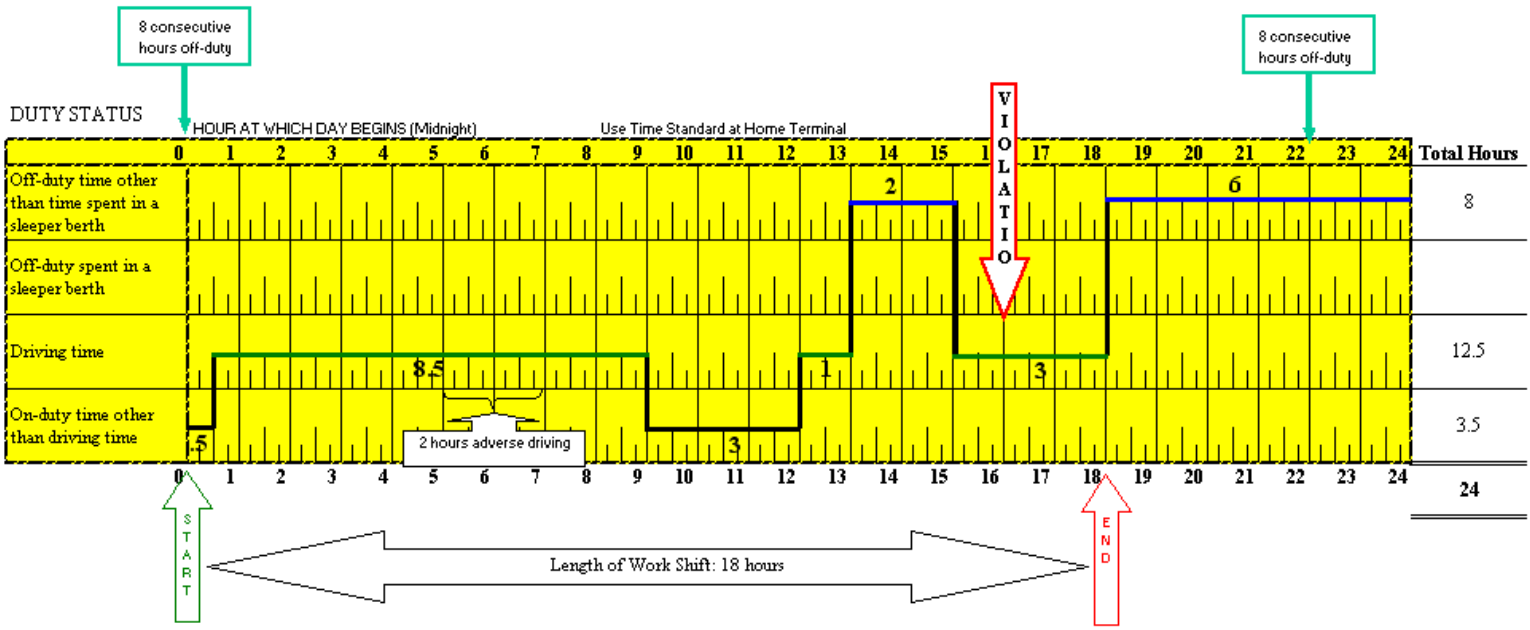
104. The term “a destination that provides safety” requires interpretation and the following example illustrates the issue. The driver is 1 hour from a truck stop which provides the facilities for the driver to rest for 8 hours, but the driver is only 2 hours from the home terminal. Will the driver be allowed to proceed to the home terminal?
Guidance: No. In the case of an emergency, the exception to the driving rules only extends to the first location that can accommodate the passengers, and provides security for the commercial vehicle and its load. (If transporting a load under an oversize/overweight permit, drivers must be aware of the conditions of the permit and comply with them.)

105. The following examples illustrate the use of Section 76(2).
Example 1: A driver has the following entries on the daily log book: on-duty not driving - 0.5 hours; driving - 4.5 hours; off-duty - 2.0 hours; driving - 2.0 hours; on-duty not driving -3.0 hours; driving -1.0 hours; adverse conditions -2.0 hours; and driving 3.0 hours. At the end of the work shift the driver has been on-duty 14.0 hours; driving 10.5 hours; and the elapsed time is 18.0 hours. (The driver should indicate what the adverse driving condition was in the remarks section of the daily log and the duration of time).
Guidance: See illustration.



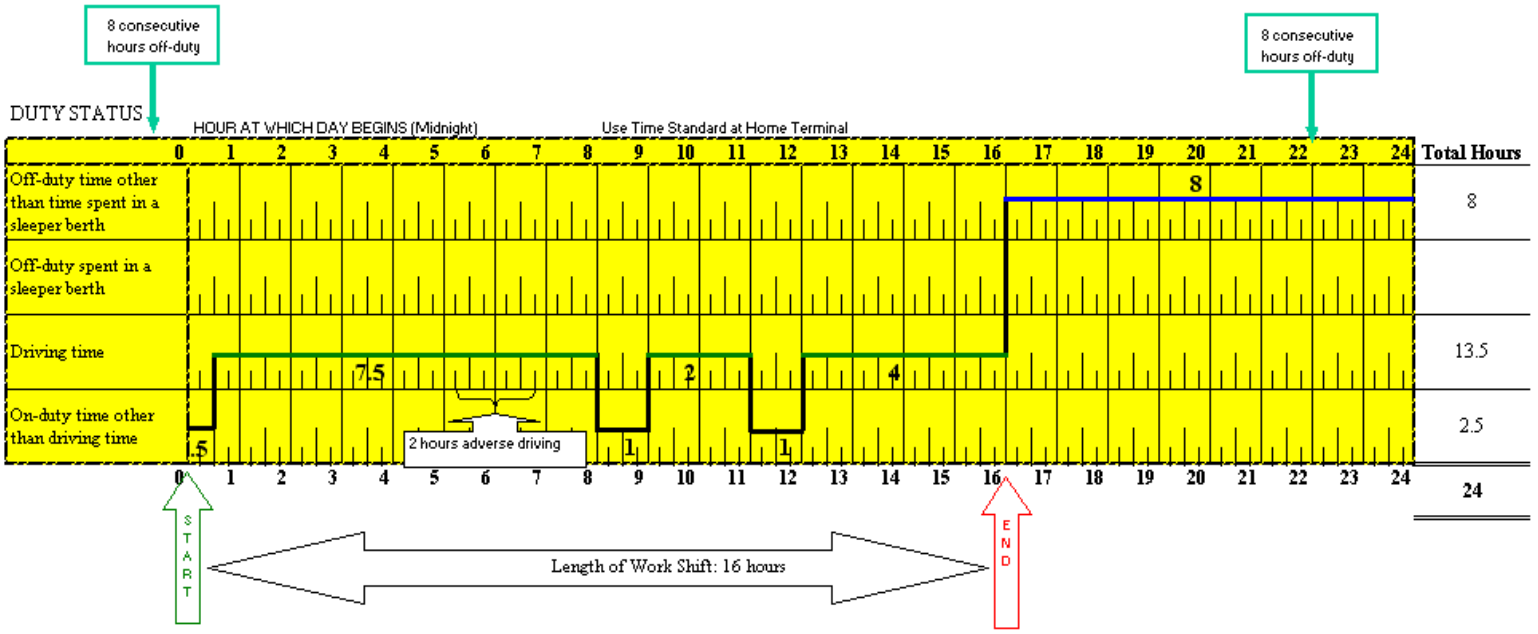
Violation: Work shift rules can not be modified. Reference: 76 (2)
1. Drive after 16 hours of elapsed time
2. Drive after 14 hours on-duty

Example 2: A driver has the following entries on the log book: on-duty not driving - 0.5 hours; driving - 4.5 hours; adverse driving - 2.0 hours; driving – 2.0 hours; on-duty not driving -3.0 hours; driving -1.0 hours; off-duty -2.0 hours; and driving 3.0 hours. At the end of the work shift the driver has been on-duty 14.0 hours; driving 10.5 hours; and the elapsed time is 18.0 hours. Is this allowed under this Section? The difference between the two scenarios is that in example 1 the driver takes a break before he experiences adverse conditions, but in example 2 the adverse conditions occur first. Can the driver extend the elapsed time by taking a break at any time?
Guidance: It is not permitted. See illustration.



Violation: Work shift rules can not be modified. Reference: 76 (2)
1. Drive after 16 hours of elapsed time
2. Drive after 14 hours on-duty

Example 3: A driver was delayed for two hours as the scene of a horrific traffic accident was cleared. The accident happened just a few minutes before the driver reached the location. It took him/her approximately two hours to travel ten kilometres as a result of the ongoing investigation, the evacuation of the injured, as well as clean up and land restrictions. Is this situation considered to be “an adverse driving condition” and is the driver allowed the additional 2 hours.
Guidance: This situation is considered “an adverse driving condition” because the driver was not aware of, nor could he/she predicted the event prior to the start of the trip. The driver is allowed up to two hours to complete the trip.



DAILY LOGS (Sections 80 - 87)

106. What happens if a motor carrier does not keep accurate and legible duty status records for a driver that is exempt from keeping a daily log (working within 160 km)?
Guidance: The motor carrier and the driver could be charged for the driver not completing a daily log. When the motor carrier fails to keep duty status records, the driver must complete a daily log.

107. What are the conditions that must be satisfied in order for a driver to be exempt from having to complete a daily log?
Guidance: The driver must:
a) not drive beyond a radius of 160 km of the home terminal;
b) return to the home terminal each day to begin a minimum of 8 consecutive hours off-duty;
c) not be driving under a permit issued under the Regulations.

Note: It is the responsibility of the motor carrier and driver to ensure that accurate and legible records are completed and maintained, and kept for a minimum of 6 months, indicating the driver's duty status and elected cycle, the hour at which each duty status begins and ends and the total number of hours spent in each status. It also includes information such as deferral (day 1 and day 2), adverse driving conditions and emergency declarations.

Example 1:

Duty Status Codes

1 = Off Duty
2 = Driving
3 = On Duty,not-Driving

Driver's name: _____ month: February Year:; 2007

Start time for the day: Midnight

Date	Duty Status	1	3	2	3	2	3	1	2	1		Total Time
27	Started @	0:00	6:00	6:30	7:30	9:30	10:30	12:30	13:30	17:30		Off-duty: 13.5
	Finished @	6:00	6:30	7:30	9:30	10:30	12:30	13:30	17:30	24:00		Driving: 6.0
	Time spent	6.0	0.5	1.0	2.0	1.0	2.0	1.0	4.0	6.5		On-Duty *not* driving: 4.5
Remarks:									Cycle 1 X		Cycle 2	**Total:** 24.0

Note: You must record in the Remarks Section, the following items:

1. Deferral of off-duty time (48-hour averaging)
2. When the driving time is extended or off-duty time is reduced because of an unforeseen adverse driving condition or an emergency
3. When a CMV is used for personal use (odometer readings)

Example 2:

2007 Record of Duty Status

Driver's Name:_____ **Month: February**

Start time for the day: Midnight

Date	Status Code	1	3	2	3	2	3	1	2	1				
	Status	Off-Duty	On-Duty	Driving	On-Duty	Driving	On-Duty	Off-Duty	Driving	Off-Duty			**Off-Duty:**	**13.50**
	Start (hh:mm)	0:00	6:00	6:30	7:30	9:30	10:30	12:30	13:30	17:30			**Driving:**	**6.00**
27	**Finish (hh:mm)**	6:00	6:30	7:30	9:30	10:30	12:30	13:30	17:30	24:00			**On-Duty:**	**4.50**
	Time Spent	**6.00**	**0.50**	**1.00**	**2.00**	**1.00**	**2.00**	**1.00**	**4.00**	**6.50**			**Total Hrs.**	**24.00**
								Total of Driving and On-Duty not-driving hours:				10.50		

1 = Off Duty
2 = Driving
3 = On Duty,not-Driving

Status Codes

Cycle 1	**x**
Cycle 2	

Remarks:

Note: You must record in the Remarks Section, the following items:

1. Deferral of off-duty time (48-hour averaging)
2. When the driving time is extended or off-duty time is reduced because of an unforeseen adverse driving condition or an emergency
3. When a CMV is used for personal use (odometer readings)

Example 3:

Name:_____ **Date:** February 27, 2007

Elected Cycle: Cycle1

Time	Off-duty	Driving	On-duty (not driving)	Remarks
0:00				
6:00	6.0			
6:30			0.5	
7:30		1.0		
9:30			2.0	
10:30		1.0		
12:30			2.0	
13:30	1.0			
17:30		4.0		
24.00	6.5			
Total	13.5	6.0	4.5	**TOTAL: 24**

Note: You must record in the Remarks Section, the following items:

1. Deferral of off-duty time (48-hour averaging)
2. When the driving time is extended and the off-duty time is reduced because of an unforeseen adverse driving condition or an emergency
3. When a CMV is used for personal use (odometer readings)

Example 4:

RECORD of DUTY STATUS

(For drivers operating within 160 km of home terminal)

Driver's Name: _____ **Month:February Year: 2007**

Start time of day: Midnight

Date	Duty Status	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Totals
27	Off-Duty																									13.5
	Driving																									6
	On-Duty-Not Driving																									4.5
	Remarks																					Cycle 1 X		Cycle 2		24

Note: You must record in the Remarks Section, the following items:

1. Deferral of off-duty time (48-hour averaging)
2. When the driving time is extended or off-duty time is reduced because of an unforeseen adverse driving condition or an emergency
3. When a CMV is used for personal use (odometer readings)

Example 5:

Date	Duty Status	Time Block from/to (every hour of the day must be accounted for) 24 hour day												Total hours for each duty status
27	Started @	0:00	6:00	6:30	7:30	9:30	10:30	12:30	13:30	17:30				
	Finished @	6:00	6:30	7:30	9:30	10:30	12:30	13:30	17:30	24:00				
	Time Off-duty	6.00						1.00		6.50				Off-duty: 13.50
	Time Driving			1.00		1.00			4.00					Driving: 6.00
	Time On-duty not driving		0.50		2.00		2.00							On-duty not driving 4.50
Remarks:												Cycle 1 ☑ Cycle 2 ☐		Total: 24

Note: You must record in the Remarks Section, the following items:

1. Deferral of off-duty time (48-hour averaging)
2. When the driving time is extended or off-duty time is reduced because of an unforeseen adverse driving condition or an emergency
3. When a CMV is used for personal use (odometer readings)

108. With regard to the exemption from having to fill out a daily log, how do you determine the area inside of the 160 km radius?
Guidance: The term radius is internationally accepted to mean “by air" and by determining the scale of a map, the 160 km radius circle can be plotted. Using the location of the home terminal as the centre point, draw a 160 km radius circle on the map.

109. Will short haul drivers be required to maintain daily log books?
Guidance: Yes, unless the daily log exemption applies. Reference: Section 81(2).

110. What documentation must a driver claiming the daily log exemption Section 81(2) have in his/her possession?
Guidance: The driver is required to produce documentation that he/she received during the current trip. Also, the driver should be prepared to explain, if requested by an inspector, the reasons why he/she qualifies for the daily log exemption.

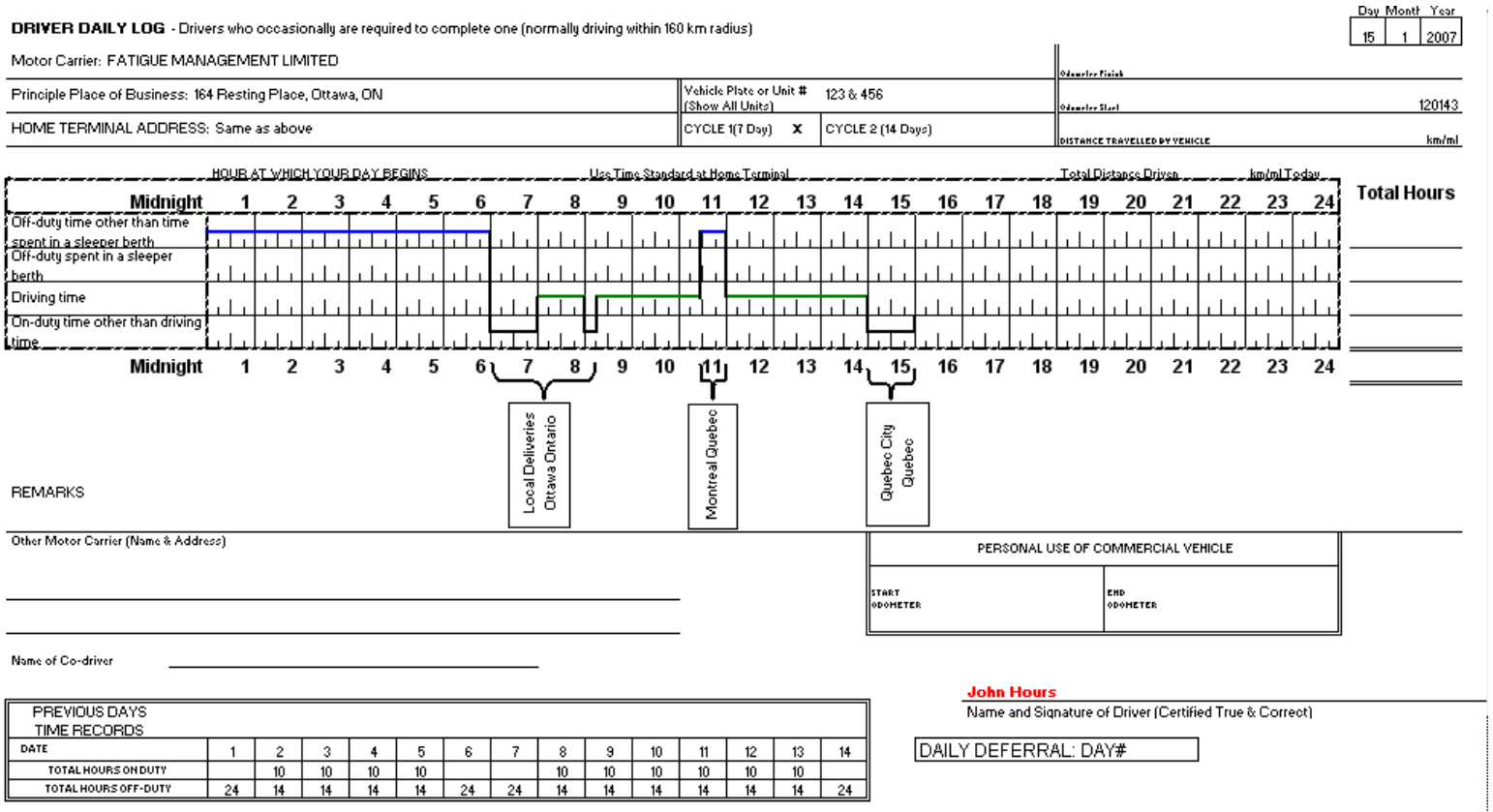
111. Must a motor carrier retain duty status records at its principal place of business for drivers that are exempt from completing a daily log?
Guidance: Yes. Upon request by an inspector, the records must be produced within a reasonable period of time at the location where the review takes place.

112. It is assumed in Section 82(1)(a) the reference to the start time means the start time of the day, e.g. calendar day 00.00 and not the start time of the shift.
Guidance: Yes.

113. Can an operation that changes its normal work- reporting location on an intermittent basis utilize the 160 km radius exemption?
Guidance: Yes. However, when the motor carrier changes the normal reporting location to a new reporting location, the day on which that trip (from the old location to the new location) was made must be recorded in a daily log because the driver has not returned to his/her normal work

reporting location. For the days on which the driver satisfied all of the requirements of Section 81(2), the driver could revert back to the simplified duty status records.

114. When a driver fails to meet the provisions of the 160 km radius exemption Section 81(2), is the driver required to have copies of his/her records of duty status for the previous fourteen days? Must the driver prepare daily records of duty status for the next seven days?
Guidance: No. The driver is only required to have in his/her possession a daily log for the day he/she does not qualify for the exemption. A driver must begin to prepare a daily log for the day immediately after he/she becomes aware the terms of the exemption cannot be met. The daily log must cover the entire day, even if the driver has to record retroactively changes in status that occurred between the time the driver reported for duty and the time in which he/she no longer qualified for the 160 km radius exemption. This is the only way to ensure that a driver does not claim the right to drive 13 hours after leaving his/her exempt status, in addition to the hours already driven under the 160 km exemption. Also, Section 82(1)(f) requires the driver to enter in the remarks section of the daily log, the number of hours of off-duty time and on-duty time that was accumulated each day during the previous 14 days or on one daily log that clearly indicates all required information. A driver may carry the record of duty status for the previous 14 days in lieu of entering in the current daily log the times they were on- and off-duty for previous 14 days.



115. Can a driver use the graph grid on the daily log as a time record to meet the requirement contained in the 160 km radius exemption?
Guidance: Yes, provided all the information is in the records. The graph grid is just an element.

116. Must the driver's name and each date worked appear on the time record prepared to comply with Section 81(2), 160 km radius driver?
Guidance: Yes.

117. Can drivers who work split shifts take advantage of the 160 km radius exemption (daily log) provided in Section 81(2)?
Guidance: Yes.

118. Must a motor carrier that uses a 160 km radius driver write zero (0) hours on the time record for each day the driver is off-duty (not working for the motor carrier)?
Guidance: Yes. Section 81(1)(c) requires a motor carrier to maintain accurate and legible records for each driver.

119. Often, bus drivers can take their bus home and begin and end their workday at home or a parking place near their home. This is particularly common in the school bus industry where drivers can "out park" their school bus at their home, on the farm, at a nearby school, shopping centre, etc. Would the "out park" location be deemed to be the home terminal for the purposes of eligibility for the 160-km radius daily log exemption?
Guidance: Yes.

120. Can a short-distance driver (operating within the 160-km radius) have all of his or her on-duty time simply recorded as "on-duty - driving" even if this time includes some on-duty not driving periods.
Guidance: No. However, a local driver may use the provision of Schedule 2 (c).

Example 1:

Illustration of the entries that must be made in the duty status records for the driver of a school bus, if the driver was not permitted to record multiple pickups and deliveries in blocks of driving and on-duty time.

Drivers Name: _____

Date: M_____ D_____ Y_____

Elected Cycle: 1_X_or 2 ___

Time	Off-duty	Driving	On-duty (not driving)	Remarks
0:00				
7:00	7:00			
7:15			0:15	
7:45		0:30		
8:15	0:30			
8:30			0:15	
9:15		0:45		
9:30			0:15	
14:00	4:30			
14:30		0:30		
14:45			0:15	
15:30		0:45		
15:45			0:15	
16:15		0:30		
24:00	7:45			
Total	19:45	3:00	1:15	

Total On-duty Hours
4 hours 15 minutes

Example 2:

Date	Duty Status		Time Block from/to (every hour of the day must be accounted for)									Totals for Day	
	Started @		0:00	7:00	9:30	14:00	16:15						
	Finished @		7:00	9:30	14:00	16:15	24:00						
	Time spent	Off-duty	7:00		4:30		7:45					Off-duty:	19:15
		Driving		1:15		1:45						Driving:	3:00
		On-duty *not* driving		1:15		0:30						On-duty *not* driving:	1:45
Remarks:								Cycle 1 (7 days) X Cycle 2 (14 days)				**Total:**	**24 hrs.**

Simplified version for duty status record keeping

Allowing the driver who drives within 160 km radius to record multiple pick-ups and deliveries in blocks of on-duty and driving time can reduce the number of entries that must be recorded in the duty

status records. This is consistent with the approach allowed for long haul drivers that are required to complete a daily log. Also, if the operator does not temporarily relieve the driver from responsibility for short off-duty periods (less than 30 minutes) this will eliminate other entries. In this scenario, recording a short off-duty period of 30 minutes as on-duty did not adversely affect the driver's available time because the total on-duty time for the day was only 4 hours and 45 minutes.

121. Section 84(b) technically requires a driver who is driving through the midnight hour (presuming the "day" is 12 midnight to 12 midnight) to add up the hours, record the mileage and sign the log sheet for the "day". Will the driver be allowed to complete the daily totals etc. on the next "day" at the first opportunity when the driver's status changes.
Guidance: Yes.

122. Can a driver who commences driving for another company, submit records of duty status for the preceding 14 days in lieu of a signed statement?
Guidance: There is no section that specifically requires a motor carrier to request a driver to submit daily logs and/or record of duty status (that were completed and kept by another motor carrier). However, a motor carrier must make sure that a driver is complying with the Regulations. It would be prudent for the motor carrier to obtain copies of the daily log or records of duty status or at the very least obtain a signed statement.

123. For motor carriers utilizing the 160 km exemption, is a motor carrier required to enter in the duty status records, the time a driver worked and drove a commercial vehicle for another motor carrier?
Guidance: Each motor carrier must maintain accurate records for the day showing the time at which each duty status began and ended and total number of hours that the driver spent in each status. All time must be accounted for and monitored, and it would be in the best interest of the carrier to identify time worked for another carrier so that the payroll records, where applicable, would be consistent with the hours worked. Reference: Section 81(2)(c).

124. A motor carrier shall require every driver to fill out and every driver shall fill out a daily log each day that accounts for all of the driver's on-duty time and off-duty time for that day. Would a driver be allowed to record multiple days off on a single daily log?
Guidance: Yes.

125. Can a rubber stamp signature be used to satisfy the requirement of a daily log?
Guidance: No. A driver's daily log must bear the signature of the driver who prepared it.

126. Can enforcement action be taken on the current day's daily log if it contains false information, even if the daily log is not signed?
Guidance: Yes.

127. Can the names of cities be abbreviated?
Guidance: No.

128. Can the names of provinces/territories, states and countries be abbreviated?
Guidance: Yes.

129. Must the daily log identify the cycle being used and the hour at which the day begins?
Guidance: Yes.

130. Is the Canadian bilingual, US or any other daily log form acceptable?
Guidance: Yes, for the Canadian bilingual; yes for the US and other daily logs, provided the graph grid and specific information required by Section 82 are included.

131. When a driver crosses a time zone, how is the time to be recorded in the log?
Guidance: The time must be consistent with the time zone of the driver's home terminal.

132. Are drivers required to include their total on-duty time for the previous 6 to 13 days (as applicable) on the daily log?
Guidance: No. The recaps for the cycles are not mandatory.

133. Can standard time be used on the graph grid portion of the driver's daily log or record of duty status?
Guidance: Yes.

134. When the driver's duty status changes, does Section 82 and Schedule 2 require a description of "on-duty not driving" activities (fuelling, pre-trip, loading, unloading, etc.) in the remarks section, in addition to the name of the nearest city, town or village followed by the name of the province, territory or state?
Guidance: No.

135. What should the carrier do when the electronic on-board recording device malfunctions?
Guidance: Use a paper (hard copy) daily log.

136. When does the time start for the retention of the daily log book?
Guidance: 6 months from the date on the document.

137. When working for multiple carriers, can a driver retain separate daily logs for each of the carriers?
Guidance: No.

138. Is a motor carrier required to monitor compliance and discipline any driver that has failed to comply with the Regulations?
Guidance: Yes.

139. Are motor carriers liable for the actions of their employees, even though the carrier contends that it did not require or permit the violations to occur?
Guidance: Yes. Carriers are liable for the actions of their employees. Neither intent to commit, nor actual knowledge of, a violation is a necessary element of that liability. Carriers "permit" violations of the Regulations by their employees if they fail to have in place management systems that effectively prevent such violations.

OUT-OF-SERVICE DECLARATIONS (Section 91)

140. May a driver operate any motor vehicle, at the direction of the motor carrier, after being placed out-of-service for an hour of service violation?
Guidance: An out-of-service order issued under Section 91 extends only to the operation of commercial vehicles as defined by these Regulations.

141. What could happen if a driver fails to produce a daily log?
Guidance: The inspector has the authority to declare a driver out-of-service for 72 consecutive hours for failing to produce a daily log. Reference: Section 91(2)(d).

INSPECTIONS (Sections 96 - 99)

Authority to Enter Premises for an Inspection **(Section 97)**

142. A number of owners/operators have a single vehicle and their home is also their principal place of business. How do you carry out an inspection in those homes?
Guidance: Through permission or a warrant.

143. It appears the latitude given inspectors provides unreasonable access to a driver's living quarters, and question the necessity of having to conduct sleeper inspections from a safety perspective. Clearly, improper sleeping quarters do not constitute a clear and immediate threat to public safety. As stated in Section 97(2), inspectors may not enter a sleeper compartment for the purpose of inspecting logs, etc., which, one might argue, could produce a possible threat to road safety. Surely, if the greater good is disallowed, a minor and unthreatening transgression, such as having too thin a mattress, should also be disallowed.
Guidance: Jurisprudence indicates that access is allowed in order to enforce Schedule 1.

Production of Daily Logs and Supporting Documents **(Sections 98 - 99)**

144. What regulation, interpretation, and/or administrative ruling requires a motor carrier to retain supporting documents and what are those documents?
Guidance: Section 85(3) requires motor carriers to retain all supporting documents at their principal places of business for a period of at least 6 months. Supporting documents are the records (handwritten or electronic) of the motor carrier which are maintained in the ordinary course of business and used by the motor carrier to verify the information recorded on the driver's daily log and/or record of duty status. Examples of supporting documentation: bills of lading, carrier pros, freight bills, dispatch records, driver call-in records, gate record receipts, weight/scale tickets, fuel receipts, fuel billing statements, toll receipts, international registration plan receipts, international fuel tax agreement receipts, trip permits, port of entry receipts, cash advance receipts, delivery receipts, lumber receipts, interchange and inspection reports, lessor settlement sheets, over/short and damage reports, agricultural inspection reports, CVSA reports, accident reports, telephone billing statements, credit card receipts, driver fax reports, on-board computer reports, border crossing reports, custom declarations, traffic citations, overweight/oversize reports and citations, and/or other documents directly related to the motor

carrier's operation, which are retained by the motor carrier in connection with the operation of its transportation business. Supporting documents may include other documents the motor carrier maintains and which can be used to verify information on the driver's records of duty status. If these records are maintained at locations other than the principal place of business but are not used by the motor carrier for verification purposes, they must be forwarded immediately to the principal place of business upon a request by an inspector.

145. Can it be assumed that the meaning of the term supporting document when it is being used when referring to a driver is different from the meaning when it is being used when referring to a motor carrier? (This term will be used differently when being applied to on road enforcement and to facility audit situations).
Guidance: Yes. With respect to a driver, it is all documents in their possession; with respect to a motor carrier, it is all documents/records relating to the business. The driver must forward his/her daily log and any supporting documents to the motor carrier no later than 20 days after a daily log was completed.

146. Are electronic records stored in computers, by a consulting company or service provider included within the meaning of supporting documents?
Guidance: Yes.

147. Is an inspector/officer allowed to take a driver's original daily log, shipping documents, receipts and other documents for purposes of making copies?
Guidance: Yes.

148. Are US drivers operating in Canada required to operate in accordance with the Canadian Regulations?
Guidance: Yes.

149. Can an inspector require a motor carrier to provide documents during normal business hours?
Guidance: Yes.

150. Is a motor carrier compelled to take all records and supporting documents to a location specified by an inspector?
Guidance: Yes.

SCHEDULE 1

151. Would a sleeping bag be adequate in a sleeper berth?
Guidance: Yes.

152. What grounds would an inspector require for entering the cab of the truck to inspect the sleeping accommodations?
Guidance: Officers have the authority to inspect sleeper berth accommodations to ensure they comply with the requirements as specified in Schedule 1.

SCHEDULE 2

153. Schedule 2 allows a driver engaged in making deliveries in a municipality that results in start periods of driving time interrupted by short periods of "other on-duty time" to record all driving time as a combined entry? Could this apply to checking an oil well site?
Guidance: Yes.

154. Is Schedule 2 what all daily log graph grids look like?
Guidance: All the information required by Section 82 must be contained in the daily log. A motor carrier may use its own version of the daily log and the graph grid must contain all the information as specified in Schedule 2. A carrier may print a graph grid with a start hour other than midnight if it routinely designates the start of the day as sometime other than midnight (e.g.: a noon start time for the day).

155. Do instructions in Schedule 2 allow for the driver to use a GPS location ID?
Guidance: No, as it is not recognizable.

General Question

156. How will the Interpretation Guide be used and what legal status will it have?
Guidance: It will simply be a guide and it will not have any legal status.

Standard 10

Cargo Securement

The NSC Standard 10 Cargo Securement was approved by the Council of Ministers Responsible for Transportation and Highway Safety on June 8, 2013.

The content and numbering of this text is identical to the Standard as approved by the Council of Ministers; however the appearance and layout may be different, including the pagination, the header and footer. This style has been adopted to be consistent with all standards that appear in the Manual: National Safety Code for Motor Carriers.

June 2013
ISBN 978-0-9878957-2-1

National Safety Code for Motor Carriers

Standard 10 – Cargo Securement

Version: June 2013

Table of Contents

INTRODUCTORY NOTES

The standard was drafted with the objective to provide jurisdictions with a standard which can be adopted by reference.

Each jurisdiction may encounter situations where existing legislation or regulations contain definitions or provisions which conflict or overlap with the contents of this Standard. For this reason, the following sections are offered as optional text for consideration by jurisdictions where needed:

Interpretation (Definitions)

"driver" includes the owner of the vehicle if the owner of the vehicle is not the carrier

PART 1 - GENERAL PROVISIONS

Division 1 - Application

Safety responsibility

(1) A carrier shall not permit a driver to operate a vehicle where the cargo transported in or on the vehicle is not contained, immobilized or secured in accordance with this Standard.

(2) A driver shall not operate a vehicle where the cargo transported in or on the vehicle is not contained, immobilized or secured in accordance with this Standard.

Division 2 - General Performance Criteria

Cargo securement

Cargo transported by a vehicle shall be contained, immobilized or secured so that it cannot

(a) leak, spill, blow off, fall from, fall through or otherwise be dislodged from the vehicle, or

(b) shift upon or within the vehicle to such an extent that the vehicle's stability or manoeuvrability is adversely affected

INTERPRETATION

In this Standard,

"anchor point" means the part of the structure, fitting or attachment on a vehicle or cargo to which a tiedown is attached;

"bell pipe" means concrete pipe with a flanged end that is bigger in diameter than the barrel;

"blocking" means a substantial structure, device or article placed against or around cargo to prevent horizontal movement;

"bolster" means a transverse, load bearing, structural horizontal component of a bunk securing device;

"boulder" means a single piece of natural or quarried, irregularly shaped rock

(a) that weighs 5 000 kilograms or more, or

(b) that has a volume of more than 2 cubic metres;

"bracing" means a structure, device or article placed against another structure, device or article to prevent tipping;

"bulkhead" means a vertical barrier across a vehicle to prevent the cargo moving forward;

"bundle" means articles that have been unitized for the purpose of securing them as a single article with a uniform shape;

"bunk" means a horizontal bolster that

(i) is installed transversely across a vehicle, and

(ii) is fitted with a stake at each end;

"cab shield" means a vertical barrier

(i) placed directly behind the cab of a truck or truck tractor, and

(ii) capable of protecting the driver if cargo moves forward;

"cargo" means all articles or material carried by a vehicle, including those used in the operation of the vehicle

"cargo securement system" means the method by which cargo is contained or secured and includes vehicle structures, securing devices and all components of the system

"chock" means a tapered or wedge-shaped part used to prevent round articles from rolling

"cleat" means a short piece of material nailed to the deck to reinforce blocking;

"coil bunk" means a device that keeps the timbers supporting a metal coil in place;

"contained" with respect to cargo means that

(i) the cargo fills a sided vehicle,

(ii) every article is in contact with or close to a wall or other articles, and

(iii) the cargo cannot move or tip;

“container chassis vehicle” means a vehicle specifically built for and fitted with locking devices for the transport of intermodal containers;

“cradle” means a structure that holds a circular article and prevents it from rolling;

“cylinder well” means the depression formed between 2 cylindrical articles when they are laid against each other with their eyes horizontal and parallel;

“deck” means the floor of a vehicle onto which the cargo is loaded;

“dunnage” means loose material used to support and protect cargo;

"duty status" means, in respect of a driver, any of the following periods:

(i) off-duty time spent in a sleeper berth;

(ii) off-duty time, other than time spent in a sleeper berth;

(iii) driving time; or

(iv) on-duty time, other than driving time.

“edge protector” means a device put on the exposed edge of an article of cargo

(i) to protect a tiedown or the article from damage, or

(ii) to distribute tiedown forces over a greater area;

“flatbed vehicle” means a vehicle with a deck but no permanent sides;

“forward” with respect to a vehicle means towards the cab or engine;

“frame vehicle” means a vehicle for transporting logs that has a skeletal structure fitted with a front bunk and a rear bunk that together cradle a stack of logs as an integral part of the vehicle;

“friction mat” means a device placed between a deck and cargo, or between articles of cargo, that increases the friction between them;

"front end structure" means a vertical barrier across the front of a deck that prevents cargo moving forward;

“heavy vehicle” means

(i) a vehicle that weighs more than 4 500 kilograms, or

(ii) equipment or machinery that operates on wheels or tracks and weighs more than 4 500 kilograms;

“Hook-lift Container” means a specialized container that is loaded and unloaded onto a tilt frame body by an articulating hook-arm.

“integral locking device “ means a device that is designed and used to restrain an article of cargo by

connecting and locking attachment points on the article to anchor points on the vehicle;

"integral securement system" means a roll-on/roll-off container or a Hook-lift Container and the vehicle used to transport them which are equipped with compatible front and rear hold-down devices which secure the container to the vehicle;

"intermodal container" means a reusable, transportable container that is specially designed with integral locking devices to secure it to a container chassis vehicle;

"large pipe" means concrete pipe with an inside diameter of more than 114.3 centimetres;

"lengthwise" means along the vehicle from the cab or tongue at the front to the rear;

"light vehicle" means an automobile, truck or van that weighs 4 500 kilograms or less;

"log" includes a utility pole, a treated pole and a building component of a log cabin;

"longwood" means logs longer than 4.9 m;

"pallet" means a platform or tray on which cargo is placed so that it can be handled as a unit;

"pole trailer" means a trailer with a frame that consists only of a drawbar;

"rail vehicle" means a vehicle fitted with stakes at the front and rear to contain logs loaded crosswise;

"restrain" includes prevent from tipping or moving;

"Roll-on / Roll-off Container" means a specialized container which is loaded and unloaded onto a tilt frame body by a lifting mechanism in conjunction with rollers which are fixed to the container.

"rub rail" means a rail along the side of a vehicle that protects the side of the vehicle from impact;

"securing device" means a device specifically designed and manufactured to attach, restrain or secure cargo;

"shoring bar " means a device placed transversely between the walls of a vehicle and cargo to prevent the cargo from tipping or moving;

"shortwood" means logs that are not more than 4.9 metres long;

"sided vehicle" means a vehicle, including a van, a dump bodied vehicle and a sided intermodal container carried by vehicle, with a cargo compartment that is enclosed on all sides by walls

(i) that are strong enough to contain the cargo, and

(ii) that may have latched openings for loading and unloading;

"small pipe" means concrete pipe with an inside diameter of up to 114.3 centimetres;

"spacer" means material placed under an article, or between layers of articles, to make loading and unloading easier;

"stake" means a part, including a standard, that

(i) is mounted close to vertical on a vehicle frame or as part of a bunk, and

(ii) that immobilizes cargo placed against it;

“strapping” means tensioned strips of material that are clamped or crimped back on themselves;

“tiedown” means a combination of securing devices that are attached to one or more anchor points on a vehicle;

"transport" means the carriage of cargo by a vehicle while on a highway

“unitized” means wrapped, banded or bound together so that several articles can be handled as a single article of cargo or behave as a single article;

“vehicle” means a truck, a truck tractor, individually or in combination with one or more semitrailers or trailers

“void filler” means material that is

(i) used to fill a space between the cargo and the structure of the vehicle, and

(ii) is strong enough to prevent the cargo from moving;

“working load limit” means the maximum load that may be applied to a component of a cargo securement system during normal service determined in accordance with Divisions 3 and 4 of Part 1.

PART 1 - GENERAL PROVISIONS

Division 1 - Application

Application

2(1) This Standard applies to a vehicle or combination of vehicles

(a) transporting cargo on a highway, and

(b) exceeding a registered gross vehicle weight of 4 500 kilograms.

(2) This Standard applies when an intermodal container is used to transport cargo.

Inspection

3(1) The driver of a vehicle shall

(a) inspect the vehicle to confirm that the vehicle's tailgate, tailboard, doors, tarpaulins and spare tire, and other equipment used in its operation, are secured,

(b) ensure that the cargo does not interfere with the driver's ability to drive the vehicle safely, and

(c) ensure that the cargo does not interfere with the free exit of a person from the cab or driver's compartment of the vehicle.

(2) The driver of a vehicle shall inspect the vehicle's cargo and the cargo securement system used and make necessary adjustments:

(a) before driving the vehicle, and

(b) not more than 80 kilometres from the point where the cargo was loaded,

(3) The driver of a vehicle shall regularly re-inspect the vehicle's cargo and the cargo securement systems used and make adjustments to the cargo or cargo securement system as necessary, including adding more securing devices, at intervals based on whichever of the following occurs first:

(a) there is a change of duty status of the driver,

(b) the vehicle has been driven for 3 hours; or

(c) the vehicle has been driven for 240 kilometres.

(4) Subsections (2) and (3) do not apply to a driver where

(a) the cargo is sealed in a vehicle and the driver has been ordered not to open it to inspect the cargo, or

(b) the vehicle is loaded in a manner that makes the cargo, or portions of the cargo, inaccessible.

(5) The driver of a vehicle transporting logs, before the vehicle enters a highway from a private road, shall:

(a) inspect the vehicle, the logs and the securing devices to ensure compliance with this Standard, and

(b) make necessary adjustments to the securing devices, including adding more securing devices.

Division 2 - General Performance Criteria

Cargo securement systems

4(1) Cargo securement systems, and each component of a system, used to contain, immobilize or secure cargo on or within the vehicle shall be strong enough to withstand the forces described in section 5(1).

(2) The components of the cargo securement system of a vehicle.

(a) shall be in proper working order,

(b) shall be fit for the purpose for which they are used,

(c) shall have no knots, damaged or weakened components that will adversely affect their performance for cargo securement purposes, and

(d) shall not have any cracks or cuts.

(3) A securing device, integral locking device, movable structure or blocking device used to secure cargo to a vehicle shall itself be secured in a manner that prevents it from becoming unfastened while the vehicle is on a highway.

Performance criteria

5(1) The cargo securement system shall be capable of withstanding the forces that result if the vehicle is subjected to each of the following accelerations:

(a) 0.8 g deceleration in a forward direction;

(b) 0.5 g deceleration in a rearward direction;

(c) 0.5 g acceleration in either sideways direction.

(2) The cargo securement system shall provide a downward force equal to at least 20 % of the weight of an article of cargo if the article is not fully contained within the structure of the vehicle.

(3) The load on a component of a cargo securement system that reacts to a force referred to in subsection (1) or (2), shall not exceed the working load limit of the component.

Appropriate system

6(1) The cargo securement system used to contain, immobilize or restrain cargo shall be appropriate for the size, shape, strength and characteristics of the cargo.

(2) The securing devices used to secure cargo on or within a vehicle shall be

(a) designed and constructed for the purpose for which they are used, and

(b) used and maintained in accordance with the manufacturer's instructions.

Equivalent Means of Securement

7 Where cargo transported by a vehicle is contained, immobilized or secured in accordance with the applicable requirements of Divisions 3, 4 and 5 and Part 2, it meets the requirements of Section 5.

Division 3 - Requirements for Cargo Securement Systems

Exemption

8 This Division does not apply to the transportation of a commodity that is transported in bulk, lacks structure, fixed shape or is fluid, and is transported in

(a) a tank, hopper, box or container that is manufactured as part of the vehicle in which it is transported, or

(b) a vehicle that is specifically manufactured to transport the commodity.

General Requirement

9. Cargo shall be firmly immobilized or secured on or within a vehicle by structures of adequate strength, blocking, bracing, dunnage or dunnage bags, shoring bars, tiedowns or a combination of these.

Minimum Strength of Securement System

10 (1) In this section, the "aggregate working load limit" is the sum of One-half of the working load limit for each end section of a tiedown that is attached to an anchor point.

(2) The aggregate working load limit of the cargo securement system used to secure an article of cargo on or within a vehicle shall not be less than 50% of the weight of the article.

(3) The aggregate working load limit of the cargo securement system used to secure a group of articles of cargo on or within a vehicle shall be not less than 50% of the total weight of the group.

Securing Devices Marked With Working Load Limit

11(1) The working load limit of a tiedown or a component of a tiedown that is marked by its manufacturer with a numeric working load limit is the marked working load limit.

(2) A tiedown or a component of a tiedown that is marked by its manufacturer in accordance with a standard referred to in Part 4 has a working load limit equal to that standard.

(3) A chain that is marked by the manufacturer in accordance with the table of Working Load Limits under Part 4 – Section 7 has a working load limit equal to the amount shown for the grade and size.

(4) A person shall not use a tiedown or a component of a tiedown to secure cargo to a vehicle unless it is marked by the manufacturer with respect to its working load limit.

Unmarked Securing Devices

12(1) *Deleted September 2010*

(2) *Deleted September 2010*

(3) *Deleted September 2010.*

(4) *Deleted September 2010.*

(5) *Deleted September 2010.*

(6) *Deleted September 2010.*

(7) *Deleted September 2010.*

(8) *Deleted September 2010.*

(9) To be considered part of a cargo securement system, a friction mat must be marked by its manufacturer with the maximum usable friction resistance (in g's) the mat will provide in restraining cargo against horizontal and lateral movement.

(10) *Deleted September 2010.*

Steel strapping

13(1) Steel strapping that is 2.54 centimetres wide or wider used to secure cargo to a vehicle shall have at least 2 pairs of crimps in each seal

(2) An end-over-end lap joint formed in steel strapping used to secure cargo to a vehicle shall be sealed with at least 2 seals.

Blocking Systems to Prevent Forward Movement

14 The aggregate working load limit of the components of a blocking system used as a unique form of securement to prevent an article of cargo from moving forward, including tiedowns used as blocking, shall not be less than 50% of the weight of the article being blocked.

Rub rails

15 The securing devices used on or within a vehicle shall, wherever practical, be located inboard the rub rails where the vehicle has rub rails.

Material Used For Cargo Securement

16 Material used on or within a vehicle as dunnage, chocks or cradles or for blocking or bracing shall be strong enough that it will not be split or crushed by the cargo or the tiedowns.

Placement of Articles of Cargo

17 Where the articles of cargo on or within a vehicle are placed beside each other and secured by tiedowns that pass over 2 or more articles, the articles shall be

(a) placed in direct contact with each other, or

(b) prevented from moving towards each other while the vehicle is on a highway.

Prevention of Rolling

18 Where any cargo or portion thereof may roll, it shall be restrained by chocks, wedges, a cradle or another securing device that prevents the cargo from rolling.

Division 4 - Tiedowns

Tension

19(1) A tiedown used to secure cargo to a vehicle shall be designed, constructed and maintained so that the driver of the vehicle can tighten it.

(2) The driver of a vehicle shall ensure that tiedowns are taut while the vehicle is on a highway.

(3) Subsection (1) does not apply to steel strapping.

(4) A tiedown used to secure cargo to a vehicle shall be used in a manner that prevents the tiedown from slipping, loosening, unfastening, opening or releasing while the vehicle is on a highway.

(5) A tiedown used to secure stacked articles of cargo is considered to contribute to the securement of all articles of cargo on which that tiedown causes pressure.

Edge protectors

20(1) An edge protector shall be used where a tiedown would be subject to abrasion or cutting at the point where it touches an article of cargo.

(2) An edge protector used between a tiedown and cargo shall be resistant to abrasion, cuts and crushing.

(3) An edge protector used between a tiedown and cargo shall allow the tiedown to slide freely when it is tightened or loosened.

Working load limit

21(1) Subject to subsection (2), the working load limit of a tiedown, associated connector or attachment mechanism is the lesser of

(a) the lowest working load limit of the components, or

(b) the lowest working load limit of the anchor points or associated connector or attachment mechanism to which the tiedown is attached.

(2) The working load limit of a tiedown that includes synthetic webbing is the least of

(a) the working load limit of the synthetic webbing assembly, or

(b) the lowest working load limit of the components, or

(c) the working load limit of the anchor point to which the tiedown is attached.

Minimum number

22(1) Subject to subsection (4), cargo transported by a vehicle shall be secured using the number of tiedowns calculated under subsection (2) or (3).

(2) Where an article of cargo is not blocked or immobilized by a front end structure, bulkhead, by other immobilized cargo or by another device that prevents it moving forward, it shall be secured by at least

(a) 1 tiedown where the article is 1.52 metres or shorter and weighs not more than 500 kilograms,

(b) 2 tiedowns where the article is

(i) 1.52 metres or shorter and weighs more than 500 kilograms, or

(ii) longer than 1.52 metres but not longer than 3.04 metres regardless of its weight, or

(c) where the article is longer than 3.04 metres

(i) 2 tiedowns for the first 3.04 metres of length, and

(ii) 1 extra tiedown for each additional 3.04 metres or fraction of 3.04 metres.

(3) Where an article of cargo is blocked or immobilized by a front end structure, bulkhead, by other immobilized cargo or by another device to prevent it moving forward, it shall be secured by at least

(a) 1 tiedown where the article is not longer than 3.04 meters, or

(b) where the article is longer than 3.04 metres

(i) 1 tiedown for the first 3.04 metres of length, and

(ii) 1 extra tiedown for each additional 3.04 metres or fraction of 3.04 metres.

(4) Where a vehicle is transporting machinery or fabricated structural items that shall be secured by special methods because of their design, size, shape or weight, the special methods shall:

(a) secured adequately any article of the cargo

(b) be properly used in accordance with the manufacturer's instructions.

Division 5 - Front End Structures

Application

23(1) Subject to subsection (2), this Division applies to a vehicle transporting cargo that is in contact with the front-end structure of the vehicle.

(2) Where devices are used on a vehicle that perform the same function as the front end structure of a vehicle, the devices shall be at least as strong as and provide the same protection as a front end structure that complies with this Division.

(3) A cab shield is not a front end structure or part of a cargo securement system.

Height and width

24(1) The height of the front end structure of the vehicle shall not be shorter than the shorter of

(a) the height at which it prevents the cargo from moving forward, and

(b) 122 centimetres above the deck.

(2) The width of the front end structure of a vehicle shall not be narrower than the narrower of

(a) the width of the vehicle, and

(b) the width at which it prevents the cargo being transported from moving forward.

Strength

25(1) The front end structure of a vehicle shall be able to withstand a horizontal forward static load equal to 50% of the total weight of the cargo where

(a) the height of the front end structure is shorter than 1.83 metres, and

(b) the cargo is uniformly distributed over all of the front end structure.

(2) The front end structure of a vehicle shall be able to withstand a horizontal forward static load equal to 40% of the total weight of the cargo where

(a) the height of the front end structure is 1.83 metres or higher, and

(b) the cargo is uniformly distributed over all of the front end structure.

Penetration resistance

26(1) The front-end structure of the vehicle shall be able to resist penetration by an article of cargo that contacts it when the vehicle decelerates at a rate of 6.1 metres per second per second.

(2) The front-end structure of the vehicle shall not have an opening or gap that is big enough to permit an article of cargo to pass through it.

PART 2 - SPECIFIC SECUREMENT REQUIREMENTS BY CARGO TYPE

Applicability

27(1) This Part applies in addition to and not instead of Part 1.

(2) Where a requirement for containing, immobilizing or securing cargo transported by a vehicle required under this Part differs from a requirement under Part 1, the provisions of this Part apply.

Division 1 - Logs

Application

28(1) This Division applies to the transportation of logs that

(a) *Deleted September 2010*

(b) are part of a cargo that has more than 4 processed logs.

(2) This Division does not apply to firewood, stumps, log debris or logs that are transported in a vehicle or container that is enclosed on all sides and strong enough to contain them.

(3) A cargo of 4 or less processed logs loaded lengthwise may be secured by the provisions of this Division or the general securement provisions of Part 1.

Vehicle transporting logs

29(1) A vehicle that is transporting logs shall be designed, built or specially adapted for such transportation.

(2) The vehicle shall be fitted with bunks, bolsters, stakes or other means of cradling the logs and preventing them from shifting.

(3) Stakes that are not permanently attached to the vehicle frame or bunk shall be secured in a manner that prevents the stakes from separating from the vehicle while it is on a highway.

Log configuration

30(1) Logs shall be solidly packed on a vehicle.

(2) The outer logs in the bottom layer of logs shall touch and rest solidly against a bunk, bolster or stake.

(3) Outside logs on a stack of logs shall

(a) touch at least 2 bunks, bolsters or stakes, or

(b) where one end of a log does not touch a bunk, bolster or stake, it shall

(i) rest on other logs in a stable manner, and

(ii) extend beyond the end of the bunk, bolster or stake.

(4) The centre of the highest outside log on each side or end of the vehicle shall be lower than the tops of the bunks or stakes.

(5) The upper logs that form the top of the cargo shall be crowned.

Securement System

31 Tiedowns must be used to secure the load, in combination with bunks, bolsters, stakes, or other means of cradling the logs.

32 Sections 10(2) and 10(3) do not apply to this Division.

33 Sufficient additional tiedowns or other securing devices shall be used to ensure that no part of the cargo becomes dislodged where

(a) the wood's condition results in such low friction between logs that they may slip against each other, or

(b) a log is not held in place by contact with other logs or by the bunks, bolsters or stakes.

Shortwood loaded crosswise

34(1) This section and sections 35 to 37 apply to shortwood loaded crosswise on a frame, rail or flatbed vehicle other than a pole trailer.

(2) The end of a log in the lower layer of shortwood shall not extend more than 1/3 of the log's total length beyond the nearest supporting structure on the vehicle.

One stack of shortwood loaded crosswise

35(1) Despite section 22, where only one stack of shortwood is loaded crosswise, the stack shall be secured by at least 2 tiedowns arranged as follows:

(a) The tiedowns shall attach to the vehicle frame at the front and rear of the load, and shall cross the load lengthwise;

(b) The tiedowns shall be positioned at approximately one-third and two-thirds of the length of the logs;

(2) A vehicle built on or after January 1, 2010 shall be equipped with a device that maintains a tension not less than 900 kg at all times, and automatically takes up slack in the tiedown as the logs settle.

Two stacks of shortwood loaded crosswise

36(1) Despite section 22, where two stacks of shortwood are loaded crosswise and side-by-side on a vehicle, they shall be loaded so that

(a) there is no space between the 2 stacks,

(b) the outside of each stack is raised by a piece of metal at least 25 millimetres high within 10 centimetres of the end of the logs or the side of the vehicle and causes the load to lean toward the centre to the vehicle,

(c) the highest log is not more than 2.44 metres above the deck, and

(d) at least one tiedown used lengthwise across each stack shall

(i) be located approximately midway between the bunks or stakes, and

(ii) attach to the vehicle frame at the front and rear of the load.

(2) A vehicle built on or after January 1, 2010 shall be equipped with a device that maintains a tension not less than 900 kg at all times, and automatically takes up slack in the tiedown as the logs settle.

Long vehicles carrying shortwood loaded crosswise

37(1) A vehicle with a cargo carrying surface that is more than 10 metres long transporting shortwood loaded crosswise shall have centre stakes, or comparable structures, that divide its length into two approximately equal sections.

(2) Where the vehicle is divided by centre stakes, each tiedown shall

(a) secure the highest log on each side of the centre stake, and

(b) be fastened below that highest log.

(3) Where the vehicle is divided by centre stakes, each tiedown shall

(a) be fixed at each end and tensioned from the middle,

(b) be fixed in the middle and tensioned from each end, or

(c) pass through a pulley or similar device in the middle of the tiedown and be tensioned from one end.

(4) Where a stake or other structure on a vehicle transporting shortwood loaded crosswise is subjected to an upward force when the tiedowns are tightened, the stake or other structure shall be anchored to resist that force.

Shortwood loaded lengthwise

38(1) Despite section 22, each stack of shortwood loaded lengthwise on a frame vehicle or flatbed vehicle, other than a pole trailer, shall be secured to the vehicle by 2 or more tiedowns.

(2) Despite subsection (1), a stack of shortwood loaded lengthwise on a frame vehicle or flatbed vehicle, other than a pole trailer, shall be secured to the vehicle with a single tiedown located approximately midway between the bunks or stakes where all the logs in the stack

(a) are shorter than 3.04 metres,

(b) are blocked in the front by a front end structure strong enough to restrain the cargo or by another stack, and

(c) are blocked in the rear by another stack or the vehicle's end structure.

(4) The aggregate working limit of tiedowns used to secure each stack shall be at least 1/6 of the weight of the stack

Longwood loaded lengthwise

39(1) Despite section 22, a stack of longwood loaded lengthwise on a frame or flatbed vehicle, other than a pole trailer, shall be secured to the vehicle by 2 or more tiedowns.

(2) The aggregate working limit of tiedowns used to secure each stack shall be at least 1/6 of the weight of the stack

(3) The outside logs of a stack of longwood shall be secured by 2 or more tiedowns.

Pole trailers

40(1) This section applies to logs, regardless of the length of individual logs, transported on pole trailers.

(2) Despite section 22, the logs shall be secured by

(a) one or more tiedowns at each bunk, or

(b) two or more tiedowns used as wrappers that encircle the entire stack of logs at sufficient locations along the stack to secure it effectively.

(3) Where wrappers are used on a stack of logs, the wrappers at the front and rear ends of the stack shall be not less than 3.04 metres apart.

(4) Where the vehicle is transporting one or two logs with diameters greater than 0.6 metre, each log shall be individually immobilized with chock blocks or an equally effective method that prevents the logs from moving.

(5) Where a log with a diameter greater than 0.6 metre rises above the bunks, it shall be secured to the underlying logs with at least 2 additional tiedowns used as wrappers.

Division 2 - Dressed Lumber

Application

41(1) This Division applies to the transportation of

(a) bundles of dressed lumber and packaged lumber, and

(b) unitized building products, including plywood, gypsum board or other materials of similar shape.

(2) For the purpose of this Division, "bundle" means the material referred to in subsection (1), but does not include building products loaded on pallets or packages of engineered wood products such as beams or trusses.

(3) Dressed lumber and similar bundled building products being transported in enclosed trucks or trailers can be secured

(a) in accordance with the requirements of this Division, or

(b) the general securement provisions of Part 1.

Side by side

42 Where bundles are placed side by side

(a) bundles shall be in direct contact with each other, or

(b) a method shall be used that prevents the bundles from moving towards each other.

Securement system for dressed lumber

43. Bundles carried in 2 or more layers shall be secured in accordance with one of sections 44, 45, 46 or 47

Bundles blocked against lateral movement by stakes

44 Bundles carried in 2 or more layers which are blocked against lateral movement by stakes on the sides of the vehicle shall be secured by tiedowns laid out over the top layer, as outlined in the provisions of section 22 of this Standard

Bundles restrained from lateral movement by blocking or high friction devices

45 Bundles carried in 2 or more layers which are restrained from lateral movement by blocking or high friction devices between layers shall be secured by tiedowns laid out over the top tier, as outlined in the provisions of section 22 of this Standard

Bundles placed directly on top of other bundles or on spacers of adequate size and orientation

46(1) Bundles carried in 2 or more layers placed directly on top of other bundles or on spacers of adequate size and orientation, shall be secured by.

(a) tiedowns over the top layer of bundles, in accordance with provisions of section 22 of this Standard, with a minimum of two tiedowns for bundle(s) longer than 1.52 metres, and

(b) tiedowns over the middle layer of bundles in accordance with the provisions of section 22 of this Standard, for each stack of bundles higher than 1.85 metres composed of more than two layers; and

(2) where spacers are used, then

(a) the length of spacers between bundles shall provide support to all pieces in the bottom row of the bundle, and.

(b) the width of individual spacers shall be equal to or greater than the height, and

(c) spacers shall provide good interlayer friction, and

(d) where spacers are comprised of layers of material, the layers shall be unitized or fastened together in a manner which ensures that the spacer performs as a single piece of material.

Layers of Bundles

47. Bundles carried in 2 or more layers shall be secured by tiedowns laid out over each layer of bundles, in accordance with the provisions of section 22 of this Standard with a minimum of two tiedowns over each top bundle(s) longer than 1.52 metres, in all other circumstances.

Division 3 - Metal Coils

Application

48 This Division applies to a flatbed vehicle or a sided vehicle or intermodal container that is transporting one or more metal coils that individually or grouped together have a total weight of 2 268 kilograms or more.

Coils transported with eyes vertical by a vehicle or an intermodal container with anchor points

49(1) This section applies to coils transported with the eyes vertical.

(2) Where a vehicle is transporting a single coil or several coils which are not grouped in a row, each coil shall be secured by tiedowns arranged in a manner that prevents the coil from tipping forward, rearward, or sideways. The securement system shall include:

(a) at least 1 tiedown attached diagonally from the left side of the vehicle near the forward-most part of the coil, across the eye of the coil, to the right side of the vehicle near the rearmost part of the coil,

(b) at least 1 tiedown attached diagonally from the right side of the vehicle near the forward-most part of the coil, across the eye of the coil, to the left side of the vehicle near the rearmost part of the coil,

(c) at least 1 tiedown attached across the eye of the coil, and

(d) blocking and bracing, friction mats or tiedowns that prevent the coil moving forward.

(3) Where a vehicle is transporting coils that are grouped and loaded side by side in a transverse or lengthwise row, each row shall be secured by

(a) at least 1 tiedown against the front of the row, restraining against forward movement, and where practical, making an angle of not more than 45 degrees with the deck when viewed from the side,

(b) at least 1 tiedown against the rear of the row, restraining against rearward movement, and where practical, making an angle of not more than 45 degrees with the deck when viewed from the side,

(c) at least one tiedown over the top of each coil or each transverse row of coils, restraining against vertical movement, and

(d) tiedowns shall be arranged to prevent shifting and tipping in the forward, rearward and lateral directions.

(4) Subject to subsections (2) and (3) a tiedown going over the top of a coil shall be as close as practical to the eye of the coil.

Coils transported with eyes crosswise by a vehicle or an intermodal container with anchor points

50(1) This section applies to coils transported with the eyes crosswise and to transverse rows of coils loaded side by side and having approximately the same outside diameters.

(2) Each coil or transverse row of coils shall be immobilized with timbers, chocks or wedges, a cradle or other device that

(a) prevents the coil from rolling,

(b) supports the coil off the deck, and

(c) is not capable of becoming unfastened or loose while the vehicle is on a highway.

(3) Where timbers, chocks or wedges are used to secure a coil, they shall be held in place by coil bunks or similar devices to prevent the blocking device from coming loose.

(4) Each coil or transverse row of coils shall be secured with

(a) at least 1 tiedown through its eye, restricting against forward movement, and where practical, making an angle of not more than 45 degrees with the deck when viewed from the side, and

(b) at least one tiedown through its eye, restricting against rearward movement, and where practical, making an angle of not more than 45 degrees with the deck when viewed from the side.

(c) if coils are loaded to contact each other in the longitudinal direction and relative motion between the coils and between coils and the vehicle is prevented by tiedowns

i. Only the foremost and rearmost coils or rows of coils must be immobilized per Section 50(2)

ii. A single tiedown restraining against forward motion may be used to secure any coil except the rearmost one, which must be restrained against rearward motion

Coils transported with eyes lengthwise by a vehicle or an intermodal container with anchor points

51 An individual metal coil transported with the eye lengthwise shall be secured in accordance with one of sections 52, 53 or 54.

52(1) Each coil shall be immobilized by timbers, chocks or wedges, a cradle or another method that

(a) prevents the coil from rolling,

(b) supports the coil off the deck, and

(c) is not capable of becoming unfastened or loose while the vehicle is on a highway.

(2) Where timbers, chocks or wedges are used to secure a coil, they shall be held in place by coil bunks or similar devices to prevent the blocking device from coming loose.

(3) Each coil shall be secured with

(a) at least 1 tiedown attached diagonally through its eye from the left side of the vehicle near the forward-most part of the coil, to the right side of the vehicle near the rearmost part of the coil, making an angle of not more than 45 degrees, where practical, with the deck when viewed from the side,

(b) at least 1 tiedown attached diagonally through its eye, from the right side of the vehicle near the forward-most part of the coil, to the left side of the vehicle near the rearmost part of the coil, making an angle of not more than 45 degrees, where practical, with the deck when

viewed from the side,

(c) at least 1 tiedown attached across the top of the coil, and

(d) blocking or friction mats to prevent a coil from moving lengthwise.

53(1) Each coil shall be immobilized by timbers, chocks or wedges, a cradle or another method that

(a) prevents the coil from rolling,

(b) supports the coil off the deck, and

(c) is not capable of becoming unfastened or loose while the vehicle is on a highway.

(2) Where timbers, chocks or wedges are used to secure a coil, they shall be held in place by coil bunks or similar devices to prevent the blocking device from coming loose.

(3) Each coil shall be secured with

(a) at least 1 tiedown attached straight through its eye from the left side of the vehicle near the forward-most part of the coil, to the left side of the vehicle near the rearmost part of the coil and, where practical, making an angle of not more than 45 degrees with the deck when viewed from the side,

(b) at least 1 tiedown attached straight through its eye, from the right side of the vehicle near the forward-most part of the coil, to the right side of the vehicle near the rearmost part of the coil and, where practical, making an angle of not more than 45 degrees with the deck when viewed from the side,

(c) at least 1 tiedown attached across the top of the coil, and

(d) blocking or friction mats to prevent the coil from moving lengthwise.

54(1) Each coil shall be immobilized by timbers, chocks or wedges, a cradle or another method that

(a) prevents the coil from rolling,

(b) supports the coil off the deck, and

(c) is not capable of becoming unfastened or loose while the vehicle is on a highway.

(2) Where timbers, chocks or wedges are used to secure a coil, they shall be held in place by coil bunks or similar devices to prevent the blocking device from coming loose.

(3) Each coil shall be secured by

(a) at least 1 tiedown over the top of the coil, located near the forward-most part of the coil,

(b) at least 1 tiedown over the top of the coil located near the rearmost part of the coil, and

(c) blocking or friction mats to prevent the coil from moving lengthwise.

Rows of Coils with Eyes Lengthwise

55(1) This section applies to the transportation of transverse rows of metal coils with eyes lengthwise and with approximately equal outside diameters.

(2) A transverse row of coils shall be immobilized by timbers, chocks or wedges, a cradle or another method that

(a) prevents the coils from rolling,

(b) supports the coils off the deck, and

(c) is not capable of becoming unfastened or loose while the vehicle is on a highway.

(3) Where timbers, chocks or wedges are used to secure a row of coils, they shall be held in place by coil bunks or similar devices to prevent the blocking device from coming loose.

(4) A transverse row of coils shall be secured by

(a) at least 1 tiedown over the top of each coil, located near the forward-most part of the coil,

(b) at least 1 tiedown over the top of each coil, located near the rearmost part of the coil, and

(c) blocking or friction mats to prevent each coil from moving lengthwise.

Prohibitions

56 The use of nailed wood blocking or cleats as the sole means to secure timbers, chocks or wedges, or a nailed wood cradle is prohibited when metal coils are transported with eyes lengthwise or eyes crosswise by a vehicle or an intermodal container with anchor points.

57 When coils are transported with eyes crosswise, attaching tiedowns diagonally through the eye of a coil to form an X pattern when viewed from above the vehicle is prohibited.

Securement of Coils Transported in a Sided Vehicle or Intermodal Container without Anchor Points

58 Metal coils shall be secured in a manner to prevent shifting and tipping using a system of blocking and bracing, friction mats, tiedowns, or a combination of these.

Division 4 - Paper Rolls

Application

59(1) This Division applies to the transportation of paper rolls which individually or together weigh 2 268 kilograms or more.

(2) Paper rolls may be secured in accordance with this Division where:

(a) the total weight is less than 2 268 kilograms, and

(b) a single or several paper rolls are unitized on a pallet.

Friction mats

60 A friction mat used to provide the principal securement for a paper roll shall protrude from beneath the roll in the direction in which it is providing that securement.

Chocks, wedges and blocking

61 Chocks, wedges or blocking used to secure paper rolls shall not shift or become unfastened while the vehicle is on a highway.

Banding

62 Where paper rolls are banded together,

(a) the rolls shall be placed tightly against each other to form a stable group,

(b) the banding shall be applied tightly and remain so, and

(c) the banding shall be secured so that it cannot fall off the rolls or to the deck.

Single layer of paper rolls transported eyes vertical in a sided vehicle

63(1) This section applies to paper rolls that are transported with the eyes vertical in a single layer in a sided vehicle.

(2) The paper rolls shall be placed tightly against the front and both side walls of the vehicle, other paper rolls or other cargo.

(3) Where there are not enough paper rolls in a group of paper rolls to reach the walls of the vehicle, void fillers, blocking, bracing, tiedowns or friction mats shall be used to prevent the rolls moving sideways.

(4) Paper rolls may be banded together.

(5) Rearward movement shall be prevented by blocking, bracing, tiedowns or friction mats or by banding to other rolls.

(6) A paper roll shall be prevented from tipping or falling sideways or rearwards by banding it to other rolls or by using bracing or tiedowns where

(a) the vehicle's structure or other cargo does not prevent the roll from tipping or falling sideways or rearwards, and

(b) the width of the roll is more than 2 times its diameter.

(7) A single paper roll or the forward most roll in a group of paper rolls shall be prevented from tipping or falling forward by banding it to other rolls or by using bracing or tiedowns where

(a) the vehicle's structure or other cargo does not prevent the roll from tipping or falling forward,

(b) the roll is restrained against moving forward only by friction mats, and

(c) the width of the roll is more than 1.75 times its diameter.

(8) A single paper roll or the forward most roll in a group of paper rolls shall be prevented from tipping or falling forward by banding it to other rolls or by using bracing or tiedowns where

(a) the vehicle's structure or other cargo does not prevent the roll from tipping or falling forward, and

(b) the roll is not restrained against moving forward by friction mats, and

(c) the width of the roll is more than 1.25 times its diameter

Split cargo of paper rolls transported with eyes vertical in a sided vehicle

64(1) This section applies to split cargo of paper rolls transported with the eyes vertical in a sided vehicle

(2) Where a paper roll in a split cargo of paper rolls transported with the eyes vertical in a sided vehicle is not prevented from moving forward by the vehicle's structure or other cargo, it shall be prevented from moving forward

(a) by filling the open space, or

(b) by using blocking, bracing, tiedowns, friction mats as described in Section 63, or

(c) by using a combination of the methods in clauses (a) and (b).

Stacked cargo of paper rolls transported with eyes vertical in a sided vehicle

65(1) This section applies to stacked cargo of paper rolls transported with the eyes vertical in a sided vehicle.

(2) Section 63 applies to the bottom layer in a stacked cargo of paper rolls.

(3) Paper rolls shall not be loaded on top of another layer unless the layer beneath extends to the front of the vehicle.

(4) Paper rolls in the 2nd and subsequent layers shall be prevented from moving forward, rearward or sideways

(a) in accordance with section 63, or

(b) by using a blocking roll from a lower layer.

(5) A blocking roll used to prevent forward, rearward or sideways movement shall be

(a) at least 38 millimetres taller than other rolls, or

(b) raised at least 38 millimetres using dunnage or another method.

(6) Despite subsection (5), a roll at the rear end of a layer of rolls shall not be raised using dunnage.

Single layer of paper rolls transported eyes crosswise in a sided vehicle

66(1) This section applies to a single layer of paper rolls transported with the eyes crosswise in a sided vehicle.

(2) The paper rolls shall be prevented from rolling or moving lengthwise

(a) by contact with the vehicle's structure or other cargo, or

(b) by chocks, wedges, blocking, bracing or tiedowns.

(3) Void fillers, blocking, bracing, friction mats or tiedowns shall be used to prevent a paper roll or group of rolls from moving sideways towards the side walls of the vehicle

(a) where the total void space between the ends of a paper roll and the walls of the vehicle is more than 203 millimetres, or

(b) where the total void space in a row of paper rolls between the vehicle walls is more than 203 millimetres

Rear doors

67 A vehicle transporting paper rolls with the eyes crosswise shall not use the rear doors of the vehicle

(a) to secure the rearmost paper roll or layer of paper rolls, or

(b) to hold blocking that secures the rearmost paper roll or layer of paper rolls.

Stacked cargo of paper rolls transported eyes crosswise in a sided vehicle

68(1) This section applies to stacked cargo of paper rolls transported in a sided vehicle with the eyes crosswise.

(2) Section 66 applies to the bottom layer in a stacked cargo of paper rolls.

(3) Paper rolls shall not be loaded in a 2nd layer unless the bottom layer extends to the front of the vehicle.

(4) Paper rolls shall not be loaded in a 3rd or higher layer unless all the cylinder wells in the layer beneath are filled.

(5) The foremost paper roll in each upper layer and a roll with an empty cylinder well in front of it shall be secured against moving forward by

(a) banding it to other paper rolls, or

(b) blocking against a secured eye-vertical blocking roll resting on the deck that is at least 1.5 times taller than the diameter of the roll being blocked, or

(c) placing it in a cylinder well formed by 2 paper rolls on the lower layer with a diameter equal

to or greater than that of the paper roll on the upper layer.

(6) The rearmost paper roll in each upper layer shall be secured by banding it to other paper rolls where it is located in either of the last 2 cylinder wells formed by the rearmost paper rolls in the layer below.

(7) Void fillers, blocking, bracing, friction mats or tiedowns shall be used to prevent a paper roll or group of rolls from moving sideways towards the side walls of the vehicle

(a) where the total void space between the ends of a paper roll and the walls of the vehicle is more than 203 millimetres, or

(b) where the total void space in a row of paper rolls between the vehicle walls is more than 203 millimetres

Single layer of paper rolls transported eyes lengthwise in a sided vehicle

69(1) This section applies to paper rolls transported in a sided vehicle in a single layer with the eyes lengthwise.

(2) A paper roll shall be prevented from moving forward by contact with the vehicle's structure or other cargo or by blocking or tiedowns.

(3) A paper roll shall be prevented from moving rearward by contact with other cargo or by blocking, friction mats, tiedowns or cradles with friction mats applied between the roll and the cradle and between the cradle and the floor.

(4) A paper roll shall be prevented from rolling or moving sideways by contact with the vehicle's wall or other cargo or by chocks, wedges, cradles or other blocking mechanism.

(5) Cradles used to support and restrain paper rolls must be secured against movement by using chocks, wedges and blocking, or friction mats.

(a) The width of a cradle(s) used to support a roll must be:

(i) at least ½ times the height of the roll, as measured from the lowest point on the roll, or

(ii) the roll must be attached to the cradle with bands or straps.

(b) When used to secure cargo in the lateral direction, each cradle:

(i) must contact at least 1/8 of the roll's perimeter, or

(ii) must be attached to the roll with bands or straps.

Stacked cargo of paper rolls transported eyes lengthwise in a sided vehicle

70(1) This section applies to stacked cargo of paper rolls transported with the eyes lengthwise in a sided vehicle

(2) Section 69 applies to the bottom layer in a stacked cargo of paper rolls.

(3) Paper rolls shall not be loaded in a higher layer unless all the cylinder wells in the layer beneath are filled.

(4) An upper layer of paper rolls shall be formed by placing the paper rolls in the cylinder wells formed by the rolls beneath.

(5) Paper rolls in the 2nd and higher layers shall be prevented from moving forward or rearward

(a) in accordance with section 69, or

(b) by using a blocking roll from a lower layer, or

(c) by banding them to other rolls.

Cargo of Paper rolls transported with eyes vertical or with eyes lengthwise on a flatbed vehicle or in a curtain sided vehicle

71(1) This section applies to cargo of paper rolls transported with the eyes vertical or with eyes lengthwise on a flatbed vehicle or in a curtain sided vehicle

(2) The paper rolls shall be loaded and secured as described for a sided vehicle, and the entire load shall be secured by tiedowns in accordance with the provisions of section 22 of this Standard.

(3) Stacked loads of paper rolls with eyes vertical are prohibited.

Cargo of Paper rolls transported with eyes crosswise on a flatbed vehicle or in a curtain sided vehicle

72(1) This section applies to cargo of paper rolls transported with the eyes crosswise on a flatbed vehicle or in a curtain sided vehicle

(2) The paper rolls shall be prevented from rolling or shifting longitudinally by contact with vehicle structure or other cargo, by chocks, by wedges, by blocking and bracing of adequate size, or by tiedowns.

(3) When used, chocks, wedges or blocking must be held securely in place by some means in addition to friction so that they cannot become unfastened or loose while the vehicle is on a highway.

(4) Tiedowns shall be used in accordance with the provisions of section 22 of this Standard to prevent lateral movement.

Division 5 -Concrete Pipe

In this Division pipe means concrete pipe.

Application

73(1) This Division applies to the transportation of concrete pipes loaded transversely on a flatbed vehicle

(2) This Division does not apply to

(a) unitized concrete pipes that has no tendency to roll, or

(b) concrete pipe loaded in a sided vehicle.

(3) Section 22 does not apply to the transportation of concrete pipes to which this Division applies.

Tiedowns

74 A transverse tiedown running through a pipe in an upper layer or over lengthwise tiedowns is considered to secure all the concrete pipe in a lower layer on which that tiedown causes pressure.

Blocking

75(1) The blocking used to secure a pipe shall comply with this section.

(2) Blocking shall be placed symmetrically about the centre of the pipe

(3) Where one piece of blocking is used it shall extend to at least ½ the distance from the centre to each end of the pipe.

(4) Where two pieces of blocking are used they shall be placed near each end of the pipe

(5) Blocking shall be placed firmly against a pipe and shall be secured to prevent it moving out from under the pipe

(6) Timber blocking shall have a minimum dimension of at least 8.9 centimetres by 14 centimetres

Multi-sized pipe

76 Where the pipes to be transported on a vehicle have different diameters,

(a) pipes with the same diameter shall be grouped together, and

(b) each group shall be secured separately.

Arranging layers

77(1) This section applies to pipe arranged in layers on a vehicle.

(2) The bottom layer of pipes shall be arranged to cover the full length of the vehicle or, as a partial layer with one or 2 groups.

(3) Pipe in an upper layer shall be placed only in the cylinder wells formed by adjacent pipes in the layer beneath.

(4) A 3rd or higher layer of pipe shall not be formed unless all the cylinder wells in the layer beneath are filled with pipe.

(5) The top layer shall be arranged as a complete layer or, as a partial layer in one or 2 groups.

Bell Pipe

78(1) Bell pipe shall be loaded on at least 2 lengthwise spacers of sufficient height so that the bell is clear of the deck.

(2) Bell pipes loaded in a single layer shall have the bells alternating on opposite sides of the vehicle.

(3) The ends of consecutive bell pipes shall be

(a) staggered, where possible, within the allowable width, or

(b) aligned.

(4) Stacked bell pipes shall have all the bells of the bottom layer on the same side of the vehicle.

(5) Stacked bell pipes shall be loaded with bells on the opposite side of the vehicle to the bells of the pipe in the layer beneath.

(6) Where the second layer of stacked bell pipes is not complete, the bells of the pipes in the bottom layer that do not support a pipe above shall alternate on opposite sides of the vehicle.

Single layer or Bottom layer, small pipe

79(1) This section applies to small pipes arranged in a single layer or in the bottom layer of stacked pipes.

(2) The front and the rear pipes of each group of pipes arranged in a single layer or in bottom layer shall be immobilized lengthwise at each end by blocking, vehicle end structure, stakes, a locked pipe unloader or other equivalent means.

(3) Pipe that is not at the end of a group of pipes arranged in a single layer or in a bottom layer may be held in place by blocks, wedges or both.

(4) A pipe in a single layer or in the bottom layer shall be held firmly in contact with the adjacent pipe by tiedowns running through the front and rear pipes of a group of pipes:

(a) One or more tiedowns running through the front pipe of each group of pipes arranged in a single layer or in a bottom layer shall run rearward at an angle, where practical, of not more than 45 degrees with the horizontal, and

(b) One or more tiedowns running through the rear pipe of each group of pipes arranged in a single layer or in a bottom layer shall run forward at an angle, where practical, of not more than 45 degrees with the horizontal.

Tiedowns for securing layers of small concrete pipes

80(1) This section applies to all cargo of small pipes.

(2) Each pipe shall be secured with a tiedown running through it, or

(3) Where each pipe is not secured individually with a tiedown

(a) one 1.27 centimetre (1/2 inch) diameter chain or wire rope or two 0.95 centimetre (3/8 inch) diameter chains or wire ropes shall be placed lengthwise over the group of pipes, and

(b) one transverse tiedown shall be used for every 3.04 metres of cargo length.

(4) The transverse tiedowns referred to in subsection (3) shall be placed

(a) through a pipe on the top layer, or

(b) over the lengthwise tiedown between 2 pipes on the top layer.

Top layer, small pipes

81(1) This section applies to small pipes in the top layer of stacked pipes.

(2) Where the first pipe of a group in the top layer is not placed in the first cylinder well formed by the pipes at the front of the layer beneath, it shall be secured by an additional tiedown that

(a) runs rearward at an angle, where practical, of not more than 45 degrees to the horizontal, and

(b) passes through the front pipe of the upper layer or outside before the front pipe of the upper layer and over the lengthwise tiedown

(3) Where the last pipe of a group in the top layer is not placed in the last cylinder well formed by the pipes at the rear of the layer beneath, it shall be secured by an additional tiedown that

(a) runs forward at an angle, where practical, of not more than 45 degrees to the horizontal, and

(b) passes through the rear pipe of the upper layer or outside after the rear pipe of the upper layer and over the lengthwise tiedown.

Large pipes

82(1) This section applies to the transportation of large pipe.

(2) The front pipe and the rear pipe in a group of pipes transported on a vehicle shall be immobilized by blocking, wedges, vehicle end structure, stakes, locked pipe unloader or other equivalent means

(3) Each pipe in the front half of the group of pipes, including the middle one where there is an odd number, shall have at least one tiedown that passes through the pipe

(a) running rearward at an angle, where practical, of not more than 45 degrees with the horizontal, and

(b) holding the pipe firmly in contact with an adjacent pipe.

(4) Each pipe in the rear half of the group of pipes, shall have at least one tiedown that passes through the pipe

(a) running forward at an angle, where practical, of not more than 45 degrees with the horizontal, and

(b) holding the pipe firmly in contact with an adjacent pipe.

(5) Where the front pipe in a group of pipes is not in contact with the vehicle's end structure, stakes or other equivalent means, it shall be secured by at least 2 tiedowns positioned in accordance with subsections (3).

(6) Where the rear pipe in a group of pipes is not in contact with the vehicle's end structure, stakes, a locked pipe unloader, or other equivalent means, it shall be secured by at least 2 tiedowns positioned in accordance with subsections (4).

(7) Where the vehicle is transporting a single pipe, or several pipes that do not touch each other, a pipe shall be secured under this section as where it were the front or rear pipe in a group of pipes.

Division 6 - Intermodal Containers

Application

83 This Division applies to the transportation of intermodal containers.

Intermodal container transported on Container chassis vehicle

84(1) This section applies to the transportation of an intermodal container on a container chassis vehicle

(2) Despite section 22, an intermodal container shall be secured to the container chassis with integral locking devices.

(3) The integral locking devices used shall restrain each lower corner of the intermodal container.

(a) *deleted January 2013*

(b) *deleted January 2013*

(c) *deleted January 2013*

(d) *deleted January 2013*

(e) *deleted January 2013*

(4) The front and the rear of the intermodal container shall be independently secured.

Loaded intermodal container transported on other vehicles

85(1) This section applies to the transportation of a loaded intermodal container on a vehicle that is not a container chassis vehicle.

(2) All the lower corners of a loaded intermodal container shall

(a) rest on the vehicle, or

(b) be supported by a structure

(i) capable of bearing the weight of the container, and

(ii) independently secured to the vehicle.

(3) Despite section 22, an intermodal container shall be secured to the vehicle by either or both

(a) chains, wire ropes or integral locking devices that are fixed to all the lower corners,

(b) crossed chains that are fixed to all the upper corners.

(4) The front and the rear of the intermodal container shall be independently secured.

Empty intermodal container transported on other vehicles

86(1) This section applies to the transportation of an empty intermodal container by a vehicle other than a container chassis vehicle.

(2) All the lower corners of an empty intermodal container shall

(a) rest on the vehicle, or

(b) be supported by a structure

(i) capable of bearing the weight of the container, and

(ii) independently secured to the vehicle.

(3) An empty intermodal container is not required to comply with subsection (2) where

(a) the container is balanced, positioned and stable on the vehicle before tiedowns or other securing devices are attached, and

(b) the container does not overhang either the front or rear of the vehicle by more than 1.5 metres

(4) An empty intermodal container shall not interfere with the vehicle's manoeuvrability.

(5) An empty intermodal container shall be secured against moving sideways, lengthwise or vertically in accordance with:

a) the provisions of section 85(3) and 85(4) of this Standard, or

b) the provisions of section 22 of this Standard.

Division 7 - Vehicles as Cargo

Application

87(1) This Division applies to the transportation of light vehicles, heavy vehicles and flattened or crushed light vehicles.

Light vehicles

88(1) Light vehicles shall be secured in accordance with this section.

(2) Despite section 22, a light vehicle shall be restrained at both the front and rear from moving sideways, forward, rearward and vertically using a minimum of 2 tiedowns.

(3) Tiedowns that are designed to attach to the structure of a light vehicle shall be attached to the mounting points on the vehicle that are specifically designed for that purpose.

(4) Tiedowns that are designed to fit over or around the wheels of a light vehicle shall restrain the vehicle from moving sideways, forward, rearward and vertically.

(5) Despite section 20, edge protectors are not required for synthetic webbing at points where the webbing comes into contact with the tires of the light vehicle.

(6) It is prohibited to transport stacks of light vehicles.

Heavy vehicles

89(1) Heavy vehicles shall be transported in accordance with this section.

(2) Accessory equipment on a heavy vehicle, including a hydraulic shovel, shall be completely lowered and secured to the vehicle unless:

(a) the accessory equipment can only move vertically;

(b) accessory equipment that can pivot, tilt or move sideways is blocked or immobilized by the transporting vehicle's structure or by a blocking or securement mechanism built into the transported vehicle.

(3) Articulated vehicles shall be restrained in a manner that prevents articulation while the vehicle is on a highway.

(4) Despite section 22, a heavy vehicle with crawler tracks or wheels shall be restrained against moving sideways, forward, rearward and vertically by at least 4 tiedowns,

(a) each with a working load limit of at least 2 268 kilograms, and

(b) each attached, as close as practical, at the front and rear of the vehicle or to mounting points on the vehicle that are specifically designed for that purpose.

Flattened or crushed light vehicles

90 Flattened or crushed light vehicles shall be secured in accordance with the sections 91, 92 and 93.

Prohibition

91 (1) Synthetic webbing shall not be used to secure flattened or crushed light vehicles

(2) Despite Section 91(1) synthetic webbing may be used to connect wire rope or chain to anchor points on the transporting vehicle where the webbing is no more than 15 cm above the deck of the vehicle and must not come in contact with the flattened or crushed vehicles.

Securement system for immobilizing stacks of flattened or crushed vehicles

92(1) Flattened or crushed light vehicles shall be transported with vehicles which.

(a) have containment walls or comparable structures on 4 sides that

(i) extend to the full height of the cargo, and

(ii) prevent the cargo moving forward, rearward and sideways, or

(b) have containment walls or comparable structures on 3 sides that

(i) extend to the full height of the cargo, and

(ii) prevent the cargo moving forward, rearward and to one side, and

(iii) have 2 or more tiedowns per stack of flattened or crushed vehicles, or

(c) have containment walls or comparable structures on the front and rear that

(i) extend to the full height of the cargo, and

(ii) prevent the cargo moving forward and rearward, and

(iii) have 3 or more tiedowns per stack of flattened or crushed vehicles, or

(d) have 4 or more tiedowns per stack of flattened or crushed vehicles.

(2) Each tiedown referred to in subsection 1 shall have a working load limit of 2 268 kilograms or more.

Containment of Loose Parts

93(1) A vehicle transporting flattened or crushed light vehicles shall have equipment that

(a) extends the full height of the cargo, and

(b) prevents any loose part of the load from falling from the vehicle.

(2) For the purposes of subsection (1), the equipment used to contain loose parts shall be structural walls, floors, sides or sideboards or suitable covering material, alone or in combination.

Division 8 - Roll-on/roll-off and Hook Lift Containers

Application

94 This Division applies to the transportation of roll-on/roll-off containers and hook lift containers.

Replacement of Securing Devices

95(1) Where a front stop or lifting device of a securement system on a vehicle that is not equipped with an integral securement system is missing, damaged or not compatible with the securing devices on a container, additional manually installed tiedowns shall be used to secure the container to the vehicle.

(2) Where a front stop or lifting device of an integral securement system on a vehicle is missing, damaged or not compatible with the securing devices on a container, the container shall be secured to the vehicle using manually installed tiedowns.

(3) A manually installed tiedown shall provide the same level of securement as the missing, damaged or incompatible component it replaces.

No integral securement system

96(1) A roll-on/roll-off container or hook lift container transported by a vehicle that is not equipped with an integral securement system

(a) shall be blocked against forward movement

(i) by the lifting device acting as a blocking structure, or

(ii) at least two stops located approximately the same distance from the longitudinal axis of the container, or

(iii) a combination of (i) and (ii)

(b) shall be secured to the front of the vehicle

(i) by the lifting device, or

(ii) by another securing device which restrains against sideways and vertical movement, and

(c) shall be secured to the rear of the vehicle in accordance with at least one of the following:

(i) one tiedown attached to the vehicle chassis and to both sides of the container;

(ii) 2 tiedowns installed lengthwise, each securing one side of the container to one of the vehicle's side rails;

(iii) 2 hooks, or equivalent mechanisms, securing both sides of the container to the vehicle chassis at least as effectively as the tiedowns referred to in subclauses (i) and (ii).

(2) A device used to secure a roll-on/roll off or hook lift container to the rear of a vehicle that is not equipped with an integral securement system

(a) shall be installed not more than 2 metres from the rear of the container, and

(b) all tiedowns shall have a working load limit of at least 2 268 kilograms.

(3) Sections 10(2) and 10(3) do not apply to this Division.

Division 9 - Boulders

Application

97(1) This Division applies to the transportation of boulders

(a) on a flatbed vehicle, or

(b) in a vehicle whose sides are not designed and rated to contain such a cargo.

(2) A piece of natural, irregularly shaped rock that weighs more than 100 kilograms but less than 5000 kilograms may be secured in accordance with this Division.

(3) A piece of natural, irregularly shaped rock of any size may be contained within a vehicle that is designed to carry such a cargo.

(4) A piece of rock of any size that is artificially formed or cut into shape and has a stable base for securement may be secured in accordance with this Division.

Positioning on vehicle

98(1) A boulder shall be placed with its flattest or its largest side down

(2) A boulder shall be supported on at least 2 pieces of hardwood blocking

(a) with side dimensions of not less than 8.9 centimetres by 8.9 centimetres

(b) that extend the full width of the boulder,

(c) that are placed as symmetrically as possible under the boulder, and

(d) that support at least 3/4 of the length of the boulder.

(3) Where the flattest side of a boulder is rounded or partially rounded and the boulder may roll,

(a) the boulder shall be in a crib made of hardwood fixed to the deck,

(b) the boulder shall rest on both the deck and the crib, and

(c) the boulder shall have at least three well-separated points of contact with the crib and deck to prevent the boulder from rolling in any direction.

(4) Where a boulder is tapered, the narrowest end shall point towards the front of the vehicle.

Tiedowns

99(1) A tiedown used to secure a boulder shall be made of chain.

(2) A tiedown that touches a boulder

(a) shall, where possible, be located in valleys or notches across the top of the boulder, and

(b) shall be arranged so that it does not slide across the rock surface.

Number of tiedowns

100(1) Despite section 22, each cubic shaped boulder shall be secured with 2 or more tiedowns placed

(a) transversely across the vehicle, and

(b) as close as possible to the hardwood blocking.

(2) Despite section 22, each non-cubic shaped boulder with a stable base shall be secured with 2 or more tiedowns

(a) forming an "X" pattern over the boulder,

(b) passing over the centre of the boulder, and

(c) attached to each other, where they intersect, by a shackle or other connecting device.

(3) Despite sections 10(2), 10(3) and 22, each non-cubic shaped boulder with unstable base shall be secured with

(a) one tiedown surrounding the top of the boulder

(i) located at a point between 1/2 and 2/3 of the height of the boulder, and

(ii) having a working load limit of at least the half of the weight of the boulder, and

(b) 4 tiedowns, each

(i) attached to the surrounding tiedown and to the vehicle that prevent the boulder moving horizontally, and

(ii) having a working load limit of at least 1/4 the weight of the boulder, and

(iii) shall be placed at an angle, where practical, of not more than 45 degrees from the horizontal

PART 3 - Default Working Load Limits

Deleted September 2010

PART 4 - Manufacturing Standards

Section 1 - Vehicle Structure

Truck Trailer Manufacturers Association - RP 47

Section 2 - Anchor Points

Canadian Motor Vehicle Safety Standard (CMVSS 905)

Truck Trailer Manufacturers Association - RP47

Section 3 - Platform Bodies (Flatdecks)

Truck Trailer Manufacturers Association - RP47

Section 4 - Van, Sided & Dump Bodies

Truck Trailer Manufacturers Association - RP47

Web Sling and Tiedown Association

Recommended Standard Specification for Interior Van Securement WSTDA-T5

Section 5 - Tiedowns

Web Sling and Tiedown Association

Recommended Standard Specification for Synthetic Webbing Tiedowns WSTDA-T1

Recommended Standard Specification for Winches Used With Synthetic Web Tiedowns WSTDA-T3

Recommended Standard Specification for Interior Van Securement WSTDA-T5

Section 6 - Webbing Assemblies

Web Sling and Tiedown Association

Recommended Standard Specification for Synthetic Webbing Tiedowns WSTDA-T1

Recommended Operating, Care and Inspection Manual for Synthetic Web Tiedowns WSTDA-T2

Recommended Standard Specification for Synthetic Webbing Used for Tiedowns WSTDA-T4

Section 7 - Chain Assemblies

National Association of Chain Manufacturers

Welded Steel Chain Specifications

Welded Steel Chain – Working Load Limits

Size mm (in)	Grade 3 Proof coil	Grade 43 High test	Grade 70 Transport	Grade 80 Alloy	Grade 100 Alloy
7 mm (1/4 in)	580 kg (1300 lb.)	1180 kg (2600 lb)	1430 kg (3150 lb)	1570 kg (3500 lb)	1950 kg (4300 lb)
8 mm (5/16 in)	860 kg (1900 lb.)	1770 kg (3900 lb)	2130 kg (4700 lb)	2000 kg (4500 lb)	2600 kg (5700 lb)
10 mm (3/8 in)	1200 kg (2650 lb.)	2450 kg (5400 lb)	2990 kg (6600 lb)	3200 kg (7100 lb)	4000 kg (8800 lb)
11 mm (7/16 in)	1680 kg (3700 lb.)	3270 kg (7200 lb)	3970 kg (8750 lb)	-	-
13 mm (1/2 in)	2030 kg (4500 lb.)	4170 kg (9200 lb)	5130 kg (11300 lb)	5400 kg (12000 lb)	6800 kg (15000 lb)
16 mm (5/8 in)	3130 kg (6900 lb.)	5910 kg (13000 lb)	7170 kg (15800 lb)	8200 kg (18100 lb)	10300 kg (22600 lb)
Chain Marks	3 30 300	4 43 430	7 70 700	8 80 800	10 100 1000

Section 8 - Wire Rope and Attachments

Wire Rope Technical Board

Wire Rope Users Manual

Section 9 - Synthetic Rope and Attachments

Cordage Institute:

CI-1301-96 Polyester Fiber Rope, 3 and 8 Strand Constructions

CI-1302A-96 Polyester/Polyolefin Dual Fiber Rope, 3 Strand Construction

CI-1302B-99 Polyester/Polyolefin Dual Fiber Rope, 8 Strand Construction

CI-1304-96 Polyester Fiber Rope, 3 and 8 Strand Constructions

CI-1305-96 Single Braided Polyester Fiber Rope, 12 Strand Construction

CI-1307-96 Polyester Fiber Rope, Double Braid Construction

CI-1307-96 Polyester Fiber Rope, High Performance Double Braid Construction

CI-1303-96 Nylon (Polyamide) Fiber Rope, 3 and 8 Strand Constructions

CI-1307-96 Nylon (Polyamide) Fiber Rope, Double Strand Construction

CI-1307-96 Nylon (Polyamide) Fiber Rope, High Performance Double Braid Construction

Section 10 - Steel Strapping

American Society for Testing and Materials

Standard Specification for Strapping, Flat Steel and Seals (ASTM D3953-91)

Section 11 - Clamps and Latches

International Standards Organization - 668.

Section 12 - Roll-on/Roll-off Containers

American National Standards Institute

Mobile Wastes and Recyclable Materials Collection, Transportation, and Compaction Equipment - Safety Requirements (ASC Z245.1 -1999)

Waste Containers - Safety Requirements (ASC Z245.30 -1999)

Waste Containers - Compatibility Requirements (ASC Z245.60 -1999)

National Safety Code Standard 11

Maintenance and Periodic Inspection Standards

CCMTA | CCATM
Canadian Council of Motor Transport Administrators
Conseil canadien des administrateurs en transport motorisé

Acknowledgements

CCMTA gratefully acknowledges members of the **Project Group on Commercial Motor Vehicle Inspection Standards** for their work in the development and update of the standards identified in this manual.

ISBN 978-1-927993-54-5

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Contents

PART A of National Safety Code Standard 11 contains the recommended standards for a commercial vehicle maintenance program and represents the *minimum* criteria which would be evaluated in an audit of the carrier's operation.

PART B of NSC Standard 11 contains the mandatory **Periodic Motor Vehicle Inspection** (PMVI) standards for commercial vehicles, the standards to which a vehicle will be inspected by an authorized technician at an authorized facility at a scheduled frequency, as evidenced by a decal of compliance.

NSC STANDARD 11, PART A

Commercial Vehicle Maintenance Standard

Introduction

Goals of the Standard

The objective of this standard is to ensure that all commercial vehicles are subject to a systematic, regular preventative maintenance program. The intent is to ensure that all operators of commercial trucks, trailers and buses have a regular vehicle maintenance and servicing program for all vehicles under their control. Regular preventative maintenance of equipment ensures small problems can be corrected before they result in accidents, major repairs or a vehicle breakdown. Establishing a preventative maintenance program that systematically identifies defects and allows an operator to effect repairs per this standard will assist in complying with the semi- annual and annual inspection requirements under the Periodic Motor Vehicle Inspection (PMVI) program.

Background

This standard was developed by all jurisdictions and industry to provide guidelines on a minimum acceptable level of performance for commercial vehicle systems and components. Though not identical, the standard is similar to U.S. Federal Motor Carrier Safety Regulations (FMCSR) Part 393, which covers parts and accessories for safe operation. Moreover, many of the equipment regulations in Canadian jurisdictions specify that certain components must be in proper working condition at all times when the vehicle is on the road. Owners that design their preventive maintenance programs to address the conditions in this standard will likely be found in compliance with jurisdictional equipment regulations, semi-annual and annual inspections and pass a roadside inspection. The maintenance standard was used to foster the reciprocity sections of the periodic motor vehicle inspection program for commercial vehicles.

Application

The standard applies to all commercial vehicles under the NSC. For the purposes of the NSC, 'commercial vehicle' is defined as:

a) a truck, tractor or trailer or combination thereof exceeding a registered gross vehicle weight of 4,500 kg (approximately 10,000 lbs)

or

b) A bus designed, constructed and used for the transportation of passengers with a designated seating capacity of more than 10, including the driver, but excluding the operation for personal use.

A number of jurisdictions exempt specific types of vehicles from the requirements of this standard, for example vehicles leased for 30 days or less, light trucks with a gross vehicle weight of 4,500 kg or less, fire trucks or ambulances. Some jurisdictions further exempt farm (2 or 3 axle) vehicles used for hauling primary products and recreational vehicles.

General Requirements

Every commercial vehicle operator must ensure that each vehicle that is owned or leased by the operator, including trailers, meets the requirements contained in the maintenance standard. Every operator must have a system to inspect, maintain and repair each of the owned or leased vehicles at regular intervals.

No predetermined time intervals have been specified in the standard for the cycle of inspection and maintenance. When the standard was first drafted it was considered too difficult to attempt to specify time requirements because of the difference in equipment, the applications for which the equipment is subjected, and the distance which might be travelled by different types of equipment. In addition, industry representatives put forward the view that there was a need for flexibility in implementing fleet maintenance programs. It was acknowledged that carriers and operators were better suited to determine the intervals for regular servicing and maintenance of their vehicles. It should be noted however that some jurisdictions do specify the maximum mileage or time which can elapse between maintenance intervals.

Inspection and Maintenance Cycles

Most established carriers undertake their systematic fleet maintenance and repair programs based on the maintenance servicing schedule suggested by the *original equipment manufacturer* (OEM). This is the single best piece of advice that can be provided in designing a maintenance program. The minimum schedule for regular maintenance and repair specified by the vehicle manufacturer should be followed as it will ensure better fuel mileage and a longer life for specific safety components and the equipment in general.

Many carriers have implemented regular preventative inspection and maintenance cycles which are distinguished by the scope of the inspection and depth of maintenance that is performed on the vehicle. The different inspection cycles for maintenance and repair are based on combinations of elapsed time and the kilometers travelled by the vehicle.

Carriers may for example schedule an A level maintenance inspection on a monthly basis, others by the kilometers travelled, (e.g. 1,600 km), to cover the basic safety components such as lights, tires, body panelling, apparent leaks and the like. The mechanic/technician should check any problems which have been reported by the driver as a result of a daily trip inspection and take the appropriate action to repair as necessary. The vehicle may be cleaned, and fluid levels will be checked and topped up during this maintenance interval. The mechanic/technician will also be looking for obvious problems, such as leaks and signs of unusual wear on key components. This type of inspection will allow the shop to undertake immediate repair of critical or damaged components. If the problem is not serious, it can be scheduled for the vehicle's next regular inspection. This will allow time to order parts not in stock or, in the case of a time-consuming repair, allow for the procedure to be scheduled with the appropriate mechanic/technician and equipment, (e.g. lift or welding materials) at a later date.

The "A" level inspection may be followed by a more extensive "B" level inspection. Generally the same components verified in the "A" level inspection are verified again along with a series of other components or vehicle systems. Depending on the operation and the use of the equipment, this could occur on a bi-monthly or quarterly basis or between 10,000 km to 30,000 km. Worn hoses, brackets and filters might be replaced. Brakes will be checked for adjustment and measured for wear[1]. The engine will receive a tune-up. A slight problem on a component noted during the "A" level inspection will be replaced. In addition fittings will be greased and lubricated per OEM or industry standard.

A further "C" level inspection may be scheduled at six-month intervals or after 50,000 kilometers, where the remaining vehicle systems and components identified in the standard will be inspected and repaired or replaced as necessary per OEM or industry standard. Some carriers will time their "C" level inspection to occur immediately prior to their semi-annual or annual PMVI inspection at a government approved facility. Following a "C" level maintenance inspection the cycle will be repeated. Some carriers schedule a fourth-level inspection, (e.g. at 100,000 km) prior to recommencing the cycle. Whatever schedule (time/mileage) is selected, it must be followed by the carrier.

The obligation to inspect and maintain vehicles is ongoing. This ongoing aspect of vehicle maintenance and inspection distinguishes this standard from the PMVI standard, where specific time intervals for inspection are mandated. Indeed the other inspection standards of the NSC can be seen as an audit of the regular maintenance and repair program that is implemented by a motor carrier or commercial vehicle operator.

1 The general intention of the PMVI standard is that internal brake components shall be inspected and measurements taken and this may entail the removal of wheels. Due to the cost of wheel removal, some alternative inspection methods and procedures have been developed. To benefit from alternate inspection criteria for internal brake components owners should consult the PMVI standard. The substantial time and cost of removing wheels at the time of the semi-annual or annual inspection can be avoided if the vehicle owner has carefully documented the inspections (measured brake components and retained repair invoices) during their normal maintenance cycles (see Section 3, 3A and 3H of the PMVI standard).

Procedures for Compliance

Each carrier must establish a system of preventative vehicle inspection, maintenance and repair for every truck, bus and trailer it operates, and keep an up-to-date maintenance and repair record for each vehicle under its control. As a minimum, the record or vehicle file should contain the following:

- make, model, year and serial number (VIN) of the equipment;
- lessor's name if applicable;
- date and nature of every repair and maintenance activity carried out on the equipment (parts replaced and invoices);
- odometer reading at the time of every servicing or repair;
- description of the type and frequency of regular maintenance and repairs to be undertaken on the equipment; and
- a record of every axle or suspension modification that affects the gross vehicle or axle weight rating.

The information specified above must be assembled and kept current for each vehicle or piece of equipment. Vehicle records must be kept for at least two years at the principal place of business. If a vehicle has been sold, destroyed or returned to the lessor, its records may be discarded after six months.

Note: Many jurisdictions require proof of maintenance, (i.e.: bills or invoices for brake repairs) to be kept for four or five years. Some jurisdictions may also require the filing of a safety plan that includes a maintenance plan for vehicles. As such jurisdictional guidelines for record keeping may vary and should be consulted and followed.

Enforcement

The most significant difference between the maintenance standard and the other inspection standards under the NSC is that there is no on-road enforcement of the requirements. Rather the requirements are enforced by jurisdictional transportation safety officials during the facility audit process (NSC Standard 15).

The auditor will randomly select a number of vehicles in a fleet and then request the vehicle files be provided for review. The auditor will be checking to see that the file is current and complete, and the maintenance program covers the minimum criteria contained in the standard.

Auditors may note deficiencies with the operator's established program, and should provide suggestions for improving the regular inspection and maintenance schedule of vehicle components.

Failure to have a regular maintenance and repair program and/or failure to keep vehicle records current will result in a violation being recorded on the carrier's jurisdictional profile. This will impact the safety rating assigned to a vehicle operator. Failure to bring preventative maintenance programs into compliance with the standard and jurisdictional equipment regulations will result in further sanctions.

The Standard

The maintenance requirements appear on the following pages. The sections are organized on the basis of vehicle systems. In each section various components subject to regular inspection and maintenance are identified, along with guidelines on when the component should be repaired or replaced. All systems and parts contained in this standard should be included in any maintenance program. All measurements are shown in metric. The measurements indicated are based on the manufacturer's recommendations regarding dimensional limits, standard industry practice and the accuracy of tools typically used for such inspections.

The *Original Equipment Manufacturers* (OEM) or industry standard service instructions and dimensions for repair and replacement should always be followed.

Conclusion

The key point to remember with this standard is the inspection and maintenance program must be regular and systematic to ensure only safe equipment is allowed on the road. The other NSC inspection standards, (e.g.: PMVI, Trip Inspection) can be viewed as the means by which the regular inspection and maintenance program is evaluated. Infractions related to the other standards may be an indication that the inspection and maintenance program is not adequate and may prompt a facility audit.

General Requirements

1. Inspection, Repair and Maintenance

a) Every carrier shall systematically inspect, repair and maintain, or cause to be systematically inspected, repaired and maintained, all commercial vehicles subject to its control.

i) Parts and accessories shall be in safe and proper operating condition at all times. These include those components and component standards specified in this standard and any additional parts and accessories which may affect safety of operation.

ii) Replacement parts must be designed for the particular application for which they are used and must meet original equipment manufacturer (OEM) or industry standard specifications. Where practical, replacement parts certified by a recognized industry standard testing organization should always be used; and Replacement parts must be properly installed.

b) Every carrier shall maintain, or cause to be maintained, the following records for each commercial vehicle:

i) an identification of the vehicle, including licence plate number, unit number or company number, if so marked, make, serial number, year and tire size. In addition, if the vehicle is not owned by the motor carrier, the record shall identify the name of the person furnishing said vehicle, (i.e.: leasing company);

ii) a means to indicate the nature and due date of the various inspection and maintenance operations to be performed;

iii) a record of inspection, repairs and maintenance indicating their date and nature (be sure to retain all invoices and where appropriate mark the measurements on company inspection forms);

iv) a lubrication record; and

v) a record of modifications involving axles or suspensions that affect a manufacturer's gross vehicle weight rating or gross axle weight rating.

c) Every carrier shall retain records required under this section where the commercial vehicle is either housed or maintained for a period of at least two years and for six months after the vehicle leaves the motor carrier's control2.

2. Lubrication

a) Every carrier shall ensure that each commercial vehicle subject to its control:

i) is properly lubricated, and

ii) is free of fluid, oil and grease leaks.

3. Wear Limits and Tolerances

a) The limits and tolerances indicated in this section are guidelines only. Where Original Equipment Manufacturer (OEM) recommended limits do not match the guidelines, the OEM limits should be used.

4. Applicability

a) These standards are not intended to override any legislative requirements.

2 *Note:* Many jurisdictions require proof of maintenance, (i.e.: bills or invoices for brake repairs) to be kept for four or five years. Some jurisdictions may also require the filing of a safety plan that includes a maintenance plan for vehicles. As such jurisdictional guidelines for record keeping may vary and should be consulted and followed.

Section 1 Power Train

Item and Method of Inspection

1. Accelerator Pedal/Throttle Actuator

a) The accelerator pedal/throttle actuator shall be mounted securely, shall not be binding, inoperative or missing, and the engine must return to the idle position upon its release.

b) linkage/cable shall not be binding, broken, inoperative, loose or missing.

2. Clutch/ Clutch Pedal

a) The clutch/pedal/linkage shall not be broken, cracked, loose, missing or abnormally worn, welded or repaired in way that doesn't meet OEM or industry standard.

b) No anti-slip feature shall be ineffective, loose or missing.

3. Engine Controls

a) The engine shall shut down upon activation of the engine shut down control.

b) Where the engine is equipped with an emergency stopping device, the engine shall stop when the control is actuated.

4. Engine Starter

a) The engine start safety feature shall function as designed and prevent the engine from starting.

5. Gasoline, Diesel, Pressurized or Liquefied Fuel System

a) No tank, strap, mounting bracket or other mounting component shall be broken, loose, missing or mounted insecurely.

b) No filler cap/tube/vent tube shall be of improper type, loose, missing or allow spillage.

c) No component of any fuel system shall show evidence of leaking.

d) No fuel line, hose, fitting or connection shall be mounted insecurely.

e) All pressurized fuel systems shall meet federal and provincial legislation requirements.

f) If fitted, no fuel tank cage shall be damaged, insecure, loose or missing.

6. Hybrid Electric Vehicle & Electric Vehicle Power Train System

Note: Only a person who is trained on the operation and potential hazards of hybrid or electric vehicle systems can safely conduct an inspection. Visually inspect all accessible parts according to the vehicle manufacturer service instructions.

Consult with the manufacturer service instructions to ensure inspection and maintenance is performed as recommended by the manufacturer.

7. Exhaust System

a) No catalytic converter, exhaust pipe, muffler, resonator, manifold, diesel particulate filter, turbo or tail pipe shall be broken, bypassed, cracked, disabled, insecure, leaking, loose or missing.

b) No point of the exhaust system shall show evidence of leakage except through drain holes provided by the manufacturer.

c) No component shall pass through an occupant compartment and no exhaust gases shall be expelled into the cab, passenger compartment and/or sleeper.

d) No part of the exhaust system shall be closer than 50 mm to wiring, any part of a fuel or brake component or any combustible material that is not protected by shields except diesel or gasoline fuel tank which requires 25 mm of clearance.

e) No component shall be detached, located or unguarded so that an individual may be burned on entering or leaving the vehicle.

f)) No exhaust system shall be shortened or modified from original equipment so as to fail to direct the exhaust beyond the perimeter of the cab, passenger compartment and/or sleeper.

8. Drive Shaft

a) No universal or constant velocity (CV) joint shall be loose, missing or show evidence of rotational free play.

b) No cv joint protective boot or u-joint bearing seal shall be damaged, loose or missing.

c) No drive shaft fasteners, guards or hanger brackets shall be cracked, loose or missing.

d) No centre (carrier) bearing shall be cracked, damaged, missing or abnormally worn or the rubber mount deteriorated so as to no longer give adequate support to the bearing.

e) No driveshaft shall be bent or twisted.

9. Engine or Accessory DriveBelt

a) No engine or accessory drive belt shall be broken, frayed, missing or oil-contaminated.

b) No belt shall be so loose that it is likely to slip, or so tight it **is** likely to cause bearing damage.

Section 2 Suspension

Item and Inspection Criteria

1. Suspension and Frame Attachments

a) No suspension shall be so sagged that the vehicle ride height is less than the manufacturer's specified height when measured at the centreline.

b) No frame bracket, mounting bracket, hanger or mounting fasteners shall be broken, cracked, damaged, loose, missing, or perforated due to corrosion or deterioration or welded or repaired in a way that does not meet OEM standard.

2. Axle Attaching and Tracking Components

a) No axle attachment or axle saddle shall be bent, broken, loose or missing.

b) No suspension connecting component, (e.g.: arm, torque rod, radius rod, strut, track rod, control arm) shall be bent, broken, cracked, loose, missing, worn beyond manufacturer specifications, or perforated due to corrosion or deterioration. None of these components shall be welded or repaired in way that does not meet OEM standard.

c) No stabilizer/anti-sway bar, link, equalizer or "walking" beam shall be bent, broken, cracked, loose, missing or worn beyond manufacturer specifications, or welded or repaired in a way that does not meet OEM standard.

3. Axle and Axle Assembly

a) No axle or axle assembly shall be bent, cracked, damaged, loose or welded or repaired in a way that does not meet OEM standard.

4. Springs and Spring Attachments

a) No leaf or composite spring shall be broken, cracked, missing, shifted out of place or worn more than 3 mm in the contact area.

b) No shackle, pin, u-bolt, hardware or bushing shall be broken, cracked, loose, missing or shifted out of normal position.

c) No coil spring or torsion bar shall be broken, cracked, missing or repaired by welding.

d) No bump pad or rubber load cushion shall be broken, loose, missing or split.

5. Air Suspension

a) No vehicle shall have a ride height that is 50 mm above or below OEM specification.

b) No air spring or airbag shall be improperly seated, missing, patched or have a reinforcing ply exposed due to damage or deterioration, or have any air leak present.

c) No air spring base or mounting plate shall be broken, cracked, missing, perforated by corrosion or deterioration, or is welded or repaired in a manner that does not meet OEM standard.

d) No component of an air system, (i.e.: pressure protection valve, pressure regulator or gauge) shall be inoperative or missing.

e) No air line, connection or fitting shall be broken, cracked, damaged, flattened, leaking or installed or modified in a manner that does not meet OEM standard.

6. Shock Absorber/Strut Assembly

a) No shock absorber/strut assembly shall be binding, broken, damaged, detached, loose, missing or leaking oil.

Section 3H – Hydraulic and Electric Brakes

Item and Inspection Criteria

1. Hydraulic Brake System Components

a) The components of a hydraulic braking system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No metal line or fitting shall be chafed, corroded so as to compromise the structural integrity of the material, be cracked, flattened, improperly mounted, leak, or be restricted.

c) No metal line or fitting shall be repaired by welding or soldering or repaired using material or method that that does not meet OEM or industry standard.

d) No flexible line/hose shall be bulged or swell under pressure, chafed, cracked, flattened, insecurely mounted, restricted and must be maintained to OEM standard.

e) No master cylinder or master cylinder filler cap shall be damaged, insecurely mounted, leaking, loose, missing, plugged or have the gasket missing or swollen.

f) The hydraulic fluid level in the reservoir shall be at the level recommended by the manufacturer.

g) No pressure differential switch or electrical connection shall be damaged, inoperative, insecure, leaking or be loose.

h) No variable or proportioning valve or link shall be damaged, inoperative, leaking, missing or seized.

i) No auxiliary or work brake (line-lock device) shall be installed that interferes with normal service brake operation.

2. Brake Pedal/Actuator

a) No brake pedal or mount shall be broken, cracked, damaged, insecure, loose, missing, abnormally worn, welded or repaired in a way that does not meet OEM standard.

b) No anti-slip feature shall be ineffective, loose or missing.

3. Vacuum Assist (Boost) System on Truck or Bus

a) The vacuum assist system shall operate as intended and be maintained as described in manufacturer service instructions

b) No line, hose or clamp shall be broken, chafed, collapsed, cracked, damaged, incorrect type, insecurely mounted, (i.e.: within 50 mm of an exhaust system component without a heat shield), leaking, loose or missing.

c) No check valve shall be incorrectly installed, inoperative, leaking or missing.

d) No vacuum reserve tank shall be corroded so that the integrity is compromised, damaged, insecure, leaking, loose or missing.

e) No vacuum assist system reserve shall be insufficient to assist in two full brake applications or there is no downward movement of the brake pedal when engine is started.

f) The vacuum pump shall operate within manufacturer specification.

4. Hydraulic Assist (Boost) System on Truck or Bus

a) The hydraulic assist system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No engine-driven hydraulic pump, reservoir, belt or filler cap shall be damaged, leaking, loose or missing.

c) No line or hose shall be broken, chafed, collapsed, cracked, of incorrect type, insecurely mounted, leaking, loose or missing.

d) The hydraulic assist (boost) electric pump, warning lamp and indicator lamp shall function as intended and be maintained per manufacturer service standard.

5. Air Assist (Boost) System on Truck or Bus

a) The air assist system shall operate as intended and be maintained as described in manufacturer service instructions and downward movement of the brake pedal shall be felt when engine is started.

b) No line or hose shall be broken, chafed, collapsed, cracked, of incorrect type, insecurely mounted, or be leaking, loose **or** missing.

c) No check valve shall be inoperative or missing.

6. Air-Over-Hydraulic Brake System

a) The air-over-hydraulic system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No line or hose shall be broken, chafed, collapsed, cracked, of incorrect type, insecurely mounted, leaking, loose or missing.

c) No check valve shall be inoperative or missing.

7. Surge Brake Controller on Trailer

a) The surge brake controller shall operate as intended and be maintained as intended by the manufacturer and shall not be damaged, defective, seized or fail to operate brakes when actuated manually.

b) No brake fluid reservoir or filler cap shall be damaged, insecure, leaking, or be missing and the brake fluid will be at the level specified by the manufacturer.

c) No break-away device shall be damaged, improperly installed, inoperative or missing from a trailer required to have a break-away device.

8. Vacuum System on Trailer

a) The trailer vacuum system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No vacuum system shall be damaged or fail to operate as intended.

9. Air-Boosted Trailer Brake System

a) The system shall operate and be maintained as described in manufacturer service instructions.

b) No air-boosted brake system shall be damaged or fail to operate as intended.

10. Electric Brake System on Trailer

a) The system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No wheel magnet or actuator component shall be broken, damaged, inoperative, loose, missing or seized.

c) No wiring shall be improperly spliced or connected, insecure, short-circuited or have insulation that is cracked or peeled.

d) No battery or controller shall be damaged or fail to operate as intended by the manufacturer.

e) No break-away device shall be damaged, improperly installed, inoperative or missing from a trailer required to have a break-away device.

11. Brake System Indicator Lamps

a) The system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No indicator lamp shall be missing or any color other than red and any indicated brake system malfunction or defect shall be repaired.

12. Drum Brake System Components

Note: Best practice is to measure and document brake drum diameter and shoe lining thickness at every comprehensive brake inspection.

a) The drum brake system components shall operate as intended and be free of defects and be inspected and maintained as described in manufacturer service instructions.

b) When any brake system inspection reveals evidence of a defect or abnormal condition, wheel and drum disassembly is required to determine the defect and to effect repairs, (i.e.: abnormal appearance, excess corrosion, damage, distortion, glazing or shifting out of place of any brake component, abnormal wear of brake drum or friction material, signs of overheating, discoloration or contamination of brake friction material).

c) Every major brake inspection requires the brake shoe lining thickness and brake drum diameter to be measured and these measurements should be recorded on a record/report of inspection and be retained. (See Section 3 of PMVI standard to learn how these inspections and records can be used to avoid wheel disassembly at every inspection).

d) No mechanical or structural part shall be binding, broken, cracked, disconnected, loose, misaligned, missing, seized, worn beyond OEM or industry standard and no backing plate shall be worn so as to restrict free movement of the shoes.

e) No required brake component shall be inoperative or missing.

f) No brake shoe lining shall be contaminated by brake fluid, oil or grease and no wheel seal shall show evidence of leaking.

g) No brake lining shall be broken, damaged, distorted, loose, missing or show any abnormal and/or uneven wear.

h) No brake shoe lining shall have a crack (other than normal heat check cracks) extending partially through or completely through the lining from the friction surface to the metal backing, passing from any rivet hole to the edge, have lining broken off exposing a rivet or have the lining distorted or separating from shoe. Follow manufacturer recommendations for repair of cracks based on length and crack dimensions.

i) In no case shall the lining protrude outside the drum by more than 3 mm, be loose, have a loose fastener or a shim used between lining and shoe or be incorrectly installed, (i.e.: such as primary and secondary shoes reversed).

j) No bonded brake shoe lining thickness shall be less that 2 mm at the centre of the shoe and no bolted or riveted brake show lining shall be less than 3 mm at the centre of the shoe.

k) No brake drum shall show wear that exceeds limit indicated on drum, OEM or industry standard or be contaminated by brake fluid, grease or oil.

l) **No** brake drum shall have an external crack, one or more grooves that exceeds OEM or industry standard wear limit, have cracks or heat cracks within 25 mm of the open edge of the drum, or there are hot spots and heat cracks in 3 locations that cannot be removed by machining within drum limits.

m) No combination of machining and wear to the inside diameter of the drum shall result in a dimension that is greater than the dimension stamped on the drum, or where the dimension is not stamped on the drum, the vehicle manufacturer's wear limit, or if the manufacturer's limit is not available then no combination of wear and machining may exceed 2.3 mm over the original drum diameter of 350 mm (14 in) or less or 3 mm over **the** original drum diameter of greater than 350 mm (14 in).

n) No self-adjuster mechanism shall be abnormally worn, have incorrect thread direction, be inoperative or seized.

o) No anchor pin or return spring shall be abnormally worn, bent, broken, damaged, distorted, loose or missing.

p) No backing plate shall be bent, damaged or loose.

q) No axle or spindle shall be cracked.

r) No wheel cylinder shall be damaged, inoperative, insecurely mounted, leaking brake fluid, loose or have the dust seal cracked, damaged, missing or split.

s) All drum brakes shall be adjusted within OEM standard and rotate without any brake drag.

13. Disc Brake System Components

Note: Best practice is to measure and document brake pad friction material thickness and rotor thickness at every comprehensive brake inspection.

a) The disc brake system components shall operate as intended and be free of defects and be inspected and maintained as described in manufacturer service instructions.

b) When any inspection reveals evidence of a defect or abnormal condition, wheel disassembly is required to determine the defect and to effect repairs, (i.e.: abnormal appearance, excess corrosion, damage, distortion, glazing or shifting out of place of any brake component, abnormal wear of brake rotor or friction material, signs of overheating, discoloration or contamination of brake friction material).

c) Every major brake inspection requires the brake friction material thickness and rotor thickness to be measured and these measurements should be recorded on a record/report of inspection and be retained (See Section 3 of PMVI standard to learn how these inspections and records can be used to avoid wheel disassembly at every inspection).

d) No mechanical or structural part shall be binding, broken, cracked, disconnected, loose, misaligned, missing, seized, worn beyond OEM or industry standard.

e) No required brake component shall be inoperative or missing.

f) No disc (rotor) shall have a section that is broken or missing.

g) No disc (rotor) shall have any crack extending from the friction surface to the cooling vent, any surface crack extending to an outer edge, groove or pitted area in rotor that reduces rotor thickness below OEM allowable limit on the friction surface or have the friction surface contaminated by brake fluid, grease or oil.

h) No disc (rotor) shall have a thickness at any point across the friction surface that is less than the minimum indicated on the brake rotor, OEM or industry standard, and no combination of machining or wear to the disc (rotor) shall result in a dimension that is less than the dimension stamped on the disc or the manufacturer's specification.

i) No caliper, pad retainer, slide pin/slider, or pad slider shall be abnormally worn, bent, binding, broken, damaged, insecure, leaking, missing, mounted incorrectly or be seized. No boot or bellows shall be cracked, damaged or missing.

j) No anchor plate or anchor plate fastener shall be loose or missing.

k) No pad shall be abnormally worn, broken, cracked, damaged, installed incorrectly, loose or have the friction material contaminated by brake fluid, oil or grease.

l) No pad (friction material) thickness measured at the thinnest point shall be less than manufacture specification or industry standard or if limit not available for bonded friction material less than 3 mm and for riveted friction material less than 5 mm.

m) The clearance between pads and rotor (caliper adjustment) shall meet manufacturer specifications.

n) All disc brakes components shall be adjusted within OEM standard, (e.g. torque values).

14. Mechanical Parking Brake

a) The system shall operate as intended and be maintained as described in manufacturer service instructions.

b) The parking brake shall hold as intended and be tested as per manufacturer service instructions.

c) The indicator lamp shall be present and activate when the control is placed in the applied position.

d) No parking brake control shall be binding, broken, inoperative, missing or fail to lock.

e) No parking cable, linkage or equalizer shall be broken, frayed, improperly adjusted or secured, missing or seized.

f) No friction material thickness on a parking brake shall be less than specified by the OEM, or when not specified less than 3 mm on riveted lining or 2 mm on bonded lining.

15. Spring-Applied Hydraulic-Released (SAHR) Parking Brake

a) The SAHR system shall operate as intended and be maintained as described in manufacturer service instructions.

b) When applied, the parking brake shall hold the vehicle, and the indicator light shall function as intended.

c) No hydraulic line or hose shall be broken, chafed, collapsed, cracked, damaged, flattened, insecure, of incorrect type, leaking, or repaired in a way that does not meet OEM standard.

d) No release canister shall be damaged, inoperative, insecure, leaking or loose.

e) No friction material on a SAHR parking brake shall be less than specified by the OEM, or when not specified less than 3 mm on riveted lining or 2 mm on bonded lining.

16. Anti-Lock Brake System (ABS) on a Truck or Bus

a) The ABS system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No ABS system will be tampered with or defeated or malfunction so as to prevent normal brake operation.

c) The indicator lamp shall be present and function as intended.

d) No electronic control unit (ECU) or wiring on the ABS system shall have any connector corroded, be insecurely mounted, be missing or repaired in a way that does not meet OEM standard.

e) No relay/ABS modulating valve shall have abnormal corrosion, be insecurely mounted to the ECU, or be leaking or missing.

f) No wheel speed sensor shall have any corroded connectors, be inoperative, insecurely mounted or missing.

17. Stability Control System

a) The Stability Control system shall operate as intended without malfunction and be maintained as described in manufacturer service instructions.

b) No Stability Control system shall be tampered with or defeated.

Section 3A – Air Brakes

Item and Inspection Criteria

1. **Air Compressor**
   - **a)** The air compressor shall operate as intended and be maintained as described in manufacturer service instructions.
   - **b)** No compressor mounting components shall be broken, cracked, or have the bolts missing or loose permitting the compressor to shift from normal position.
   - **c)** No air filter shall be contaminated to restrict air flow or be missing
   - **d)** No pulley or belt shall be bent, broken, cracked, damaged, frayed, loose or out of alignment.

2. **Air Supply System**
   - **a)** The air supply system shall operate as intended and be maintained as described in manufacturer service instructions.
   - **b)** The air pressure build-up/loss time shall be tested per manufacturer specifications and in no case shall exceed 2 minutes.
   - **c)** No governor shall be inoperative, show evidence of an air leak or the governor cut-in or cut-out pressure is lower or higher than OEM specification.
   - **d)** The low pressure warning system shall activate and operate normally and not be missing.
   - **e)** The air pressure gauge shall be present and provide accurate readings.
   - **f)** No pressure drop of more than 138 kPa (20 psi) should occur when a full service brake application is made with engine off.
   - **g)** No air leakage shall be detected at any location in the system.

3. **Air System Leakage on Trailer**
   - **a)** Test air loss rate per OEM specifications and follow service instructions.
   - **b)** No air leakage shall be detected at any location in the system.

4. **Air Tank**
   - **a)** Test air tanks for contamination per service instructions and OEM specifications and if contamination is found purge per service instructions.
   - **b)** No air tank shall be corroded or damaged so that structural integrity is compromised or be leaking, loose or welded (other than factory weld) or fail to meet OEM standard.
   - **c)** No air tank bracket and/or strap shall be broken, cracked, missing or fail to meet OEM standard.
   - **d)** No air tank drain valve shall be inoperative, leaking, loose or missing or fail to meet OEM standard.
   - **e)** No moisture ejector should be inoperative or leaking air.

5. **Air Tank Check Valves**
   - **a)** Test per OEM service instructions and ensure there is no air pressure drop in the primary or secondary air tank and follow recommended service instructions if an air pressure drop is detected.
   - **b)** No air tank check valve shall be inoperative or missing.

6. **Brake Pedal/Actuator**
   - **a)** No brake pedal or mount shall be broken, cracked, damaged, insecure, loose, missing, abnormally worn, welded or repaired in a way that does not meet OEM standard.
   - **b)** No anti-slip feature shall be ineffective, loose or missing.

7. **Treadle Valve and Trailer Handle Valve**
   - **a)** No valve, pivot or plunger shall be binding, inoperative or seized, (i.e.: fails to fully release brakes).
   - **b)** No valve shall be cracked, insecure, loose or have any mount, mounting bracket or mounting fastener damaged, missing or stripped.

8. Brake Valves & Controls

a) No brake valve or control shall be broken, damaged, inoperative, loose or repaired in a way that does not meet OEM standard,

b) No brake valve or control mount, mounting bracket or mounting fastener shall be damaged, insecure, loose, missing or stripped.

c) No quick release or relay valve shall be inoperative, of improper type or allow air to leak from the valve back into the system.

d) Any air system accessory device, (e.g.: suspension, tire inflation system, landing gear) that draws air from the air brake system must function as intended with a properly functioning pressure protection valve.

9. Proportioning, Inversion or Modulating Valve

a) The proportioning, inversion or modulating valve system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No required valve shall be inoperative, of improper type or missing.

c) No valve mounting bracket shall be broken, insecure or loose.

10. Towing Vehicle (Tractor) Protection System

a) The tractor protection valve system shall operate as intended and be maintained as described in manufacturer service instructions.

b) The tractor protection valve operation shall be tested per OEM service instructions and ensure no air flows out of the trailer service line during the test. (Follow OEM service instructions when a problem is detected.)

c) The trailer supply valve shall be tested per OEM standard and follow service instructions when air pressure variances are outside OEM specifications or where the valve fails to close automatically or does not operate as intended or protection valve is missing.

11. Parking Brake and Emergency Application on Truck or Bus

a) The parking brake shall operate as intended and be maintained as described in manufacturer service instructions.

b) The parking brake shall apply on any wheel required to have a parking brake.

c) No parking brake shall drag, hang or release slowly.

d) When the parking brake is activated by closing the brake control valve the brake shall apply automatically.

12. Parking Brake and Emergency Application on Trailer

a) The parking brake shall operate as intended and be maintained as described in manufacturer service instructions.

b) The parking brake shall apply on any wheel required to have a parking brake.

c) No parking brake shall drag, hang or release slowly.

d) When the parking brake is activated by closing the brake control valve the brake shall apply automatically.

13. Air System Components

a) The air system components shall operate as intended and be maintained as described in manufacturer service instructions.

b) No gladhand shall be corroded, cracked, damaged or insecure, or have a damaged or missing seal.

c) In jurisdictions where gladhand screens are required, no screen shall be missing, plugged or ruptured.

d) No air line, connection, fitting, hose or tube shall be broken, cracked, damaged, (i.e.: deformed, flattened, melted), leaking or be improperly installed, modified or repaired in a way that fails to meet OEM or industry standard.

e) No air system accessory device, (e.g.: suspension, tire inflation system, landing gear) that draws air from the air brake system shall operate without a protection valve, and the valve shall function as intended.

f) There shall be no air leakage at any location in the system.

14. Brake Chamber (Includes a DD3 chamber on a bus)

a) All brake chamber components shall operate as intended and be maintained as described in manufacturer service instructions.

b) No improper type or size brake chamber shall be used.

c) No brake chamber shall be corroded, cracked, damaged, insecurely mounted, leaking, or loose.

d) The drain hole shall be pointed downward and not be plugged.

e) No improper, mismatched (size) or mixed long-stroke or standard stroke chambers shall be installed or used on an axle.

f) No push rod return spring shall be binding or broken.

g) No spring brake chamber or park brake-apply spring shall be broken, caged by a caging bolt or made inoperative by other mechanical means.

h) No chamber caging plate shall be hung up or misaligned.

i) No chamber shall be insecure, loose, missing or have any non-manufactured hole or crack present.

j) No chamber brackets, clevis yokes, pins, anchor pins, push rods or spiders shall be bent, broken, cracked, loose, misaligned or missing or have clevis, pin, cotter pins or safety retainers missing.

k) No DD3 brake chamber shall fail to remain fully applied at any wheel.

15. Drum Brake System Components

Note: Best practice is to measure and document brake drum diameter and shoe lining thickness at every comprehensive brake inspection.

a) All drum brake system components shall operate as intended and be free of defects and be inspected and maintained as described in manufacturer service instructions.

b) When any drum brake system inspection reveals evidence of a defect or abnormal condition, wheel and drum disassembly is required to determine the defect and to effect repairs, (i.e.: abnormal appearance, excess corrosion, damage, distortion, glazing or shifting out of place of any brake component, abnormal wear of brake drum or friction material, signs of overheating, discoloration or contamination of brake friction material).

c) Major brake inspections require certain components to be measured, and these measurements should be recorded on a record/report of inspection and be retained. For drum brakes, the brake shoe lining thickness and brake drum diameter should be recorded and retained along with any repair work order or invoice when brake systems are repaired (See Section 3A of PMVI standard to learn how these inspections and records can be used to avoid wheel disassembly at every inspection).

d) No mechanical or structural part shall be binding, broken, cracked, disconnected, loose, misaligned, missing, seized, worn beyond OEM or industry standard and no backing plate shall be worn so as to restrict free movement of the shoes.

e) No required brake component shall be inoperative or missing.

f) No brake shoe lining shall be contaminated by brake fluid, oil or grease and no wheel seal shall show evidence of leaking.

g) No brake lining shall be broken, damaged, distorted, loose, missing or show any abnormal and/or uneven wear.

h) No brake shoe lining shall have a crack (other than normal heat check cracks) extending partially through or completely through the lining from the friction surface to the metal backing, passing from any rivet hole to the edge, have lining broken off exposing a rivet or have the lining distorted or separating from shoe. (Follow manufacturer recommendations for repair of cracks based on length and crack dimensions.)

i) No lining shall protrude outside the drum by more than 3 mm, be loose, have a loose fastener or a shim used between lining and shoe or be incorrectly installed, (i.e.: such as primary and secondary shoes reversed).

j) No bonded or riveted continuous strip brake shoe lining thickness shall be less that 5 mm when measured at the centre of the shoe and no bolted or riveted block-type brake shoe lining thickness shall be less than 8 mm at the centre of the shoe.

k) No brake drum shall show wear that exceeds limit indicated on drum, OEM or industry standard or be contaminated by brake fluid, grease or oil.

l) No brake drum shall have an external crack, one or more grooves that exceeds OEM or industry standard wear limit, have cracks or heat cracks within 25 mm of the open edge of the drum, have hot spots and heat cracks in 3 locations that cannot be removed by machining within drum limits.

m) No combination of machining **and** wear to the inside diameter of the drum shall result in a diameter greater than the dimension stamped on the drum, or where the dimension is not stamped on the drum, the vehicle manufacturer's wear limit, or if the manufacturer's limit is not available then no combination of wear and machining may exceed 2.3 mm over the original **drum** diameter of 350 mm (14 in) or less or 3 mm over the original drum diameter of greater than 350 mm (14 in).

n) No wheel seal shall leak bearing lubricant.

o) No return spring shall be abnormally worn, bent, broken, damaged, distorted, loose, missing or stretched, or fail to hold both rollers to against cam.

p) No spider or spider mounting fastener shall be bent, broken, damaged, loose, missing or repaired or welded in a way that does not meet OEM standard.

q) All drum brakes shall be adjusted within OEM standard.

16. S-Cam Drum Brake System

a) The S-Cam brake system components shall operate as intended and be maintained as described in manufacturer service instructions and per Canadian Motor Vehicle Safety Standard (CMVSS) 121.

b) No camshaft shall be bent, broken, damaged, of incorrect type, incorrectly installed or mounted, twisted or repaired by welding, and no camshaft shall move more than 2 mm in a bushing.

c) No camshaft mounting bracket or bracket fastener shall be broken or loose.

d) No clevis, pin, clevis yoke, locking device or pushrod shall be bent, binding, broken, cracked, misaligned, loose, missing or welded or repaired in a way that does not meet OEM Standard.

e) No clevis yoke lock nut shall be loose and no required brake stroke indicator shall be missing.

f)) When brakes are applied all parts working together must form the correct angle to slack adjuster and brake chamber per manufacturer specifications.

g) No brake adjuster shall be used that is abnormally worn, bent, broken, of improper type, improper size, improperly installed or inoperative and the self-locking sleeve on manual slack adjusters shall not fail to lock or be seized.

h) No self-adjusting brake adjuster shall be replaced with a manual slack adjuster.

i) The distance from the centre of a camshaft to the centre of the clevis pin shall be the same for all brakes on an axle.

j) No brake shoe roller shall have flat spots, be missing or of the wrong size.

k) No brake shoe anchor pin shall have wear that allows the lining to protrude beyond the outside edge of the brake drum or be missing.

l) All brake stroke measurement in relation to the chamber shall be within OEM specification and shall be continuously adjusted to remain within limit established by OEM or industry standard.

17. Brake Shoe Travel (Wedge Brakes)

a) All wedge brake system components shall operate as intended and be maintained as described in manufacturer service instructions.

b) No brake shall fail to operate, no shoe shall fail to move and no shoe movement shall be more than 2 mm.

18. Disc Brake System Components

Note: Best practice is to measure and document brake pad friction material and rotor thickness at every comprehensive brake inspection.

a) The disc brake system components shall operate as intended and be free of defects and be inspected and maintained as described in manufacturer service instructions.

b) When any inspection reveals evidence of a defect or abnormal condition wheel disassembly is required to determine the defect and to effect repairs, (i.e.: abnormal appearance, excess corrosion, damage, distortion, glazing or shifting out of place of any brake component, abnormal wear of brake rotor or friction material, signs of overheating, discoloration or contamination of brake friction material).

c) Major brake inspections require certain components to be measured and these measurements should be recorded on a record/report of inspection and be retained. For disc brakes, the brake friction material thickness and rotor thickness should be recorded and retained along with any repair work order or invoice when brake systems are repaired (See Section 3 of PMVI standard to learn how these inspections and records can be used to avoid wheel disassembly at every inspection).

d) No mechanical or structural part shall be binding, broken, cracked, disconnected, loose, misaligned, missing, seized, worn beyond OEM or industry standard.

e) No required brake component shall be inoperative or missing.

f) No disc (rotor) shall have a section that is broken or missing.

g) No disc (rotor) shall have any crack extending from the friction surface to the cooling vent, any surface crack extending to an outer edge, or have any groove or pitted area in rotor that reduces rotor thickness below OEM allowable limit on the friction surface or the friction surface is contaminated by brake fluid, grease or oil.

h) No disc (rotor) shall have a thickness at any point that is less than the minimum indicated on the brake rotor, OEM or industry standard. No combination of machining and wear to the disc (rotor) shall be less than the dimension stamped on the disc or the manufacturers' specification.

i) No caliper, pad retainer, slide pin/slide or pad slider shall be abnormally worn, bent, binding, broken, damaged, insecure, leaking, missing, mounted incorrectly or be seized.

j) No boot or bellows shall be cracked, damaged or missing.

k) No anchor plate or anchor place fastener shall be loose or missing.

l) No pad shall be abnormally worn, broken, cracked, damaged, incorrectly installed, loose or have the friction material contaminated by brake fluid, oil or grease.

m) No pad (friction material) thickness measured at the thinnest point shall be less than manufacture specification or industry standard or if limit not available for bonded friction material less than 3 mm and for riveted friction material less than 5 mm.

n) The clearance between pads and rotor (caliper adjustment) shall meet manufacturer specifications.

o) All disc brakes shall be continuously adjusted within OEM standard specifications.

19. Spring-Applied Air-Released (SAAR) Parking Brake

a) The SAAR system shall operate as intended and be maintained as described in manufacturer service instructions.

b) The parking brake shall hold the vehicle and the indicator light shall function as intended.

c) No air line, connection or fitting shall be broken, cracked, damaged, defective, flattened, leaking or repaired in a way that does not meet OEM standard.

d) No air tank shall be damaged, corroded, loose or welded other than factory weld.

e) No friction material on a SAAR parking brake will be less than specified by the OEM, or when not specified less than 3 mm on riveted lining or 2 mm on bonded lining.

20. Anti-Lock Brake System (ABS) on a Truck or Bus

a) The ABS system shall operate as intended and be maintained as described in manufacturer service instructions.

b) No ABS system shall be tampered with or defeated or malfunction so as to prevent normal brake operation.

c) The indicator lamp shall be present and function as intended.

d) No electronic control unit (ECU) or wiring on the ABS system shall have any connector corroded, be insecurely mounted, be missing or repaired in a way that does n ot meet OEM standard.

e) No relay/ABS modulating valve shall have abnormal corrosion, be insecurely mounted to the ECU, or be leaking or missing.

f) No wheel speed sensor shall have any corroded connectors, be inoperative, insecurely mounted or missing.

21. Anti-Lock Brake System (ABS) on a Trailer

a) The ABS system on a trailer shall operate as intended and be maintained as described in manufacturer service instructions.

b) The ABS system shall be tested per OEM specifications, and the service instructions shall be followed when a problem is detected.

c) No ABS system shall be tampered with or defeated or malfunction so as to prevent normal trailer brake operation.

d) The indicator lamp (trailer mounted) shall be present, amber in color and function as intended.

e) No electronic control unit (ECU) or wiring on the ABS system shall have connector corroded, be insecurely mounted, missing or be repaired in a way that does not meet OEM standard.

f) No relay/ABS modulating valve shall have abnormal corrosion, be insecurely mounted to the ECU, or be leaking or missing.

g) No wheel speed sensor shall have any corroded connector, be inoperative, insecurely mounted or missing.

22. Stability Control System on Truck or Bus

a) The Stability Control system shall operate as intended without malfunction and shall be maintained as described in manufacturer service instructions.

b) No Stability Control system shall be tampered with or defeated.

23. Stability Control System (Electronic Stability Control {ESC}) or Roll Stability System on Trailer

a) The Stability Control system shall operate as intended without malfunction and shall be maintained as described in manufacturer service instructions.

b) No Stability Control system shall be tampered with or defeated.

Section 4 Steering

Item and Inspection Criteria

1. Steering Control and Linkage

a) No steering box or rack and pinion unit shall be broken, cracked, insecure, loose, missing or leaking.

b) No tie rod, tie rod end, drag link, ball and socket joint, or pitman arm shall be bent, broken, cracked, damaged, insecure, loose, missing, worn, welded or repaired in way that does not meet OEM standard.

c) No ball joint in upper or lower control arm shall be insecure or loose, or have wear that exceeds limit shown by wear indicator or OEM standard limit or is injected with repair material.

d) No steering column or any mounting attachment shall be insecure, loose or missing.

e) No steering shaft, universal joint, yoke, or steering column slip joint shall be binding, insecure loose, seized, welded or repaired in way that does not meet OEM standard, or has any rotational free play.

f) No adjusting sleeve shall be bent, loose, welded or repaired in a way that does not meet OEM standard.

2. Power Steering System

a) The power steering drive belt shall not be cracked, frayed, loose, missing, and shall have the correct tension.

b) The fluid in the power steering reservoir shall not be lower than that specified by the vehicle manufacturer and the fluid must not be contaminated.

c) No hose, pump or cylinder, if fitted, shall be inoperative, insecure, loose or leaking.

Note: Hose must not be mounted within 25 mm of the exhaust system.

d) No mounting bracket or attaching component shall be broken, cracked, loose or ***missing***.

e) The power steering assist system shall operate as designed.

3. Steering Operation (Active Steer Axle)

a) No steering wheel shall be binding, broken, damaged, loose on spline, modified, or jam during rotation.

b) No steering wheel shall operate with steering lash or free play in excess of OEM standards.

c) No steering stop shall be improperly adjusted or missing and there shall be a minimum of 25 mm between the tire and frame, fender or any other part.

4. Kingpin Play

a) No kingpin shall bind, jam or be worn to allow lateral or vertical movement in excess of manufacturers specifications.

5. Self –Steer and Controlled Steer Axle

a) No passive steer axle shall bind or jam during rotation.

b) No passive steer axle stop shall be improperly adjusted or missing and there shall be a minimum of 25 mm between the tire and frame, fender or any other part.

c) No air pressure regulator or pressure gage shall be inaccurate, inoperative or missing.

Section 5 Instruments and Auxiliary Equipment

Item and Inspection Criteria:

1. **Fire Extinguisher**
   - **a)** Where required by legislation, all commercial vehicles shall be equipped with a fire extinguisher that is approved, secure, charged, of correct type and ready for use.
   - **b)** No required fire extinguisher shall be loose or missing.

2. **Hazard Warning Kit**
   - **a)** Where required by legislation, all commercial vehicles shall be equipped with a hazard warning kit and where required, triangle reflectors shall not be broken, damaged, insecure or missing.

3. **Horn**
   - **a)** The horn shall not be loose on its mounting or missing.
   - **b)** The activating device shall be easily identified and readily accessible to the driver.
   - **c)** The horn shall be audible and function as intended.
   - **d)** Where equipped, the backup alarm shall be audible and function as intended.

4. **Speedometer and Odometer**
   - **a)** The speedometer and odometer/hubometer shall not be inoperative or missing.

5. **Instruments and Gauges on a Bus**
   - **a)** The engine temperature gauge or indicator, oil pressure gauge or indicator, ammeter, voltmeter or charge indicator and fuel gauge shall be operative and provide accurate information.

6. **Windshield Wiper/Washer**
   - **a)** All windshield wiper/washer system components shall operate as intended.

7. **Heater and Windshield Defroster**
   - **a)** The heater and windshield defroster shall be operative and function in all operating modes and positions.

8. **Chain/ "Headache" Rack**
   - **a)** The chain and "headache" rack shall not be broken, cracked, insecure, loose or missing.

9. **Indicator Lamps**
   - **a)** The brake warning indicator, high beam headlamp indicator, turn signal indicator, hazard warning indicator and anti-lock brake indicator shall operate in accordance with manufacturer's specifications.

10. **First Aid Kit**
    - **a)** All school buses and buses shall be equipped with an approved and fully stocked first aid kit, as required by jurisdictional legislation/regulations.

Section 6 Lamps

Item and Inspection Criteria:

1. **General**
   - **a)** Each circuit shall light the filaments of all the lamps on that circuit when the appropriate switch is in the "ON" position, and each indicator light shall operate correctly.
   - **b)** The operation of any lighting circuit shall not interfere with the operation of any other circuit.
   - **c)** Each lens and reflex reflector shall be correctly and securely installed and shall not be discolored or missing in whole or in part, and comply with Canadian Motor Vehicle Safety Standards (CMVSS).

2. **Headlamps**
   - **a)** A vehicle shall be equipped with two or four white in color headlamps mounted in the same location as the manufacturer's design, and operate on both high and low beam and all diodes on an LED lamp must be functional.
   - **b)** No headlamp shall be equipped with a tinted cover or coated with a color lacquer.
   - **c)** No headlamp shall be modified by the attachment to the lamp or to the vehicle of any device that reduces the effective area of the lens or the brightness of the light.
   - **d)** Each headlamp shutter or retracting headlamp shall operate over the full range of movement or shall be secured in the fully open position.
   - **e)** All headlamps shall be properly aligned.
   - **f)** All required headlamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

3. **Tail Lamps**
   - **a)** Every vehicle shall be equipped with a minimum of two red tail lamps mounted at the rearmost location of the vehicle.
   - **b)** All required tail lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

4. **Stop Lamps**
   - **a)** Every vehicle shall be equipped with a minimum of two red stop lamps mounted at the rearmost part of the vehicle and activated when service brakes are applied.
   - **b)** All required stop lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

5. **Turn Signal Lamps**
   - **a)** Every vehicle shall be equipped with four signal lamps, two amber in colour facing forward and two amber or red in color facing rearward.
   - **b)** The turn signal flasher shall function properly.
   - **c)** All required turn signal lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

6. **Hazard Warning Lamps**
   - **a)** Every vehicle shall be equipped with four hazard lamps, two amber in colour facing forward and two amber or red in color facing rearward.
   - **b)** The hazard flasher shall function properly.
   - **c)** All required hazard lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

7. Side Marker Lamps

a) Every vehicle shall be equipped with four side marker lamps, two at the front facing the side, amber in colour, and two at the rear facing the side, red in colour.

b) Every vehicle greater than 9.1 m (30 ft) in length shall be equipped with an intermediate side marker lamp, amber in color, on each side.

c) All required side marker lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

d) Rear side marker lamps are not required on truck-tractors.

8. Clearance Lamps

a) All vehicles 2.05m (80 in) in width and greater are required to be equipped with four operating clearance lamps, two at the front amber in colour and two at the rear red in colour.

b) Rear clearance lamps are not required on truck-tractors.

c) All required clearance lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

9. Identification Lamps

a) All vehicles 2.05m (80 in) in width and greater are required to be equipped with six identification lamps, three facing the front, amber in colour, three facing the rear, red in colour.

b) Rear identification lamps are not required on truck-tractors, and front identification lamps are not required on trailers.

c) All required identification lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

10. Back-Up Lamps

a) All trucks, buses and truck-tractors manufactured after January 1, 1971 are required to have a minimum of one back-up lamp, white in colour, located at the rear.

b) All required back-up lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

11. Licence Plate Lamp

a) All vehicles shall be equipped with a white lamp that illuminates the licence plate.

b) All required licence plate lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

12. Daytime Running Lamps

a) All vehicles manufactured after December 1, 1989 are required to be equipped with daytime running lamps.

b) All required daytime running lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

13. Auxiliary Lighting

a) In the case of a school bus, bus or physically-disabled passenger vehicle, all interior lamps, stepwell lamps or lamps used to illuminate loading equipment shall illuminate when the appropriate switch is in the "ON" position or the doors are opened.

14. Instrument Lamps

a) All instrument lamps shall function as required by OEM standards.

15. Reflex Reflectors

a) A lamp or cover that emits reflection may be considered a reflector and it must not be broken, cracked, missing or obscured, and it must meet CMVSS, DOT or SAE standards.

b) Commercial vehicles are required to comply with the conspicuity requirements and retro-reflective markings as defined in CMVSS 108 or, in the case of school buses, the requirements of CSA D-250.

16. Retro-Reflective Marking

a) Commercial vehicles are required to comply with the conspicuity requirements and retro-reflective markings as defined in CMVSS 108 or, in the case of school buses, the requirements of CSA D-250.

Section 7 Electrical System

Item and Inspection Criteria:

1. **Wiring**
   - **a)** No electrical wiring shall be cut, deteriorated, peeled, short circuited or have any sections rubbed through the insulation or be so loose so as to contact moving parts.
   - **b)** All electric wiring shall be secured at least every 1800 mm.
   - **c)** No electrical component or wiring shall show signs of arcing, shorting or hot spots.
   - **d)** No electrical cable shall be burnt, chafed, damaged or frayed to expose the conductor.

2. **Battery**
   - **a)** No battery shall be cracked, insecurely mounted, loose, have fluid leaking from case (bus only), have hold-downs missing, have corroded posts or cables, or have weakened cracked or missing mounts or mounts perforated by corrosion.

3. **Trailer Cord**
   - **a)** No trailer cord shall be cut, deteriorated, peeled, short circuited or have any sections rubbed through the insulation or be so loose so as to contact moving parts.
   - **b)** Connectors shall not be cracked or have split ends and shall not be improperly repaired.
   - **c)** If OEM equipped, constant ABS power must be continuously supplied to the auxiliary circuit (centre pin, blue wire) while the ignition is in the “On” position.

4. **Switches**
   - **a)** All switches must function as designed.
   - **b)** Any switch pertaining to safety items shall not fail to operate.

Section 8 Body and Chassis

Item and Inspection Criteria:

1. **Hood or Engine Enclosure**
   - **a)** No hood or latch (primary or secondary) shall fail to open or close properly, be broken, insecure, missing or seized, or be welded or repaired in a way that does not meet OEM standards.
   - **b)** No safety cable, assist spring, support/dampener, hinge or support spring shall be abnormally worn, broken, insecure, missing or seized.

2. **Tilt Cab**
   - **a)** No tilt cab latch, secondary latch or hinge shall fail to open or close normally, be abnormally worn, broken, inoperative, insecurely mounted, loose, missing, seized or welded or repaired in a way that does not meet OEM standard.

3. **Air Suspended Cab**
   - **a)** No air bag shall leak, be cracked, damaged or patched, or be improperly inflated causing the cab to tilt to one side.
   - **b)** No air line, connection or fitting shall be broken, damaged, flattened, leaking or repaired in a manner that does not meet OEM or industry standard.
   - **c)** No mount, rod or attachment shall be bent, broken, loose or welded or repaired in a way that does not meet OEM standard.
   - **d)** No pressure protection valve or height control valve shall be of improper type, inoperative or missing.
   - **e)** No shock absorber shall be broken, damaged, disconnected, leaking, loose or missing.

4. **Cab and Passenger-Vehicle Body**
   - **a)** No cab or passenger-vehicle body component shall have any section with an exposed sharp edge, or that is corroded or torn in a manner that reduces structural integrity of a panel or floor, or allows exhaust gases to enter the occupant compartment.
   - **b)** No cab or passenger-vehicle body shall have its integrity reduced due to a loose body component, broken weld, missing fastener, failed adhesive, or is repaired in a way that does not meet OEM standard.
   - **c)** There shall be no hole(s) present in a panel or floor.
   - **d)** No body mount/support shall be broken, bulged, cracked, loose, be missing parts or be welded or repaired in a way that does not meet OEM standard.
   - **e)** No fender shall be damaged, detached, loose or missing, and all fenders must extend to the full width of the tires.

5. **Cargo Body**
   - **a)** No sheet metal shall have an exposed sharp edge, be torn or protruding or have any panel or rivet that is insecure, loose, missing or welded or repaired in a way that does not meet OEM standard.
   - **b)** No floor or deck shall have any condition that allows a person or cargo to fall through or is welded or repaired in a way that does not meet OEM standard.
   - **c)** No frame, sub-frame, cross-member or attaching fastener shall be bent, broken, bulged or perforated by corrosion, collapsed, cracked, loose, missing or welded or repaired in a way that does not meet OEM standard.
   - **d)** No inner or outer side rail or body-long sills or attaching fastener shall be bent, broken, bulged by corrosion, cracked, insecure, loose, missing or be welded or repaired in a way that does not meet OEM standard.
   - **e)** No required stake pocket/tiedown, cargo securing point or cargo securing device shall be broken, cracked, distorted, elongated, insecure or missing.
   - **f)** No tailgate, hopper or end-dump door shall have any gap that allows leakage, loss or spillage of cargo.

g) No tailgate, hopper or end-dump door shall be broken, cracked, insecure, loose or missing, or be welded or repaired in a way that does not meet manufacturer standards, or contain a component that is broken, cracked or missing, (i.e. hinges, pin lock).

h) No body-to-frame attachment, spacer or insulator shall be abnormally worn, bent, broken, cracked, loose or missing.

i) No body rail or structural member, floor cross member or roof support shall be bent, buckled, loose or sagging.

j) No body panel or panel fastener shall be bent, broken, insecure, loose or missing, or be repaired or welded in a way that does not meet OEM standard.

k) No body panel shall have any gap that allows leakage, loss or spillage of cargo, or an exposed sharp edge or section that is protruding.

6. Frame, Rails & Mounts

a) No frame, rail or mount shall be bent, broken, bulged or perforated due to corrosion, cracked or welded, modified or repaired in a way that does not meet OEM standard.

b) No frame fastener shall be ineffective, loose or missing.

c) No cross member or sub-frame assembly shall be bent, broken, cracked, cut, loose, missing, notched, rusted or corroded to a depth sufficient to cause weakness, or repaired using material or a method that does not meet OEM or industry standard.

7. Unitized Body Elements

a) No load-carrying panel, bulkhead, structural element, mount or attaching fasteners shall be bent, broken, cracked, loose or missing, or be welded or repaired in a way that does not meet OEM standard.

8. Cab or Cargo Door

a) No cab or cargo door shall have a gap that may allow exhaust gases to enter cab, passenger compartment and/or sleeper.

b) No cab or cargo door shall bind or fail to lock securely, be insecure or fail to operate or latch on both primary and secondary latches, or be welded or repaired in a way that does not meet OEM standard.

c) No door opener, handle or hinge shall be broken, inoperative, insecure, loose or missing.

d) No cargo door shall have a gap that would allow leakage, loss or spillage of cargo.

9. Cargo Tank or Vessel

a) No cargo tank or vessel shall be broken, bulged by corrosion, cracked, leaking or loose on its mounts, or be welded or repaired in a way that does not meet OEM standard.

b) No cap, hatch, hose or valve shall be broken, inoperative, insecure, leaking, loose or missing.

10. Special Body, Device or Equipment Attached or Mounted to Vehicle

a) Any special equipment, (e.g. snow plow, grader) or devices mounted or attached on a vehicle, (e.g. crane, log loader) shall be secured and maintained per OEM or industry standard so as not to pose a hazard.

11. Bumper

a) No bumper shall be broken, loose or missing or protrude so as to pose a hazard, or be replaced or repaired by any part that does not meet OEM standard.

12. Windshield

a) No windshield shall be missing, clouded, damaged or deteriorated so as to impair driver's vision.

b) The windshield shall be laminated safety glass manufactured and marked to OEM and industry standard, (i.e. AS-1, AS-10).

c) No windshield shall have any crack through both layers of glass, any intersecting cracks in an area swept by the wipers that extends more than 50 mm, or any star chips greater than 13 mm in diameter in an area swept by the OEM windshield wipers.

d) No windshield shall have any after-market tinting, or OEM tinting extending more than 75 mm from the top of the windshield.

e) No windshield shall have any obstruction, decal or device in the area swept by the OEM wipers.

13. Side Windows

a) No side window shall fail to open or close normally, have an exposed sharp edge, be broken, damaged, missing or deteriorated in such a way that driver's vision is impaired.

b) Side windows shall be manufactured and marked to OEM and industry standard, (i.e. AS-1, AS-2, AS-10 or AS-11).

c) No side window shall contain any after-market tint (Requirements may vary by jurisdiction; confirm applicable requirement).

14. Rear Window

a) No rear window shall be broken or contain an exposed sharp edge.

b) The rear window shall be manufactured and marked to OEM and industry standard, (i.e. AS-1, AS-2, AS-10 or AS-11, or if rigid plastic AS-4 or AS-5).

15. Interior Sun Visor

a) No interior sun visor shall be missing on the driver's side, or be bent, broken, loose or missing, or fail to maintain a set position.

16. Exterior Windshield Sun Visor

a) No exterior windshield sun visor shall extend more than 150 mm below the upper edge of the windshield and overlap the portion of the windshield swept by the OEM wiper arm and wiper blade.

17. Rear-view Mirror

a) No required rear-view mirror shall be broken, cracked, detached, insecure, loose or missing, or have obscured vision due to the condition of the glass, or fail to maintain a set position.

18. Seat

a) No seat shall have a broken frame, be insecure or have any exposed metal component or spring.

b) No driver seat shall fail to adjust in a forward, backward or recline position, or fail to lock into position or contain a seat assembly that does not meet OEM standard.

c) No passenger seat on a bus shall have a frame or mounting that is broken, insecure or loose.

d) No seating surface, seat back or barrier surface on a bus shall have the covering material that is loose, missing or torn so as to render the protective quality ineffective.

19. Seat Belt/Occupant Restraint

a) If originally manufactured with a seat belt assembly or assemblies, each belt anchorage shall be secure, each buckle and retractor shall operate as intended, and no belt webbing shall be broken, cut, damaged, frayed or torn so as to reduce its effectiveness.

b) Where required under Canadian Motor Vehicle Safety Standards (CMVSS), no seat belt assembly or anchorage shall be removed, rendered partly or wholly inoperative, or be modified so as to reduce their effectiveness.

c) No seat belt anchor, belt release or buckle shall be broken, insecure or missing, or fail to retract properly or lock into position.

d) No supplemental restraint system (air bag) shall be by-passed, disabled, disconnected, inoperative or missing.

e) All air bag systems must be maintained or serviced to OEM or industry standard.

20. Fender/Mud Flap

a) No required fender or mud flap shall be broken, insecure, loose or missing, or fail to cover the full tread width of the tire(s).

21. Landing Gear on Trailer

a) No landing gear, brace, pad or crank handle shall be bent, binding, broken, cracked, inoperative, insecure, loose, missing or seized.

22. Sliding Axle Assembly (Sliding Bogie) on Trailer

a) No frame or sub-frame rail on a sliding axle assembly shall be bent, broken, cracked, perforated or separated due to corrosion or welded or repaired in a way that does not meet OEM standard.

b) No slider-guide/hold-down bracket, locking device or stop on a sliding axle assembly shall be bent, broken, cracked, disengaged, inoperative, loose or missing.

23. Aerodynamic Device and Attachment

a) **No** aerodynamic device or attachment shall be insecure or loose or have any section with an exposed sharp edge that is torn or protrudes.

24. Rear Impact Guard (RIG) on Trailer

a) No rear impact guard shall be bent, broken, distorted, loose or missing.

b) All rear impact guards must conform to the industry standard based on TMC RP 732.

25. Floor Pan/Baggage Floor/Step Well on a Bus

a) No floor shall be bent, cracked, deformed, split or corroded sufficiently to result in structural weakness or allow exhaust gases to enter occupant compartment.

b) No floor attaching fastener shall be loose or missing.

c) No floor covering shall be abnormally worn, cracked, loose, missing or **of** improper type.

d) No step well shall be bent, cracked, deformed or contain holes that are not properly patched, or be rusted so as to result in structural weakness.

26. Interior Body and Fixtures on a Bus

a) No OEM stanchion, guard rail, grab handle, retainer barrier or attaching fastener shall be broken, loose or missing, or have any metal that is torn in a way that could present a hazard.

27. Service and Exit Door on a Bus

a) No service or exit door on a bus shall bind or fail to lock securely, be insecurely mounted or corroded through, or fail to latch on both the primary and secondary latches.

b) No service or exit door on a bus shall have a gap that would allow exhaust gases to enter the passenger compartment or be welded or repaired in a way that does not meet OEM standard.

c) No door opener, handle or latch shall be broken, inoperative, loose or missing.

d) No remote door operator shall bind, jam or malfunction or be inoperative or missing, and manual override device on power operated door must be present and operate as designed.

e) No service or exit door edge material shall be loose, of improper material, missing or torn.

f) No window of a school bus door shall have fog or visible moisture between the panes or fail to meet OEM type and size.

g) The windows of a school bus door shall be marked as type AS-1, AS-2, AS-10 or AS-11.

28. Emergency Exit (Door, Window and Roof Hatch) on a Bus

a) No emergency exit shall have the passage blocked, or the release or latch failing to operate normally, or have the identifying label and signage missing.

b) No emergency door or roof latch interlock system shall fail to operate as intended.

c) No emergency exit window warning device on a school bus shall be inoperative or missing.

29. Passenger Compartment Window on a Bus (Except Emergency Exit Window)

a) No side window on a bus shall fail to open, close or latch as intended.

b) No side window on a bus shall be broken, cracked or have an exposed edge.

c) Side window material must be glass type AS-1, AS-2, AS-3, AS-10 or AS-11 or rigid plastic type AS-4, AS-5, AS- 12.

30. School Bus Exterior Mirror (Except Standard Left and Right Side Mirror)

a) No required convex mirror shall be broken, cracked, insecure, loose, missing or pitted or fail to meet any applicable requirement of the jurisdiction.

b) The mirror heating and controls must function as intended.

31. School Bus Body Exterior

a) The paint on the body, hood and bumper must be the required colour as specified by jurisdictional regulation or standard, (i.e.: D-250).

b) No rub rail or attaching fastener shall be bent, broken, corroded, cracked, loose, missing, missing sections, protruding or torn.

c) No required sign shall be damaged, illegible or missing.

d) No required stop arm, stop arm control, stop arm lamp or pedestrian crossing arm shall be bent, broken, inoperative or fail to operate as intended.

32. Auxiliary Compartment on a Bus

a) All access, baggage door latches and hinges must open and close normally.

b) No hinge, counterbalance cable or latch shall be broken, frayed, inoperative, insecure, missing or seized

c) No overhead shelf/parcel rack or mounting fastener shall be broken, insecure, loose or missing.

Section 9 Tires and Wheels

Item and Inspection Criteria:

1. **Tire Tread Depth**
   - **a)** No front tire shall have a tread depth less than 3 mm.
   - **b)** No rear time shall have tread depth less than 2 mm.
   - **c)** Vehicles transporting dangerous goods may require different minimum tread depth based on jurisdictional requirements (consult applicable legislation).

2. **Tire Tread Condition**
   - **a)** No retreaded tire shall be installed and operated on an active steering axle.
   - **b)** No retreaded tire material shall be loose, missing or separated at the interface where the retread is bonded to the tire casing.
   - **c)** No tire tread shall have a cut or crack greater than 25 mm long that extends deeper than a major tread groove, or extends into the casing ply, or have any body cord exposed.
   - **d)** No tire shall have any piece of tread longer than 25 mm missing.
   - **e)** No tire shall be regrooved that is not marked “Regroovable”.
   - **f)** No tire should have any visible bump or bulge in the tread area indicating tread separation.
   - **g)** No regrooved, recapped or retreaded tire shall be on the front steering axle of any bus.
   - **h)** No tire shall contact any part of the vehicle.

3. **Tire Sidewall and Manufacturer Markings**
   - **a)** No radial tire shall be mixed with a non-radial tire on an axle.
   - **b)** Rim and wheel size must match tire size.
   - **c)** No tire that is labelled “Not for Highway Use” shall be used on a public road.
   - **d)** No required tire shall be missing.
   - **e)** The manufacturer’s recommendation for nominal tire size and markings shall be followed.
   - **f)** No tire shall be used that has a bump or bulge caused by tread, ply or sidewall separation, or when body cords are exposed, or the casing is broken or distorted.
   - **g)** No tire shall be used that has a plug-type repair in a sidewall or shows UV degradation damage more than 3 mm deep.

4. **Tire Inflation Pressure**
   - **a)** No tire shall leak, or have an inflation pressure 10% above or below OEM or industry standard recommended pressure, or the tire pressure difference between dual-mounted tires is more than 10%.
   - **b)** No tire shall be used with a valve stem that is cracked, damaged, inaccessible or leaking or has a missing valve stem cap.
   - **c)** No tire shall be used with a tire inflation system that is insecure, leaking air, or in danger of falling off.

5. **Wheel Hub**
   - **a)** No wheel hub shall be bent, broken, cracked, damaged, distorted, repaired by welding, or have the bearing cup loose in the hub bore.
   - **b)** No wheel hub stud hole shall be enlarged or damaged in a way that prevents proper fitting or retention of studs.
   - **c)** No wheel hub seal shall be leaking or out of position.
   - **d)** The wheel hub lubricant (oil or grease) shall be maintained per OEM or industry standard to address minimum level of lubricant and to avoid contamination.

6. Wheel Bearing

a) All wheel bearings, locking devices, spindles and axle stubs shall be serviced and maintained per OEM or industry standard.

b) No wheel bearing, race or roller shall show any signs of binding, damage, overheating or roughness.

7. Wheel/Rim (Applies to all wheel types)

a) No wheel or rim shall be bent, broken, cracked, damaged or distorted or show signs of overheating, or be welded or repaired in a way that does not meet OEM standard.

b) Rim and wheel size must match tire size.

8. Multi-Piece Wheel/Rim

a) No multi-piece wheel or rim shall be used that has any component that is bent, broken, cracked, damaged, distorted, improperly assembled or shifted out of position, is severely corroded or pitted, or shows evidence of damage caused by heating, or has been repaired by welding.

b) No multi-piece wheel or rim shall be used that has mismatched components, shows signs of improper seating, or that has more than 3 mm of clearance between butt ends of the lock ring.

9. Spoke Wheel/Demountable Rim System

a) No spoke wheel or demountable rim system shall be used that shows evidence of rim slippage, incorrect positioning of rim on spokes, damage, corrosion or pitting, or lateral runout exceeds 6 mm at the sidewall of the tire.

b) No rim clamp shall be broken, cracked, mismatched, missing, repaired by welding, twisted or worn out in the mounting area, or gap between rim clamp and heel spoke is less than OEM or industry standard.

c) No spacer band shall be collapsed, cracked, distorted, missing or of incorrect size or type, or welded or repaired in a way that does not meet OEM standard.

10. Disc Wheel System

a) No incompatible wheel or component shall be used on a disk wheel system.

b) No disc wheel system fastener shall be loose or ineffective, and no bolt/stud hole shall be elongated.

c) No disc wheel system shall be welded or repaired in a way that does not meet OEM standard.

11. Wheel Fasteners (Nuts, Bolts and Studs)

a) All wheel fasteners must be of the correct type, thread direction and style, and any nut must be fully engaged with the stud or the bolt.

b) No wheel fastener shall be bent, broken, damaged or missing.

c) All wheel fasteners must be secured per the torque value specified by OEM or industry standard.

Section 10 Coupling Devices

Item and Inspection Criteria:

1. **Hitch Assembly, Structure and Attaching Components**
   - **a)** No hitch component shall be of improper type or inadequate capacity.
   - **b)** No hitch assembly, receiver, draw bar, draw beam, slider, supporting structure or mounting fastener shall be bent, broken, cracked, ineffective, leaking, loose, missing, worn beyond manufacturer's specification, or welded or repaired in a way that does not meet OEM standard.

2. **Secondary Attachment (Safety Chain or Cable)**
   - **a)** No safety chain or cable shall be of improper type or inadequate capacity.
   - **b)** No safety chain or cable shall be abnormally worn, bent, broken, cracked, ineffective, insecure, of improper length, loose or missing.

3. **Pintle Hook, Pin Hitch or Coupler Hitch**
   - **a)** No hitch component shall be of improper type or inadequate capacity.
   - **b)** No pintle hook, pin hitch, coupler hitch, mounting or mounting fastener shall be bent, cracked, damaged, loose, missing or improperly repaired.
   - **c)** No cast or forged part shall be cracked, worn or repaired by welding.
   - **d)** No air chamber cushion or component shall be used that is damaged or leaking from an air chamber, air line or fitting, or that does not have a properly-functioning pressure protection valve installed.
   - **e)** No lunette (or draw bar eye) on a trailer shall be cracked or worn.

4. **Ball Type Hitch**
   - **a)** No component shall be of improper type or inadequate capacity.
   - **b)** No ball, neck or stem shall be bent, cracked, loose, worn or welded or repaired in a way that does not meet OEM standard.
   - **c)** No component in the ball deck area, ball coupler and latch shall be bent, cracked, inoperative, loose or welded or repaired in a way that does not meet OEM standard.

5. **Roll-Coupling Hitch**
   - **a)** No component shall be of improper type or inadequate capacity.
   - **b)** No roll-coupling hitch shall be bent, broken, cracked, or welded or repaired in a way that does not meet OEM standard.
   - **c)** No fastener shall be ineffective, loose, missing, or smaller than specified by the manufacturer or less than SAE grade 8 or ISO class 10.9.
   - **d)** No roll-coupling hitch shall fail to operate as intended.

6. **Automated Coupling Device**
   - **a)** No component shall be of improper type or inadequate capacity.
   - **b)** No component shall be bent, broken, cracked, damaged, inoperative, loose, missing or welded or repaired in a way that does not meet manufacturer standard.

7. **Fifth Wheel Coupler**
   - **a)** No component shall be of improper type or inadequate capacity.
   - **b)** No upper coupler (pick up plate) on a trailer shall be bent, cracked, damaged, loose, warped, worn or in a condition that the plate or king pin is weakened.
   - **c)** No upper coupler mounting bolt or rivet shall be broken, corroded, loose or missing.
   - **d)** No king pin on trailer (or towing vehicle) shall be bent, broken, cracked, deformed, loose, worn or repaired by welding.

e) The kingpin must be of correct length to fit properly into fifth wheel jaws.

f) No lower coupler top plate shall have any part that is broken, cracked, damaged, distorted, missing, worn or welded, or repaired in a way that does not meet manufacturer standard.

g) No latching mechanism shall have any component that is broken, cracked, inoperative, improperly adjusted, modified, seized or worn beyond manufacturer specified limit.

h) No lower coupler pivot (fifth wheel saddle) shall exceed manufacturer wear limits.

i) No slider assembly and locking mechanism shall have any component that is bent, broken, cracked, damaged, inoperative, insecure or missing.

j) No slider assembly and locking mechanism shall have fore/aft movement of the fifth wheel in slider that exceeds manufacturer specification or fails to lock securely.

k) No slider stop shall be insecure or missing.

l) No fifth wheel coupler air-operated control or feature shall fail to operate as intended by the manufacturer.

m) No upper or lower coupler attachment to frame component shall be broken, cracked, damaged, distorted, missing or welded or repaired in a way that does not meet manufacturer standard.

n) Upper or lower coupler attachment fastener shall not be cracked, ineffective, loose or ***missing***, and must meet OEM or industry standard.

8. Oscillating Fifth Wheel Coupler

a) No component shall be of improper type or inadequate capacity.

b) The components and structure of the oscillating fifth wheel coupler shall not be cracked, damaged, defective or worn beyond manufacturer specification.

9. Ball-Bearing Type Turntable on Trailer

a) No component shall be of improper type or inadequate capacity.

b) No component of a ball-bearing type turntable on a trailer shall be cracked, loose, missing or worn beyond manufacturer specification.

NSC STANDARD 11, PART B

Periodic Commercial Motor Vehicle Inspections (PMVI)

Introduction

Goals of the Standard

The objectives of the PMVI standard are to reduce collisions due to mechanical defects on vehicles, improve highway safety, and ensure the consistency of periodic inspections across Canada. The PMVI requirements represent one of the most significant amendments to the *National Safety Code* (NSC) since its inception.

Background

In 1988, CCMTA began work on a reciprocal agreement to promote uniformity and reciprocity among jurisdictions with inspection programs, and to encourage those provinces and territories without mandatory inspections for commercial vehicles to develop and implement such programs. In September 1991, the Council of Ministers Responsible for Transportation and Highway Safety signed a Memorandum of Understanding (MOU) on periodic motor vehicle inspections, which was designed to address the lack of uniformity and reciprocity with respect to mandatory periodic commercial vehicle inspection programs in Canada.

Under the MOU, all Canadian jurisdictions agreed to work towards implementing compulsory periodic inspection programs for commercial vehicles, and all committed to implementing the uniform PMVI standard which appears in the following pages. All jurisdictions further extend recognition and reciprocity to vehicles inspected pursuant to this standard from other jurisdictions party to the PMVI agreement. While Quebec was not a signatory to the agreement, it participated in the development of the standard and has entered into separate bi-lateral arrangements with the other Canadian jurisdictions to give effect to the reciprocity provisions contained in the agreement.

Application

This standard generally applies to all commercial vehicles as defined by the NSC: trucks, truck-tractors, semi- trailers, trailers and combinations thereof exceeding a registered gross vehicle weight of 4,500 kg (approximately 10,000 lbs), as well as buses designed, constructed and used for the transportation of passengers with a designated seating capacity of more than 10, including the driver, but excluding the operation for personal use.

It is important to note that for the purposes of the national PMVI program the above definition of a commercial vehicle applies. A number of jurisdictions may exempt or include specific types of vehicles from the requirements of their particular PMVI programs, (e.g. farm vehicles).

General Requirements

All commercial trucks, truck-tractors, semi-trailers, trailers and combinations thereof are required to be inspected to the standard at least annually. Buses are required to be inspected to the standard at least semi- annually.

Inspections must be conducted by an authorized inspector in a government establishment, or at an inspection facility approved by a government agency.

The status of implementation of the program including inspection cycles and weight thresholds appears below.

Mandatory Periodic Commercial Motor Vehicle Inspection Programs

Inspection Cycles by Jurisdiction

Jurisdiction	Weight Threshold (kg)	Inspection Interval (months)		
		Truck	Trailer	Bus
BC	8,201	6	6/12[1]	6
AB	11,794[2]	12	12	6
SK	11,794[2]	6/12[3]	12	6/12[4]
MB	4,500	12	12	6
ON	4,500	12	12	6[5]
QC	4,500	12	12	6
NB	4,500	12	12	6
NS	4,500	12	12	6
PE	4,500	12	12	6
NL	4,500	12	12	6
YT	11,794	6	12	6
NT[6]	4,500	12	12	6
NU[7]				

1 For BC – log & dump trailers: 6 months, other trailers: 12 months

2 For AB and SK – 11,794 kg for vehicles that operate solely within the province; vehicles travelling in other jurisdictions must comply with the inspection requirements applicable in the jurisdiction in which they are travelling.

3 For SK – truck-tractors: 6 months, other trucks: 12 months

4 For SK – school buses: 12 months, other buses: 6 months

5 For ON – Accessible vehicles and vehicles used for school purposes are inspected using the bus criteria

6 For NT – The program is administered by Alberta

7 For NU – PMVI Regulation yet to be implemented.

Procedures for Compliance

Jurisdictions which have mandatory inspection requirements for vehicles at the 4,500 kg level (**refer to the chart** *Mandatory Periodic Commercial Motor Vehicle Inspection Programs - Inspection Cycles by Jurisdiction*, above) expect all vehicles 4,500 kg and above to be inspected and PMVI-certified prior to departing from the base, or plate, jurisdiction. A unique feature of the agreement is that it permits vehicles from jurisdictions which have not yet legislated to the lower weight threshold to be voluntarily inspected in the base jurisdiction, or alternatively the vehicles can be inspected in another jurisdiction, and either inspection will be accepted by every other signatory jurisdiction.

All jurisdictions recognize inspections of each participating province or territory, and, except in rare circumstances, will accept the host jurisdiction's inspection to be equivalent to the inspection mandated by their legislation. This feature was built into the agreement to address the situation where a vehicle or trailer is not in its base jurisdiction when an inspection is due. The reciprocity provisions may be limited to six months for trucks and trailers which are base-plated in a jurisdiction with a six-month inspection cycle. Trucks and trailers base-plated or registered in a jurisdiction with a twelve-month inspection cycle do not have to be reinspected in jurisdictions with six-month inspection cycles. The twelve-month inspection decal will be recognized as satisfying the requirements of jurisdictions with six-month programs.

Following a "passed" inspection, a report will be provided to the operator and the inspector will affix a decal to the vehicle. The inspection report should be carried in the vehicle at all times (please check with jurisdiction). Regardless of the inspection result, copies of the completed inspection reports should also be kept at the carrier's principal place of business and the PMVI Facility, while another copy must be sent to the jurisdiction the inspection was conducted in within 15 business days. If a vehicle fails an inspection, jurisdictions generally permit the vehicle to be repaired on-site and re-inspected, or the vehicle can be towed or transported to another facility for repair and re-inspection.

The previous PMVI decal must then be removed and a current decal indicating compliance with the standard will be placed on the vehicle. The inspection decal will indicate either the date of inspection or the month and year of expiry. As per Canadian Council of Motor Transport Administrators agreed/approved policy, CCMTA policy, jurisdictions will be moving to a system where the month/year of expiry will be indicated on the decal.

CCMTA jurisdictions have further agreed the inspection decals issued pursuant to the PMVI program will be placed in the following locations:

- **for trucks and truck-tractors** – on the left-hand corner of the windshield or in a conspicuous position on the left-hand side of the cab;
- **for trailers and converter dollies** – on the left-hand side as close as practicable to the front of the equipment;
- **for buses** – on the lower right-hand corner of the windshield, to a fixed side window as close as practicable to the right front of the vehicle, or in a conspicuous position on the right side of the vehicle body close to the front of the vehicle.

In the event the vehicle fails the inspection, the necessary repairs must be undertaken to bring the vehicle into compliance with the standard prior to a decal being placed on the vehicle.

Canada/U.S. Reciprocity Issues

On September 23, 1991 the U.S. Federal Highway Administration (now the Federal Motor Carrier Safety Administration) recognized the inspection programs of every Canadian jurisdiction as being equivalent to the U.S. PMVI requirements. Canadian vehicles bearing a valid inspection decal from any Canadian jurisdiction already meet U.S. standards and are not required to be reinspected to U.S. requirements. Canadian carriers who have experienced any problems with having their Canadian PMVI inspection report or decal accepted by U.S. enforcement personnel are encouraged to report this problem to a jurisdictional representative.

All vehicles registered in Canada must be inspected to the Canadian PMVI inspection standard to benefit from the reciprocity provisions contained in the PMVI agreement. Canadian-registered vehicles bearing U.S. compliance stickers are not eligible for the reciprocity provisions contained in the Canadian agreement on PMVI. Some Canadian jurisdictions permit equipment, (i.e. trailer) which is out of the country when an inspection is due to be inspected to the U.S. standard. These vehicles have to be re- inspected to the Canadian standard in order for the inspection to be recognized by other Canadian jurisdictions.

For U.S. base-plated vehicles, Canadian jurisdictions will accept inspections conducted to the FMCSA standard, or an inspection conducted in a state which meets or exceeds the FMCSA standard. The FMCSA has determined the following have mandatory periodic inspection programs that are comparable to or as effective as the FMCSA program:

> Arkansas, California, Connecticut, District of Columbia, Hawaii, Illinois, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, , Pennsylvania, Rhode Island, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin and the Alabama Liquified Petroleum (LPG) Board.

U.S. carriers should ensure the inspection report and/or certificate of compliance with U.S. federal requirements or a recognized state program is carried in the vehicle at all times.

U.S. carriers are advised that a CVSA decal and/or inspection report based on a roadside inspection will not be accepted as proof of compliance with the requirements of the annual PMVI programs which have been implemented in Canada.

Canadian rules require buses to be inspected on a semi-annual basis. U.S. buses entering Canada should ensure their PMVI inspection was conducted in the previous six months.

Enforcement

Enforcement of the requirements of the PMVI program occurs on-road and during facility audits. For record keeping, proof of PMVI inspections, (i.e. inspection reports) may have to be kept up to a maximum of four years. Vehicle owners are reminded they should keep all proof of repair, (i.e. bill or invoice showing parts replaced) as these are required and verified during a facility audit when the maintenance program implemented by a vehicle owner is evaluated (see Maintenance Standard – 11A). In addition, the invoices are required in order to benefit from alternate inspection requirements for internal brake components.

It is an offence to operate a vehicle which has not been inspected pursuant to the PMVI program. Fines are imposed for non-compliance.

The Standard

The PMVI standard which has been agreed to by all jurisdictions appears below.

The standard contains 10 Sections organized by major vehicle systems, and an appendix on alternate fuel systems. A check mark (√) appears in the right column to indicate whether the inspection method and "reject if" criteria apply to a truck, trailer or bus. Trailer converter dollies must comply with the trailer requirements. For school bus inspections all of the applicable bus inspection criteria apply along with the additional requirements which are identified throughout the standard.

Within each of these sections the item and method of inspection are listed in the left column. The corresponding "reject if" criteria to be used by the inspecting mechanic/technician appears in the right column. The term "reject if" means a condition is observed or present which causes the vehicle to fail the inspection and no decal can be issued until the condition is corrected. Under the criteria of some items in the right column the words "hazardous condition" appear with some descriptive text in bold. The hazardous condition criteria are meant to alert the inspection mechanic/technician to a potentially dangerous or unsafe condition for which corrective action should be taken prior to the vehicle being returned to service.

The vehicle owner should be advised of the unsafe condition and that immediate repairs are required before the vehicle goes back on the road. In most jurisdictions the owner is allowed to have the repairs conducted at the inspection facility or garage or permitted to have the vehicle towed or transported to another facility for repairs. In some jurisdictions a "condemned" vehicle decal or sticker will be affixed to the vehicle. In other jurisdictions the rules require the garage to report the situation when an owner attempts to leave the facility with the vehicle without the necessary repairs being conducted. Please check jurisdictional policy and procedures if this situation is encountered.

Instructions for Technician-Inspector Conducting Inspections

Workplace Safety

Some of the inspection procedures described in this standard require the use of tools and equipment, and may involve safety hazards. It is assumed that the individual performing inspections according to this standard is fully familiar with all relevant workplace safety requirements and protocols.

No specific safety warnings are provided within this document. All relevant and appropriate safety precautions are the responsibility of the inspector/mechanic/technician and the workplace where the inspection is conducted.

Inspection Outcome Based on Current Vehicle Condition

A vehicle is to be inspected and determinations made about the pass or fail outcome of the inspection based on the condition of the vehicle at the time of inspection. The inspection is not intended to ensure that a vehicle remains in a safe condition for any particular period after the inspection.

Inspection Methods

The inspection of vehicle components and systems conducted to determine compliance with this standard consists mainly of visual inspection activities.

An inspection will also involve testing, removal and/or disassembly of components, measurements and other actions in certain cases. Whenever inspection of an item requires more than a visual inspection, additional inspection procedures are specifically provided for each item. These are displayed with the heading *"Additional Inspection Procedure(s):"* *"Optional Additional Inspection Procedure(s)" or Optional Inspection Procedure(s)",* appearing before the text describing the necessary steps.

The items that require inspection on any particular vehicle are based on the specific components and systems that were required by any applicable regulations, (e.g.: CMVSS or Provincial/Territorial legislation/regulation) applicable to the vehicle at the time it was manufactured, are ordinarily present on a vehicle; were present on a vehicle when that vehicle was manufactured, or are required for normal and safe vehicle operation. This standard is not meant to be used to identify all of the components or systems that are present on that vehicle.

Informational Notes

In many cases additional information is provided to clarify the inspection procedure or assist in consistent interpretation of the standard. These are displayed with the heading *"Note:"* appearing before the text.

Definitions

Various terms and acronyms are used throughout this standard. These terms have specific and consistent meanings as they relate to conducting periodic inspections, and identifying defective conditions. The purpose of defining these terms is to support consistent interpretation and application of the language used in this standard. The terms that are defined below are highlighted whenever they appear in each section to remind the reader that the condition is one of those that is specifically defined. This reminder also appears in the footer of each page of this document.

The meaning of each of the terms, for the purposes of conducting inspections according to this standard, is as follows:

"abnormally worn" – means unusual, excessive or exceptional wear of a vehicle component, indicative of the presence of some deterioration or defect in that component, or in a related part of a vehicle. This term is used selectively in this standard for a component or system where some wear is normal, and does not directly have any effect on vehicle safety. It is expected that the inspector knows the amount of wear, and the type of wear, that is typical (normal) based on the age and operation of a vehicle.

"ANSI" – means the American National Standards Institute, and standards developed by ANSI which have been adopted in jurisdictional equipment regulations.

"applicable requirements"– means the applicable requirements of the relevant jurisdiction, (i.e.: province or territory). This phrase is used in situations where one or more provinces, or territories, have a different standard, requirement or criteria. It is expected that the inspecting technician will know what the requirements are in the jurisdiction where they perform inspections.

"CMVSS" – means the Canadian Motor Vehicle Safety Standards (CMVSS) and their supporting Technical Standards Documents. These are Canadian manufacturing standards for vehicles which are developed and updated by Transport Canada and which are referenced in jurisdictional equipment regulations.

"CSA" – means the Canadian Standards Association, an association that develops standards that apply to vehicles, (i.e.: CSA B51, B109, B620, D250, D409, D435, D436 etc.). These standards are updated on a periodic basis and are often referenced in jurisdictional equipment regulations.

"CVSA" – means the Commercial Vehicle Safety Alliance, a voluntary organization comprised primarily of on-road enforcement officers from Canada, United States and Mexico. The CVSA administers the North American Standard Out-of-Service Criteria (OOSC) that are similar, but not identical, to the Hazardous Conditions defined in this standard. The basis for any differences in these conditions stems from the fact that the OOSC apply at a road side inspection while the Hazardous Conditions apply in a shop setting.

"damaged" – means any unintended condition, or condition caused by means other than normal use, that is likely to impair normal function.

"**FMVSS**" – means Federal Motor Vehicle Safety Standards. These are U.S. manufacturing standards for vehicles which are developed and updated by the National Highway Traffic Safety Administration of the Department of Transport.

"Hazardous Condition" – means a condition that is so dangerous or unsafe that it requires corrective action before the vehicle can return to service and be permitted to operate. A vehicle with a hazardous condition is considered too unsafe to be driven and in some jurisdictions driving a vehicle with a hazardous condition is prohibited. (*Note:* In most cases driving a vehicle with a condition that causes it to fail an inspection is a violation. Driving a vehicle with a hazardous condition is an additional and more serious offence.)

"industry standard" – means installation, modification or repair methods described in industry-accepted recommended practices published by the Society of Automotive Engineers (SAE), recommended practices published in the Technology and Maintenance Council (TMC) of the American Trucking Associations, standards developed and published by Canadian Standards Association (CSA), and other similar documents from similar organizations.

"inoperative" – means a vehicle component or system does not operate the way: it ordinarily operates; it operated when the vehicle was manufactured, or it is required to operate for normal and safe vehicle operation.

"insecure" – means that an item is beginning to become detached due to deterioration of the means of mounting. This can also mean that a method of attachment has been used that is in itself unsafe by being unable to withstand normal vehicle operation, or is not at least equivalent to the OEM standard method of attachment.

"**loose**" - means that an item is detached, or no longer fully attached, due to failure or deterioration of one or more means of attachment.

"**missing**" – means that an item is absent (such as 'removed' or 'detached') that: is ordinarily present on the vehicle; was present on the vehicle when the vehicle was manufactured, or is required for normal and safe vehicle operation.

"**manufacturer**" – means the manufacturer of the vehicle, the manufacturer of a major vehicle component or system, or manufacturer of aftermarket parts that are direct replacements for OEM parts. Examples of major components or systems include, but are not limited to: engines, transmissions, axles, brake systems, steering systems, suspension systems, etc.

"OEM" – means 'original equipment manufacturer' and refers to the 'brand name' manufacturer of the vehicle.

"OEM standard" – means the manufacturing methods, component or assembly quality, and performance level, set by the manufacturer of a vehicle, or vehicle component, to ensure a vehicle is able to safely perform at its intended level, and to ensure the vehicle complies with the relevant CMVSS (or FMVSS) requirements. It includes component quality, performance levels, repair methods, durability, safety, and the service methods outlined in the warranty and service literature provided for the use and maintenance of a vehicle. Parts supplied by OEM, and established aftermarket manufacturers of parts intended for direct replacement of OEM parts, are generally considered to meet OEM standard.

"operate as intended" – means the manner in which a vehicle component or system ordinarily operates; it operated when the vehicle was manufactured, or is required to operate for normal and safe vehicle operation.

"reject if" – means a condition if present at time of inspection, or if present after repairs, results in a failed inspection.

"**rust jacking**" – means a build up of rust that results in lifting, separation or bulging of components originally designed to remain in contact with each other, (i.e.: brake linings, suspension, frame and body components).

"SAE" – means the Society of Automotive Engineers.

Categorization of Fluid (Liquid) Leaks

Every reference to a fluid (or liquid) leak listed as a reject condition is categorized with respect to the level of severity of the leak. The level of severity is categorized as either level 1, level 2, or level 3, and each category is defined below. A vehicle with a leak that meets the defined level, or leaking more severely than this level, will cause the vehicle to fail inspection.

"level 1 leak" – means seepage of fluid that is not great enough to form drops

"level 2 leak" – means seepage of fluid that is great enough to form drops, but not great enough to cause the drops to fall during inspection

"level 3 leak" – means seepage of fluid that forms drops and those drops fall during inspection

Illustrations and Diagrams used in the Standards

In an effort to improve the consistency and uniformity of the inspection process a series of diagrams and illustrations are used in this version of the standard. When a diagram or illustration is in conflict with a legislated or regulatory requirement the latter prevails.

Measurements and Tolerances

Many of the inspection items and reject conditions involve measurements of mass or weight, pressure and distance. To achieve consistent application of each criterion that involves such a measurement, it is necessary to address the degree of precision associated with such measurements. In determining the appropriate level of precision or tolerance, it is also necessary to consider the measuring tools that will be commonly used to make each of these measurements.

The level of precision associated with any measurement is defined by the tolerance stipulated for that measurement. Tolerance is expressed as a plus or minus (+/-) value. The actual window of precision is double the value of the tolerance. For example 20 kg with a tolerance of +/- 0.5 kg, means that the precision of the measurement is to the nearest 1 kg. Similarly, 50 mm (+/- 1 mm), means a value of 49 to 51 mm. The measurement tolerance of 1 mm renders a measurement precision of within 2 mm.

Given the similarities in the measurements that appear most frequently in this standard, standard tolerances are given for most of these measurements. The standard tolerances that are listed below apply in all cases where no additional tolerance is provided. In cases where the standard tolerance does not apply, the tolerance for that criterion is provided adjacent to the measurement. Whenever a tolerance is provided adjacent to a measurement, the tolerance stipulated with the measurement is to be used in place of the standard tolerance listed below.

Measurements of distance are the most common in this standard and also have a significant variance in terms of the range of distance that is used. Four different standard tolerance values are used for distance.

Pressure

Metric ("SI" or "International System of Units") pressure value = *kilopascals (kPa)*, Imperial (American) pressure value = *pounds per square inch or pounds/inch² (psi)* **Conversion Factors:** *1 kPa = 0.145 psi, 6.9 kPa = 1 psi*
Standard tolerance for all pressure values: *+/- 5 kPa (0.5 psi)*

Mass (weight)

Metric (SI) mass value: *kilogram (kg)*
Imperial (American) mass value: *pound (lb.)*
Conversion Factors: *1 kg = 2.2 lb., 0.454 kg = 1 lb.*
Standard tolerance for all mass (weight) values: *+/- 0.5 kg (1 lb.)*

Distance

Metric (SI) distance value: *millimetre (mm)*

Imperial (American) distance value: *inch (in.)*

Conversion Factors: *1 mm = 0.039 in., 1 in. = 25.4 mm* **Standard tolerance for distance value ranges**

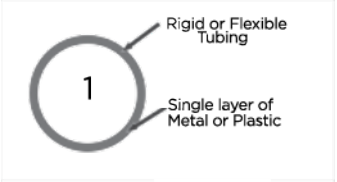
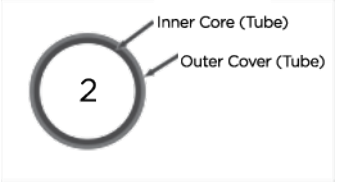
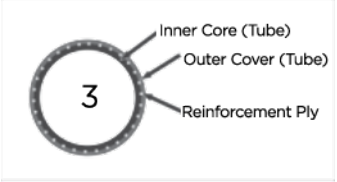
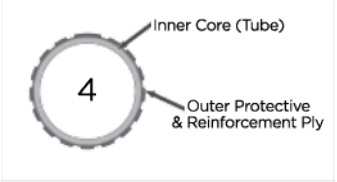
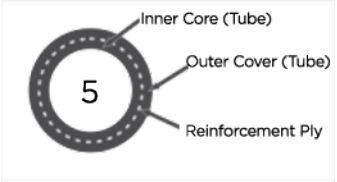
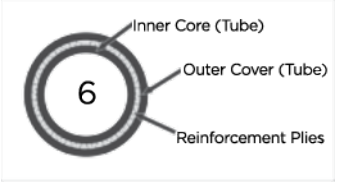
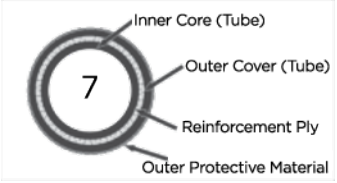
Tolerances for distance measurements vary based on the type and precision of the criterion as follows:

1. **Large distance measurements of greater than 25 mm:** tolerance is +/- 5 mm (accuracy is to the nearest 10 mm)
2. **Short distance measurements of 1 to 25 mm, where the distance value is expressed as a whole mm:** *tolerance is +/- 0.5 mm (accuracy is to the nearest 1 mm)*
3. **Precise short distance measurements of 1.0 to 25.0 mm, where the distance value is expressed as one- tenth of a mm:** *tolerance is +/- 0.05 mm (accuracy is to the nearest 0.1 mm)*
4. **Micro distance measurements of less than 1 mm:** *tolerance is +/- 0.005 mm (accuracy is to the nearest 0.01 mm)*
5. For the purpose of these tolerances, the following equivalent values are used:

Comparable Measurement Tolerances

Tolerance in metric measurements	Tolerance in Imperial measurements
+/- 5 mm	+/- 0.125 (1/8) in.
+/- 0.5 mm	+/- 0.02 in.
+/- 0.05 mm	+/- 0.002 in.
+/- 0.005 mm	+/- 0.0005 in.

Identification of Defective Conditions of the Types of Hose, Tubing and Lines used on Vehicles

	Characteristics	Defective Condition
	Type 1 – Copper, Steel or plastic tubing used for liquid or vapour. Made of a single layer of material.	Damage is visible on the outside that is reducing the wall thickness.
	Type 2 – Plastic (usually Nylon) tubing commonly used in air brake systems. No reinforcement ply. Inner core and outer cover are usually different color.	Inner core becomes visible from the outside, as shown by color change.
	Type 3 – Plastic (usually Nylon) tubing commonly used in air brake systems. With reinforcement ply. Inner and outer core are different color. (*Note:* Type 2 and 3 may appear identical externally.)	Reinforcement ply or inner core is visible from the outside, as shown by color change.
	Type 4 – Stainless steel outer cover with inner layer of tubing.	Damage through the outer cover.
	Type 5 – Synthetic rubber hose with inner reinforcement ply.	Wear or damage exposing the reinforcement ply.
	Type 6 – Synthetic rubber hose with multiple reinforcement plies.	Wear or damage exposing the outer reinforcement ply.
	Type 7 – Flexible hose with one or more reinforcement plies that may be fabric or steel, and an outer protective layer.	Wear or damage through the outer protective layer and outer cover, exposing a reinforcement ply.

Section 1 – Power Train

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Accelerator Pedal/Throttle Actuator *Additional Inspection Procedure(s):* With engine running, press and release the accelerator pedal. Check engine response.	**Truck|✓|** Trailer| | **Bus|✓|**
a) pedal/actuator	a) binding, ***inoperative***, ***missing***, or engine fails to respond normally modified, or repaired by welding
b) anti-slip feature	b) ineffective, ***loose*** or ***missing***
c) throttle position sensor and connections	c) corroded, ***inoperative***, ***insecure*** or improperly connected
d) mount	d) deteriorated or weakened by corrosion, or ***insecure***
e) linkage/cable	e) binding, broken or ***insecure*** deficient part is used that is not equivalent to ***OEM standard*** throttle cable is binding, frayed or seized
f) springs	f) broken, corroded, deteriorated, ***missing***, stretched or improper type
	Hazardous Condition(s) **i. engine fails to return to idle** ***ii.*** **throttle position sensor is *inoperative*** ***iii.*** **pedal is *missing***
2. Exhaust System *Additional Inspection Procedure(s):* Inspect with engine running. *Note*: Minor leaking and resulting soot tracks are normal at joints in diesel exhaust systems.	**Truck|✓|** **Trailer|✓|** **Bus|✓|**
a) manifold	a) broken, cracked, leaking, ***loose*** or ***missing***
b) muffler *Note*: The ***OEM*** muffler or one that meets the ***OEM standard*** is required on every vehicle.	b) cracked, perforated or leaking bypassed, disabled, ***missing*** or removed deficient part is used that does not meet ***OEM standard*** patched in any manner other than by welding

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) resonator	c) cracked, leaking, ***missing*** or perforated patched in any manner other than by welding
d) exhaust pipe	d) cracked, collapsed or pinched, ***missing***, perforated or leaking patched in any manner other than by welding
e) mounting hardware	e) broken, ***insecure*** or ***loose***, or ***missing*** deficient part is used that does not meet ***OEM standard***
f) heat shields *Note:* All heat shields provided by the ***manufacturer***, installed as part of a retrofit for certain fuels, or installed for specialty applications, are considered required and must remain functional as intended.	f) a required heat shield is broken, ***insecure*** or ***loose***, or ***missing***
g) location	g) any part of the exhaust system is less than 50 mm away from a brake system component, any combustible material, or any part of the fuel system except a diesel or gasoline fuel tank, and is not protected by a heat shield any part of the exhaust system is less than 25 mm away from a diesel or gasoline fuel tank and is not protected by heat shield any exhaust component passes through an occupant compartment
h) turbocharger	h) leaking exhaust gases ***level 2 leak*** of engine oil
i) exhaust system and pipe termination *Note:* Also applies to the exhaust system of any auxiliary equipment. On a school bus, inspection must be conducted according to the ***applicable requirements*** and the applicable ***CSA*** D250 Standard.	i) exhaust gases are expelled into cab, passenger compartment, and/or sleeper exhaust gases are expelled within the perimeter of the cab, passenger compartment, and/or sleeper on a school bus, does not terminate as required by jurisdiction and applicable ***CSA*** D250 Standard

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. exhaust leak, other than a minor leak at a joint, within the perimeter of the cab, passenger compartment, and/ or sleeper** **ii. perforation or separation of any exhaust system component** **iii. any part of the exhaust system has caused, or is likely to cause, burning or charring damage to electrical wiring, fuel system or any other combustible part** **iv. on a bus with a gasoline fuel system, the exhaust system is leaking or discharging more than 160 mm forward of the rear most part, and discharging forward of any door or window designed to be opened (except door or window intended solely for emergency use)** **v. on a bus with a diesel, pressurized, or liquefied fuel system, the exhaust system is leaking or discharging more than 400 mm forward of the rear most part, and discharging forward of any door or window designed to be opened (except door or window intended solely for emergency use)**
3. Emission Control Systems and Devices *Note:* **Requirements Vary** - The emission control devices and system required on any particular vehicle will vary based on the vehicle's date of manufacture. **Possible Roadside Violation** - In some jurisdictions a vehicle will fail an inspection if the vehicle is not equipped with either a National Emissions Mark (Canada) or U.S. Emissions Control Information Label. If the emission label is not present, advise vehicle owner that the vehicle may violate a roadside inspection requirement based on jurisdictional regulation. Further questions or issues are to be directed to the relevant jurisdictional authorities.	
a) engine malfunction indicator lamp (MIL) ("check engine lamp") *Additional Inspection Procedure(s):* Cycle the ignition off and on and check the status displayed by the lamp.	a) **lamp fails to illuminate during bulb-check, is ***missing*** or has been disabled **lamp remains on after bulb-check to indicate a malfunction **Each of the conditions above marked with a double asterisk (**) are to be recorded on the inspection report, however a vehicle is not rejected for this condition alone.**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) exhaust gas recirculation (EGR) system *Additional Inspection Procedure(s):* Visually inspect system using ***OEM*** service information as a guide.	b) there is evidence that any part of the EGR system has been bypassed, defeated, disabled, improperly modified, removed, or is ***missing***
c) catalytic converter	c) cracked, leaking, ***missing***, or perforated patched in any manner other than by welding there is evidence that the catalytic converter has been defeated or disabled
d) diesel particulate filter (DPF) and regeneration system *Additional Inspection Procedure(s):* Visually inspect system using ***OEM*** service information as a guide.	d) there is evidence that any part of the DPF or any related regeneration system has been bypassed, defeated, disabled, improperly modified, removed, or is ***missing***
e) diesel exhaust fluid (DEF) system *Additional Inspection Procedure(s):* Visually inspect system using ***OEM*** service information as a guide.	e) storage tank is ***damaged***, ***insecure*** or ***missing*** ***level 2 leak*** of DEF at any location in the DEF system storage tank filler cap is ***missing***
	Hazardous Condition(s) **i. any part is in a condition where it appears likely to become detached, or imminent failure appears likely**
4. Drive Shaft and Differential *Additional Inspection Procedure(s):* Inspect using hand pressure and suitable tools.	**Truck|✓|** Trailer| | **Bus|✓|**
a) u-joint/CV joint	a) rotational free-play is present horizontal or vertical movement within the u-joint can be detected by hand u-joint cap, cap fastener or fastener locking device is ***loose*** or ***missing*** u-joint bearing seal is ***damaged***, ***missing*** CV joint protective boot is ***loose***, ***missing***, or torn lubricant is leaking from CV joint

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) drive shaft yoke *Note:* This includes: slip yoke, shaft yoke, input yoke, output yoke, tube yoke and end yoke.	b) cracked mounting hardware is loose yoke can be moved by hand vertically or horizontally more than 3 mm yoke end fitting has broken, ***loose***, or ***missing*** fastener
c) drive shaft tube	c) crack in weld or tube twisted tube
d) drive line attaching hardware	d) ***loose***, ***missing*** or stripped
e) centre (carrier) bearing and mount	e) cracked, ***damaged***, ***loose***, ***missing*** or ***abnormally worn*** ***insecure*** mounting or mount is abnormally deteriorated
f) slip joint	f) radial wear at joint exceeds ***manufacturer*** specification
g) hanger bracket and hardware, and metal guard or catch -Where equipped from O.E.M.	g) cracked, ***loose***, ***missing*** mounted in a manner that fails to prevent drive shaft from falling to ground on a bus, metal floor guard is ***missing*** or fails to protect occupant compartment
h) differential *Additional Inspection Procedure(s):* With vehicle raised, check differential for condition and proper functioning	h) missing or loose fasteners, level 2 leak, not functioning as intended

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. any part is in a condition where it appears likely to become detached, or imminent failure appears likely** **Driveline/Driveshaft** **ii. a yoke end has a visible crack** ***iii.* yoke mounting, or end fitting fastener hardware, is broken, *loose*, or *missing*** **Universal Joint** **iv. vertical movement between opposing yoke ends is greater than 3.0 mm** **v. bearing cap, or bearing cap bolt, is broken, *loose*, or *missing*** **Centre Bearing (Carrier Bearing)** **vi. mounting bracket, bracket bolt or hardware is broken, *loose*, or *missing*** **vii. mounting bracket has a crack longer than one-half of the original bracket width** **viii. vertical movement of the shaft in the centre bearing carrier is greater than 13 mm** **Drive Shaft Tube** **ix. twisted, or has a crack in the metal or any weld longer than 6 mm**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
5. Clutch and Clutch Pedal *Additional Inspection Procedure(s):* Inspect clutch operation and adjustment according to *manufacturer* service instructions.	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation	a) fails to operate in the manner prescribed by the *manufacturer*
b) adjustment	b) is not adjusted according to *manufacturer* instructions
c) pedal and linkage	c) broken, cracked, *loose*, *missing* or *abnormally worn* welded or repaired in a way that does not meet *OEM standard* deteriorated or weakened by corrosion, or *insecure* anti-slip feature is ineffective, *loose* or *missing*
d) clutch pedal hydraulic system	d) fluid reservoir is below minimum level indicated by *manufacturer* or *level 2 leak* of fluid at any point
	Hazardous Condition(s) **i. clutch fails to disengage transmission**
6. Engine/Transmission Mount	**Truck|✓|** Trailer| | **Bus|✓|**
a) condition/attachment	a) bent, *loose* or *missing* a bolt or insulator is *loose* or *missing* an insulator is broken, deteriorated or swollen abnormally a mount or part of a mount is replaced with a product or material that is not equivalent to *OEM standard*
	Hazardous Condition(s) **i. imminent failure of a mount or bolt appears likely**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
7. Engine Shut Down *Additional Inspection Procedure(s):* Test operation according to ***manufacturer*** service instructions.	**Truck|✓|** Trailer| | **Bus|✓|**
a) ignition switch	a) engine fails to shut down when ignition switch is turned off
b) mechanical shut down	b) engine fails to shut down when device is actuated
8. Engine Start Safety Feature *Additional Inspection Procedure(s):* Test operation to confirm engine start is prevented according to ***manufacturer*** service instructions.	**Truck|✓|** Trailer| | **Bus|✓|**
a) ignition interlock operation *Note*: This includes neutral and clutch safety switches. Effective May 30, 2005 ***CMVSS*** 102 (2) requires all vehicles (including buses) equipped with an automatic transmission to be equipped with a neutral safety switch. ***CMVSS*** 102 (7) requires trucks (excluding buses) with a GVWR at or below 4,536 kg to be equipped with a clutch safety switch.	a) fails to prevent engine start as designed
9. Gear Position Indicator	**Truck|✓|** Trailer| | **Bus|✓|**
a) location	a) cannot be viewed by a person seated in driver position
b) operation	b) indicator fails to indicate selected gear on a vehicle equipped with an automatic transmission
c) gear shift or gear selector pattern illustration label (embossment etc.)	c) illegible or ***missing***
10. Engine or Accessory Drive Belt *Note:* This section applies only to a drive belt directly connected to the engine.	**Truck|✓|** Trailer| | **Bus|✓|**
a) condition	a) broken, frayed, ***missing*** or oil-contaminated crack exceeds ***OEM standard*** or ***industry standard***
b) adjustment/tension *Additional Inspection Procedure(s):* Check the tension of drive belt(s) according to ***OEM*** service instructions, or when no particular instructions are given, as shown below. *Note:* Normal belt deflection should result in 1 mm of deflection for each 60 mm of span length, when 5 to 10 kg of force is applied to the belt.	b) belt is so loose it is likely to slip, or so tight it is likely to cause bearing damage the belt tensioner does not function as intended
c) drive belt pulley	c) bent, broken, cracked or out of alignment

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
11. Hybrid Electric Vehicle & Electric Vehicle Power Train System *Additional Inspection Procedure(s):* Only a person who is trained on the operation and potential hazards of hybrid or electric vehicle systems can safely conduct an inspection of the items listed below. Visually inspect all accessible parts according to the vehicle *manufacturer* service instructions.	
Additional Inspection Procedure(s): Disassembly of system components may be required. *Note:* Consult with the *manufacturer* service instructions and vehicle maintenance records to confirm inspection and maintenance has been performed as recommended by the *manufacturer*. No disassembly of the system is required to complete this inspection when records of recommended maintenance and inspection are provided. When any damage or abnormal condition is found, refer to the *manufacturer* service instructions to determine whether or not to reject the vehicle or identify a Hazardous Condition. When records of recommended maintenance or inspection are not provided, system components must be disassembled as necessary by a qualified person to conduct a full inspection.	
a) electrical system connections *Additional Inspection Procedure(s):* Visually inspect all accessible electrical connections using manufacturer service information as a guide.	a) connector is *damaged* or corroded in a way that exposes any conductor connector is *damaged* or *insecure* connector is unable to properly connect or lock into place
b) wiring *Additional Inspection Procedure(s):* Visually inspect all accessible electrical wiring using *manufacturer* service information as a guide.	b) corroded or *damaged* in a way that exposes any conductor insulation is chafing due to abrasive contact with any vehicle part
c) traction motor/generator *Additional Inspection Procedure(s):* Visually inspect the drive motor/generator using *manufacturer* service information as a guide.	c) *damaged*, *insecure* or *loose* indication of burning or overheating drive component abnormally worn

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) traction battery *Additional Inspection Procedure(s):* Visually inspect the battery using ***manufacturer*** service information as a guide.	d) ***damaged***, ***insecure*** or ***loose*** indication of burning or overheating
e) battery storage area *Additional Inspection Procedure(s):* Visually inspect the battery storage area using ***manufacturer*** service information as a guide.	e) ***damaged*** or structurally weakened
f) self-diagnostic/status indicator *Additional Inspection Procedure(s):* Visually inspect the system indicator(s) using ***manufacturer*** service information as a guide.	f) there is any condition indicated by the system that is defined by the ***manufacturer*** as being unsafe
	Hazardous Condition(s) **i. any sign of shorting, arcing, or hot spot, at or near, any electrical component or wiring** **ii. traction battery is *damaged* or leaking**
12. Gasoline or Diesel Fuel System *Note:* This includes the fuel system for any auxiliary equipment or device.	**Truck|✓| Trailer|✓| Bus|✓|**
a) filler cap	a) allows spillage, improper type or ***missing***
b) tank, filler neck/tube and vent tube	b) cracked, ***insecure*** mounting or weld is broken not intended for the storage of automotive fuel improper vent repair to any non-metallic tank
c) tank mount and strap	c) broken, cracked, ***loose*** or ***missing*** deficient part is used that does not meet ***OEM standard*** fastener is ***loose*** or ***missing***
d) line, hose, fitting and connection *Note*: Refer to correct type of hose or tube and the related defective condition(s) as defined in the chart in the definition section of this standard.	d) chafing, cracked or ***insecure*** deficient product is used that does not meet ***OEM standard*** any section of a line, hose or tube is worn or ***damaged*** as shown in the chart on page 55*
e) fuel pump	e) ***damaged*** or ***insecure***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) leakage	f) *level 1 leak* of gasoline anywhere in a gasoline fuel system *level 2 leak* of diesel fuel anywhere in a diesel fuel system
	Hazardous Condition(s) **i. *level 1 leak* of gasoline in gasoline fuel system** **ii. *level 2 leak* of diesel fuel in diesel fuel system** ***iii.* fuel cap is *missing*** **iv. fuel tank is *insecure* (a tank mounted with cushioning devices will have some movement)**
13. Pressurized or Liquefied Fuel System (LPG, CNG and LNG)	
Additional Inspection Procedure(s): Inspect pressurized fuel systems according to the items listed below unless additional inspection is required by the applicable requirements of the jurisdiction where the inspection is being conducted. In some jurisdictions a full inspection of a pressurized fuel system may be conducted at a different time, as part of a different inspection program, or by a person with different qualifications. *Note:* **Refer to Appendix A for detailed criteria for inspecting Liquefied Petroleum Gas (LPG or Propane), Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG).** When such an inspection is conducted, follow the applicable requirements of the relevant jurisdiction, or refer to the appropriate sections in Appendix A, as required.	**Hazardous Condition(s)** **Any cause for rejection of a LPG, CNG or LNG system, except those shown with a double asterisk, will also mean an automatic "Hazardous Condition" of that vehicle. The cause for rejection must be corrected and the vehicle "passed" before it may be operated on the highway.**
a) regulatory authority decal	a) **decal is not displayed **an incorrect decal is affixed to vehicle **information on decal is not readable **Despite the note above, the conditions listed here with a double asterisk (**) are not Hazardous Conditions**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) pressure vessel (tank or cylinder) and valves, location and mounting	b) pressure vessel (tank or cylinder) is ***insecure*** or ***loose***, or welds are broken welding has been done anywhere on a pressure vessel (tank or cylinder) except on saddle plates or bracket tank or cylinder valve and r connections are ***insecure*** or ***loose*** tank or cylinder valve and connections are not protected from damage due to stationary objects, or objects from the road pressure vessel (tank or cylinder) is located above the vehicle or projects beyond vehicle side, ahead of front axle or behind rear bumper any part of exhaust system is less than 200 mm away from any part of the fuel system and is not protected by shields a heat shield is less than 25 mm away from any fuel system component
c) pressure vessel (tank or cylinder) ground clearance *Note:* Includes any attached fitting or valve the appropriate sections in Appendix A, as required.	c) distance to ground from bottom of pressure vessel (tank or cylinder) is less than minimum ground clearance shown below pressure vessel (tank or cylinder) located between axles wheelbase of 3225 mm or less: minimum ground clearance = 170 mm wheelbase over 3225 mm: minimum ground clearance = 220 mm pressure e vessel (tank or cylinder) located behind rear axle minimum ground clearance = 200 mm any portion of the tank or cylinder protrudes past the plane formed by the bottom of the rear most tires and the lowest most rearward part of the vehicle.
d) pressure vessel (tank or cylinder) sub-frame	d) any modification has been made to pressure vessel (tank or cylinder) carrier or sub-frame, that does not meet ***OEM standard*** or ***industry standard***
e) pressure vessel (tank or cylinder) information plate and data *Note:* Pressure vessel installed as part of an ***OEM*** vehicle gaseous fuels installation may not have an information plate affixed to it.	e) name plate is missing or illegible, or data is not shown on plate (see note below) *Note:* When information plate is illegible or missing, record it on the inspection report, however do not reject the vehicle for this condition alone.
f) pressure vessel (tank or cylinder) filler cap	f) protective filler cap not secured to filler valve or vehicle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
g) pressure vessel (tank or cylinder) remote filler box	g) not adequately sealed to prevent vapour migration into vehicle interior (trunk etc.)
h) main shut-off valve	h) valve is not readily accessible (cannot be reached)
i) corrosion protection	i) protective coating or material is *damaged*, or is missing from externally mounted pressure vessel (tank) or attachment
j) fitting, hose, piping and tubing	j) is *insecure*, or any anchor support is *damaged* or *missing* is not protected against corrosion grommet is *damaged* or *missing* components in trunk area not protected against luggage
k) fuel system leakage	k) any fuel system leak is detected
l) pressure relief valve	l) incorrectly installed or *missing*
m) supply lock off valve (LPG)	m) does not operate as originally intended
n) excess flow valve (LPG) and cap	n) *missing*
o) vehicle chassis and under-body	o) a structural member has been altered in any manner that does not meet *OEM standard* or *industry standard*
	Hazardous Condition(s) **Any cause for rejection of a LPG, CNG or LNG system, except those shown with a double asterisk, will also mean an automatic "Hazardous Condition" of that vehicle. The cause for rejection must be corrected and the vehicle "passed" before it may be operated on the highway.**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

Section 2 – Suspension

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Suspension & Frame Attachments *Note*: This section applies to all types of suspension. ***Manufacturer*** welding of components is a normal part of many manufacturing processes and is distinct from welding to modify or repair a part. *Additional Inspection Procedure(s):* Raise the vehicle as necessary to access the suspension components.	**Truck|✓| Trailer|✓| Bus|✓|**
a) vehicle ride height *Additional Inspection Procedure(s):* Check ride height while vehicle is parked on a flat level surface.	a) suspension is sagged so that the vehicle ride height, on a vehicle other than a bus, is more than 50 mm from manufacturer specified height when measured at the tire centreline one side of the vehicle is more than 50 mm, higher or lower than the other when measured at the tire centreline on a bus, step height at an entrance door is 25 mm above or below the range of step height specified by the ***manufacturer***
b) frame bracket, mounting bracket and hanger *Note*: Some trailer suspension systems use a "cross tube brace", consisting of a pipe positioned between the spring hangers on either side of the vehicle. The "cross tube brace" is used to position the suspension for shipment and installation and has no bearing on the alignment or the function of the suspension.	b) broken, cracked, ***damaged***, ***loose***, ***missing***, or perforated due to corrosion or deterioration welded or repaired in a way that does not meet ***OEM standard***
c) mounting fasteners	c) broken, cracked, ***loose*** or ***missing***
	Hazardous Condition(s) **i. an axle has shifted or is able to shift from its normal position** ***ii.*** **any attaching component is broken, cracked, *loose* or *missing*** **iii. the condition of the suspension system allows a tire to contact any part of the vehicle frame or body**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
2. Axle Attaching & Tracking Components *Note*: This section applies to all types of suspension. *Additional Inspection Procedure(s):* Raise the vehicle as per manufacturer procedures to access the suspension components. Inspect using hand pressure and suitable tools.	**Truck|✓|** **Trailer|✓|** **Bus|✓|**
a) axle attachment, axle saddle	a) bent, broken, cracked, ***loose*** or ***missing*** axle has shifted from its normal position
b) bushing (rubber or composite material)	b) ***loose*** or shifted out of place, ***missing***, worn beyond ***manufacturer*** specification wear or damage permits axle or wheel to shift out of position
c) suspension connecting component, (e.g.: arm, torque rod, radius rod, strut, track rod, control arm) *Note*: Some suspension connecting components are supplied as unfinished two-piece assemblies that require welding once the required length is established. This type of welding is not cause for rejection.	c) bent, broken, cracked, ***loose***, ***missing***, worn beyond ***manufacturer*** specifications, or perforated due to corrosion or deterioration welded or repaired in a way that does not meet ***OEM standard*** wear or damage permits axle or wheel to shift out of position
d) stabilizer/anti-sway bar or link	d) bent, broken, cracked, ***loose***, ***missing*** or worn beyond ***manufacturer*** specification welded or repaired in a way that does not meet ***OEM standard***
e) equalizer or "walking" beam	e) broken, cracked or bushing mounting holes are elongated welded or repaired in a way that does not meet ***OEM standard*** wear in suspension allows tires to contact frame axles do not align correctly on a truck or truck-tractor, "walking" beam cross tube bushing has more than 7 mm clearance

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. an axle has shifted or is able to shift from its normal position** **ii. any attaching component is broken, cracked, *loose* or *missing*** **iii. the condition of the suspension system allows a tire to contact any part of the vehicle frame or body**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
3. Axle & Axle Assembly	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition	a) axle is bent or *damaged* axle material or a weld is cracked *loose* or shifted out of normal position welded or repaired in a way that does not meet *OEM standard*
	Hazardous Condition(s) **i. axle has shifted or is able to shift from its normal position** **ii. axle material or a weld is cracked**
4. Spring & Spring Attachment	**Truck|✓| Trailer|✓| Bus|✓|**
a) leaf spring	a) any spring leaf is broken, cracked, *missing*, or is shifted out of place any spring leaf is worn more than 3 mm in the hanger contact area or where leaves are in contact with each other leaf is shifted and contacting another vehicle part
b) composite spring *Note*: Some change in the appearance of a composite spring, described as "fuzzing" is normal as the spring ages. A crack of a composite spring is a separation in any axis which passes completely through the spring.	b) worn more than 3 mm in load bearing area broken, crack of any length visible on both sides of a spring, splintered, delaminating or not the same type on each side of vehicle
c) shackle, pin, bushing *Additional Inspection Procedure(s):* Check the wear of the spring pins according to *manufacturer* service instructions.	c) broken, *loose* or *missing* shifted out of normal position fastener *loose* or *missing* **vertical movement of a spring or shackle against a spring pin exceeds *OEM standard* or if not available; wear exceeds limit below** For pin size of 12.5 mm to 25 mm: wear limit is 2.0 mm For pin size of 25 mm to 45 mm: wear limit is 3.0 mm
d) U-bolt & hardware	d) broken, cracked, *loose, missing*, or shifted out of normal position welded or repaired in a way that does not meet *OEM standard*

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) spring contact area of hanger (slipper) *Note*: Wear plates are permitted by some manufacturers in the spring contact (slipper) area of fabricated hangers.	e) repaired by welding (except installation of wear plates) spring load bearing area is worn more than 3 mm
f) coil spring	f) broken or shifted out of normal position spacer is used between the coils of a spring
g) torsion bar	g) broken, cracked or *missing* *repaired by welding*
h) bump pad	h) *loose, missing* or split
i) rubber load cushion	i) rubber block or vertical pin is broken, *loose*, *missing* or split
	Hazardous Condition(s) **i. any metal spring leaf is *missing*, or has leaves shifted out of place** **ii. the main leaf or more than 25% of the leaves of a metal leaf spring are cracked** **iii. spring leaf is shifted and in contact with a rotating part** **iv. a composite spring is broken, has a crack of any length intersecting with another crack, or a crack longer than ¾ the length of the spring** **v. torsion bar is broken or cracked** **vi. coil spring is broken** **vii. a rubber load cushion is *missing* or separated**
5. Air Suspension *Note*: This section applies to fixed axle and liftable axle suspension systems. *Additional Inspection Procedure(s)*: Check with air system at normal operating pressure, liftable suspension in lowered position, and with supports placed under the vehicle to protect against dropping of the vehicle in the event of air loss. Maintain appropriate air pressure in any liftable axle system.	**Truck|✓| Trailer|✓| Bus|✓|**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) ride height	a) height is 50 mm above or below *OEM* specification vehicle leans to one side or air spring pressure is unequal
b) air spring (air bag)	b) improperly seated, *missing*, patched or reinforcing ply is exposed due to damage or deterioration air leak
c) air spring base, mounting plate	c) broken, cracked or *missing* perforated by corrosion or deterioration welded or repaired in a way that does not meet *OEM standard*
d) air system *Additional Inspection Procedure(s):* Inspect the function and operation of the air suspension system and controls in accordance with *manufacturer* service instructions.	d) pressure protection valve is *inoperative* or *missing* control, pressure regulator or gauge, is *inoperative* or *missing*
e) airline, connection and fitting *Note*: Refer to correct type of hose or tube and the related defective condition(s) as defined in the chart in the definition section of this standard.	e) fitting, line, repair method, installation or modification does not meet *OEM standard* tubing or hose is defective as defined in the chart on **page 55** fitting or connection is broken, cracked, flattened or leaking *damaged* in a way (such as: melting, flattening, deformation or kinking) that can restrict air flow
f) height control valve	f) *inoperative* a system originally equipped with 2 valves has a valve *missing* or has been converted to a single valve a system with only one valve has the valve positioned in a location other than near the centre of an axle
g) kneeling feature on a bus *Additional Inspection Procedure(s):* Use the control to operate the kneeling feature. Confirm the system operates as intended.	g) *fails to operate as intended* audible or visual warning *fails to operate as intended*
	Hazardous Condition(s) **i. an air spring (air bag) is *missing*, deflated or has an air leak**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
6. Self-Steer and Controlled-Steer Axle *Note*: The suspension components on a self-steer or controlled steer axle must be inspected according to items 1-4 in this section. The steering components must be inspected according to Section 4.	**Truck|✓| Trailer|✓| Bus|✓|**
7. Shock Absorber/Strut Assembly	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition	a) ***damaged***, detached, or ***missing*** binding strut bearing/mount prevents free rotation of the steering wheel
b) mount & hardware	b) broken, ***loose*** or ***missing***
c) oil leak	c) ***level 2 leak*** of oil
	Hazardous Condition(s) **i. a shock absorber on air ride suspension is broken, detached, or *missing***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section 3 – Brake Systems

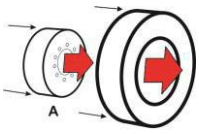
A. OPTIONS FOR INSPECTING INTERNAL BRAKE COMPONENTS OF HYDRAULIC AND AIR BRAKE SYSTEMS

1. Types of Brake Inspections

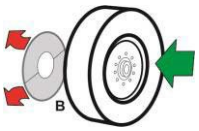
This standard supports several different types of brake inspections depending on the age of a vehicle, the type of brakes being inspected, the required cycle of inspections that applies to a vehicle, i.e.: 12 month or 6 months, and the type of inspection previously completed.

There are three types of inspection for drum brakes:

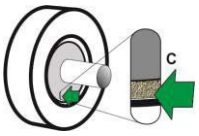
A. *Full inspection with drum removed* (this is a detailed inspection of all internal components {listed in Section 3H 12 and 3A 15 & 16} and includes measuring drums and shoe lining)



B. *Wheel-on full inspection* (this is only available for cam-type drum brakes with removable dust shields and involves an inspection of the internal components {listed in Section 3A 15 & 16} with the dust shields removed, it includes measuring drums and shoe lining)

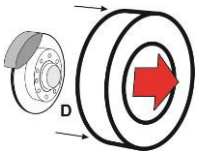


C. *Limited-inspection of drum brake* (this is an inspection through inspection holes and involves a measurement of shoe lining only)

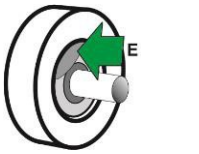


There are two types of inspection for disc brakes

D. *Full inspection with wheel(s) removed* (this is a detailed inspection of all internal components {listed in Section 3H 13 and 3A 18} and includes measuring rotor and pad friction thickness)



E. *Limited-inspection of disc brake* (this is an inspection of visually accessible components and measurement of the friction material of one brake pad)



To determine what inspection must be conducted, refer to the following instructions.

2. Disassembly of Wheels and/or Drums for Inspection

Disassembly of brakes provides access to ensure all components are fully inspected. Full inspection with either drum or wheel removal is required when any defect is suspected or found during an inspection.

Suspecting a defect of any wheel brake must be based on some visible evidence that could indicate the presence of a problem or abnormal condition. The following conditions are those that should cause a technician-inspector to suspect a brake defect:

- abnormal wear of friction material
- signs of overheating
- evidence of negative effects of corrosion ("rust-jacking", friction material lifting due to rust build- up, shoe table deformation, friction material separating from backing material)

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

- abnormal wear of the brake drum or rotor
- abnormal appearance, glazing, discolouration or contamination of brake friction material
- damage, distortion or shifting out of place of any brake component
- abnormal noise or response upon application or release of the brakes
- the age of the brake components, or the previous measurements of wear compared to current measurements, indicate that a drum or rotor, or friction material, is likely to be worn beyond the allowable limit

Note: When any of these conditions is evident or is suspected, that specific brake wheel end does not qualify for a "wheel-on full inspection" or a "limited inspection". A "full inspection with drum removed" is required in the case of drum brakes and a "full inspection with wheel(s) removed" is required in the case of

3. Exemptions from Brake Disassembly for Drum Brakes

When a "full inspection with drum removed ('A')" is conducted on a truck or trailer having drum brakes, and the proper documentation is completed, the brake can qualify for a "limited inspection ('C')" for a period of 19 months. Buses with drum brakes, only qualify for a limited inspection for 7 months following a "full inspection with drum removed". A "limited inspection ('C')" can only be conducted during the respective 7 or 19 month qualifying period after completing a "full inspection with drum removed"; but only when such inspection is properly documented.

A cam-type drum brake with removable dust cover/shields also qualifies for a "*wheel-on full inspection ('B')*" at each inspection. This option is only available for cam type drum brakes; but only when the dust cover/shields are left off the vehicle or are removed to facilitate the inspection.

4. Exemptions from Wheel Disassembly for Disc Brakes

Disc brakes require a "full inspection with wheel(s) removed ('D')" at least every 12 months. When a "full inspection with wheel(s) removed ('D')" is conducted on a disc brake, and the proper documentation is completed, the brake can qualify for a "*limited inspection ('E')*" for a period of 7 months.

5. Exemptions from Brake/Wheel Disassembly for New Vehicles

Brakes are exempt from the requirement to disassemble when vehicles are new. The exemption period depends on the type of brake used and is based on the vehicle manufacture date.. Trucks and trailers using drum brakes qualify for a "*limited inspection ('C')*" for a period of 19 months. Trucks and trailers with disc brakes, and all buses qualify for a "*limited inspection ('C') or ('E')*" for a period of 7 months.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

6. Summary of Inspection Requirements for Trucks and Trailers on 12-Month Inspection Cycle

INSPECTION REQUIRED FOR NEW TRUCKS AND TRAILERS on 12 month inspection cycle

Brake used	Inspection required when vehicle is 1st inspection	12 mo. old	24 mo. old
Drum with removable dust shields	C	C	A or B
Drum with rigid backing plate	C	C	A
Disc	E	D	D

ONGOING BRAKE INSPECTION OPTIONS for Truck & Trailer on 12 month inspection cycle

Brake used	Type of inspection last completed (Starting Month)	Inspection required[1] 12 mo. later	24 mo. later
Drum with removable dust shields	*full inspection with drum removed (A)*	C[2]	A or B
	wheel-on full inspection (B)	B	B
Drum with rigid backing plate	*full inspection with drum removed (A)*	C[2]	A
Disc	*full inspection with wheel(s) removed (D)*	D	D

1 This is the minimum inspection that is permitted. A full inspection is always permitted.

2 A *limited inspection* is only permitted when proper documentation of a *full inspection with drum or wheel(s) removed* is provided.

Types of inspections		
Drum	*full inspection with drum removed*	'A'
Brakes	*wheel-on full inspection*	'B'
	limited-inspection of drum brake	'C'
Disc	*full inspection with wheel(s) removed*	'D'
Brakes	*limited-inspection of Disc brake*	'E'

7. Summary of Inspection Requirements for Trucks on 6-Month Inspection Cycle

Note: Only applicable in YK, BC, SK & MB.

INSPECTION REQUIRED FOR NEW TRUCK on 6 month inspection cycle

Brake used	Inspection required when vehicle is 1st inspection	6 mo. old	12 mo. old	18 mo. old	24 mo. old
Drum with removable dust shields	C	C	C	C	A or B
Drum with rigid backing plate	C	C	C	C	A
Disc	E	E	D	E	D

Brake used	Inspection required when vehicle is 1st inspection	6 mo. old	12 mo. old	18 mo. old	24 mo. old
Drum with removable dust shields	C	C	C	C	A or B
Drum with rigid backing plate	C	C	C	C	A
Disc	E	E	D	E	D

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ONGOING BRAKE INSPECTION OPTIONS for Truck on 6 month inspection cycle

Brake used	Type of inspection last completed (Starting Month)	Inspection required[1] 6 mo. later	12 mo. later	18 mo. later	24 mo. later
Drum with removable dust shields	*full inspection with drum removed (A)*	C[2]	C[2]	C[2]	A
	wheel-on full inspection (B)	B	B	B	B
Drum with rigid backing plate	*full inspection with drum removed (A)*	C[2]	C[2]	C[2]	A
Disc	*full inspection with wheel(s) removed (D)*	E[2]	D	E[2]	D

1 This is the minimum inspection that is permitted. A full inspection is always permitted.
2 A *limited inspection* is only permitted when proper documentation of a *full inspection with drum or wheel(s) removed* is provided.

8. Summary of Inspection Requirements for Buses

INSPECTION REQUIRED FOR NEW Bus

Brake used	1st inspection	Inspection required when vehicle is 6 mo. old	12 mo. old	18 mo. old	24 mo. old
Drum with removable dust shields	C	A	C	A	C
	C	B	B	B	B
Drum with rigid backing plate	C	A	C	A	C
Disc	E	D	E	D	E

ONGOING BRAKE INSPECTION OPTIONS for Buses

Brake used	Type of inspection last completed (Starting Month)	Inspection required[1] 6 mo. later	12 mo. later	18 mo. later	24 mo. later
Drum with removable dust shields	*full inspection with drum removed (A)*	C[2]	A	C[2]	A
	wheel-on full inspection (B)	B	B	B	B
Drum with rigid backing plate	*full inspection with drum removed (A)*	C[2]	A	C[2]	A
Disc	*full inspection with wheel(s) removed (D)*	E[2]	D	E[2]	D

1 This is the minimum inspection that is permitted. A full inspection is always permitted.
2 A *limited inspection* is only permitted when proper documentation of a *full inspection with drum or wheel(s) removed* is provided.

Types of inspections

Drum	*full inspection with drum removed*	'A'
Brakes	*wheel-on full inspection*	'B'
	limited-inspection of drum brake	'C'
Disc	*full inspection with wheel(s) removed*	'D'
Brakes	*limited-inspection of Disc brake*	'E'

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

B. REQUIRED MEASUREMENT OF BRAKE COMPONENTS

Brake inspections require certain components to be measured and these measurements are required to be recorded on a record/report of the inspection. The items that must be measured for each type of brake are as follows:

1. Drum Brake Systems

For drum brakes, the brake shoe lining thickness and brake drum diameter must be measured during every "*full inspection with drum removed ('A')*" and every "*wheel-on full inspection ('B')*".

When a "*limited-inspection ('C')*" of drum brakes is conducted, the lining thickness of one brake shoe must be recorded. The measurement must be taken of the thinnest accessible portion of the thinnest brake shoe lining for each wheel brake assembly.

2. Disc Brake Systems

For disc brakes, the rotor thickness and pad friction material thickness of the inner and outer brake pad must be measured and recorded at every inspection, unless the brake qualifies for a *'limited-inspection ('E')'*.

When a *'limited-inspection ('E')'* of disc brakes is conducted, the thickness of the friction material of one of the pads must be recorded for each wheel brake assembly. Normally this will be the inner pad.

Friction material thickness can be determined by measuring the friction material itself or by measuring the combined thickness of the friction material and pad backing plate, then deducting the thickness of the backing plate. Always record the thickness of the friction material only.

C. DOCUMENTS REQUIRED FOR QUALIFYING A PRIOR INSPECTION OF INTERNAL BRAKE COMPONENTS

- Qualifying a prior inspection with respect to wheel brake ends requires a document containing the information listed below to be submitted to the inspecting technician and inspection facility conducting a current inspection.
- A legible copy of the document must also be submitted to the inspection facility for attachment to the inspection report.
- The technician-inspector and inspection facility must be satisfied with the documentation provided.

Information to be Included on the Proof of Brake Inspection Document:

The documentation used to prove a prior inspection must include the following information:

1. Common Information (all brakes)

- Date of inspection
- Odometer reading (Optional for trailers.)
- VIN
- Authorized technician/inspector's name and/or number and signature or Journeyman's name and Journeyman's Certificate number (based on jurisdictional requirements) in written or electronic form.
- Inspection station name and number, or name and location of repair facility (based on jurisdictional requirements) in written or electronic form.

2. Supplemental Information Required for Drum Brakes (NO BRAKE JOB HAS BEEN PERFORMED IN-BETWEEN INSPECTIONS)

- Internal diameter of the brake drum.

- Thickness of the thinnest brake shoe lining taken at the edge of the lining near the center of

the brake shoe.

- The document must state that the ('A')" inspection was the previous inspection conducted

2.1 Supplemental Information Required for Drum Brakes (BRAKE JOB HAS BEEN PERFORMED IN-BETWEEN INSPECTIONS)

- Documentation must show that ALL new brake shoe linings and brake drums were installed, and must be supported by purchase invoices, work orders, etc. to qualify for the "C" inspection

3. Supplemental Information Required for Disc Brakes (NO BRAKE JOB HAS BEEN PERFORMED IN-BETWEEN INSPECTIONS)

- Thickness of rotor
- Thickness of thinnest pad friction material
- The document must state that the ('D') inspection was the previous inspection conducted

3.1 Supplemental Information Required for Disc Brakes

Documentation must show that ALL new brake pad linings and brake rotors were installed, and must be supported by purchase invoices, work orders, etc. to qualify for the "E" inspection.

Additional Information Required for Disc Brakes

- If new brake pads and/or rotor were installed, the document must show them as 'new' and be supported by documentation, such as purchase invoice, work order, etc.
- Thickness of the rotor.
- Thickness of the thinnest pad friction material.
- Brake pad friction material measurements must be taken at the thinnest point of the material.
- The document must include a declaration stating that the wheel(s) was/were removed and a "full inspection with wheel(s) removed ('D')" was conducted, and that no defective component was present at the completion of the inspection.

D. PROHIBITION ON REMOVAL OF BRAKES FROM A VEHICLE

Axles fitted with brakes by the ***manufacturer*** as original equipment must have those brakes in proper working order, and the brakes must be inspected in accordance with this standard. Brakes must not be disabled or removed from a vehicle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

Section 3H – Hydraulic Brakes

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Hydraulic System Components	**Truck|✓| Trailer|✓| Bus|✓|**
a) metal line and fittings *Additional Inspection Procedure(s):* Inspect lines and fittings for leaks while brakes are fully applied with heavy force on the brake pedal, (i.e.: panic stop). Operate engine if necessary to maintain power-assist. *Note:* All connections between brake system components must be proper flared type. *Note:* Surface rust and corrosion is normal on metal lines and fittings, and is not cause for rejection.	a) heavy rust, corrosion or scaling, is present on any metal line or fitting that reduces or increases the thickness, or compromises the structural integrity of the material ***level 1 leak*** of brake fluid chafing, cracked, flattened or restricting section ***insecure*** mounting causing line to shift out of its normal position repaired by welding or soldering repaired using material or method does not meet ***OEM standard***
b) flexible line/hose *Additional Inspection Procedure(s):* Inspect flexible hoses while brakes are applied with heavy force on the brake pedal, (i.e.: panic stop). Operate engine if necessary to maintain power-assist.	b) bulged or swells under pressure, flattened, twisted, restricting section or ***insecure*** mounting outer composite material is cracked or chafed exposing an inner layer as shown in hose and tube condition chart in introduction deficient product is used that does not meet ***OEM standard*** ***level 1 leak*** of brake fluid
c) master cylinder	c) ***damaged*** or ***insecure*** mounting fluid is contaminated ***level 1 leak*** of brake fluid fluid level is below indicated minimum level, or if not indicated, more than 13 mm from top filler cap is ***damaged***, ***loose*** or ***missing***, vent holes are plugged, or gasket is ***missing*** or swollen
d) pressure differential switch	d) switch or electrical connection is ***damaged***, ***insecure*** or ***loose*** ***level 1 leak*** of brake fluid ***inoperative***
e) variable or proportioning system *Additional Inspection Procedure(s):* Check links for mechanical defects. Test when there is evidence of a problem. Refer to ***manufacturer*** service instructions and confirm that the valve is functioning properly.	e) link is ***damaged***, ***missing***, or seized ***inoperative*** ***level 1 leak*** of brake fluid

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) auxiliary or work brake (line-lock device) *Note*: Line-lock devices block brake fluid from returning to the master cylinder as a means of holding a vehicle stationary. Improperly installed they can interfere with normal service brake operation.	f) any device is installed that interferes with normal service brake operation
g) service brake function	g) brake does not apply or release as intended
	Hazardous Condition(s) **i. a brake hose or line swells under pressure** **ii. *level 2 leak* in any part of the brake system** **iii. brake pedal moves downward when brakes are held applied** **iv. a brake hose is broken, crimped, restricted, or cracked exposing any inner layer** **v. master cylinder fluid level is below indicated minimum level or less than ¼ full** **vi. brake fluid is contaminated in a way that prevents normal brake operation** **vii. service brakes do not apply or release as intended**
2. Brake Pedal/Actuator	**Truck|✓|** Trailer| | **Bus|✓|**
a) pedal	a) broken, cracked, *loose*, *missing* or *abnormally worn* welded or repaired in a way that does not meet *OEM standard*
b) mount	b) cracked, deteriorated, *insecure* or weakened by corrosion
c) anti-slip feature	c) ineffective, *loose* or *missing*
	Hazardous Condition(s) **i. pedal is *missing***
3. Vacuum Assist (Boost) System on Truck or Bus	**Truck|✓|** Trailer| | **Bus|✓|**
a) line, hose and clamp	a) broken, chafed, collapsed, cracked, leaking, *loose* or *missing* *insecure* mounting, incorrect type, or positioned within 50 mm of any exhaust system component and not protected by a heat shield
b) check valve	b) incorrectly installed or *inoperative*, leaking or *missing*
c) tank	c) *damaged*, structurally deteriorated from corrosion, *insecure* or *loose*, leaking or *missing*

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) operation *Additional Inspection Procedure(s):* Test system operation as described below. Stage 1 – Start engine, build to full vacuum, shut engine off, make two (2) full brake applications. Stage 2 – With engine off, press brake pedal several more times to eliminate remaining vacuum. Apply a light force on brake pedal and then start engine.	d) during stage 1 - vacuum reserve is insufficient to assist two full brake applications during stage 2 - downward movement of brake pedal is not felt when engine is started
e) vacuum pump *Additional Inspection Procedure(s):* Confirm proper operation of the vacuum pump to ***manufacturer*** specifications. When no specification is available, check with engine running at 1200 rpm using vehicle gauge, or connect external gauge.	e) vacuum pump does not operate within ***manufacturer*** specifications, or when no specification is available, is unable to achieve and maintain 4.5 kPa of vacuum *Note*: High altitude can reduce achievable vacuum level.
	Hazardous Condition(s) **i. a brake hose or line swells under pressure** **ii. *level 2 leak* in any part of the brake system** **iii. applied pedal travel exceeds 80% of total pedal travel** ***iv.* power assist unit is *inoperative*** ***v.* a check valve is *inoperative* or *missing*** **vi. the brake pedal does not move downward when the engine is started with the brakes applied**
4. Hydraulic Assist (Boost) System on Truck or Bus	**Truck|✓|** Trailer| | **Bus|✓|**
a) engine-driven pump, reservoir and belt *Additional Inspection Procedure(s):* Check with engine stopped and with engine running. Inspect drive belt according to Section 1. Power Train, Item 10. Engine or Accessory Drive Belt.	a) ***level 2 leak*** of hydraulic boost fluid fluid level is below indicated minimum level, or if not indicated, more than 25 mm from top filler cap is ***damaged***, ***loose*** or ***missing***
b) line and hose *Additional Inspection Procedure(s):* Check with engine stopped and with engine running.	b) ***level 2 leak*** of hydraulic boost fluid broken, chafed, collapsed, cracked, ***loose*** or ***missing*** ***insecure*** mounting or incorrect type

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) operation *Additional Inspection Procedure(s):* Confirm proper operation of the hydraulic assist (boost) system according to ***manufacturer*** service instructions. When no ***manufacturer*** service instructions are available, check as described below. Test Method 1 - For a system with electrically-driven back-up pump. Operate brakes with engine running and engine stopped with ignition off. Observe system operation and status of indicator lamps. Test Method 2 – For a system with gas-accumulator back-up. Stop engine and deplete pressure reserve. Then apply a moderate force on brake pedal and start engine.	c) hydraulic assist (boost) is not available or system malfunctions system does not operate as described in ***manufacturer*** service instructions warning or indicator lamp is activated, showing a system malfunction during Test Method 1 - system does not operate as described in ***manufacturer*** service instructions or electric driven pump fails to operate as intended during Test Method 2 - on a system with gas- accumulator back-up - pedal fails to sink down and then push back up again
	Hazardous Condition(s) **i. a brake hose or line swells under pressure** **ii. *level 2 leak* in any part of the brake system** **iii. applied pedal travel exceeds 80% of total pedal travel** ***iv.* power assist unit is *inoperative*** ***v.* a check valve is *inoperative* or *missing*** **vi. the brake pedal does not move downward when the engine is started with the brakes applied**
5. Air Assist (Boost) System on Truck or Bus	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Confirm proper operation of the air assist (boost) system according to ***manufacturer*** service instructions. When no ***manufacturer*** service instructions are available, check as follows: Stop engine and deplete pressure reserve. Then apply moderate force on the brake pedal and start the engine.	a) system does not operate as described in ***manufacturer*** service instructions downward movement of brake pedal is not felt when engine is started
	Hazardous Condition(s) **i. a brake hose or line swells under pressure** **ii. *level 2 leak* in any part of the brake system** **iii. applied pedal travel exceeds 80% of total pedal travel** ***iv.* power assist unit is *inoperative*** ***v.* a check valve is *inoperative* or *missing*** **vi. the brake pedal does not move downward when the engine is started with the brakes applied**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
6. Air-Over-Hydraulic Brake System *Note:* An Air-Over-Hydraulic Brake System is a brake system that uses compressed air to transmit force from the driver control to a hydraulic brake fluid system that actuates the service brakes. The brake pedal is connected to an air valve that delivers air pressure to hydraulic pressure converters. *Note:* The air system of an air-over-hydraulic brake system must comply with ***CMVSS*** 121.	**Truck|✓| Trailer|✓| Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Inspect system operation according to ***manufacturer*** service instructions. When no ***manufacturer*** service instructions are available, inspect the air supply system for compliance with the items 1 – 6 in Section 3A Air Brakes. Inspect the hydraulic system components for compliance with all relevant items listed in this Section.	a) system does not operate as described in manufacturer service instructions a vehicle manufactured after 1975 does not have a dual-circuit air system and two independent air-to- hydraulic pressure converters any system defect or malfunction is detected
	Hazardous Condition(s) **i. a brake hose or line swells under pressure** **ii. *level 2 leak* in any part of the brake system** **iii. applied pedal travel exceeds 80% of total pedal travel** ***iv.* power assist unit is *inoperative*** ***v.* a check valve is *inoperative* or *missing*** **vi. the brake pedal does not move downward when the engine is started with the brakes applied**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
7. Surge Brake Controller on Trailer	Truck| | **Trailer|✓|** Bus| |
a) controller operation *Additional Inspection Procedure(s):* Check the operation of the surge brake controller according to the manufacturer service instructions. Actuate the controller using suitable means and confirm brake operation at each wheel. Test operation of any backing mechanism.	a) controller is *damaged* or defective controller is seized, or fails to operate brakes when actuated manually backing/towing function fails to *operate as intended*
b) brake fluid reservoir	b) *insecure* mounting or *loose* *level 1 leak* of brake fluid brake fluid level is below 'fill' or 'min.' mark or less than 75% of capacity when reservoir is not marked reservoir filler cap *damaged, loose* or *missing*
c) break-away device *Note*: A break-away device is not required in all jurisdictions. Inspect according to the *applicable requirements.* *Additional Inspection Procedure(s):* When a break-away device is present, it must be inspected according to the service instructions provided by the *manufacturer* and it must be functional.	c) *missing* from a trailer required to have a break-away device *damaged*, improperly installed or *inoperative*
	Hazardous Condition(s) **i. brakes are *inoperative* or fail to *operate as intended*** **ii. required break-away device is improperly installed, *inoperative* or *missing***
8. Vacuum System on Trailer *Additional Inspection Procedure(s):* When inspecting a trailer that uses vacuum to actuate or boost braking, inspect the system according to the service instructions provided by the *manufacturer*.	Truck| | **Trailer|✓|** Bus| |
a) condition and operation	a) *damaged* or fails to *operate as intended*
	Hazardous Condition(s) **i. brakes are *inoperative* or fail to *operate as intended***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

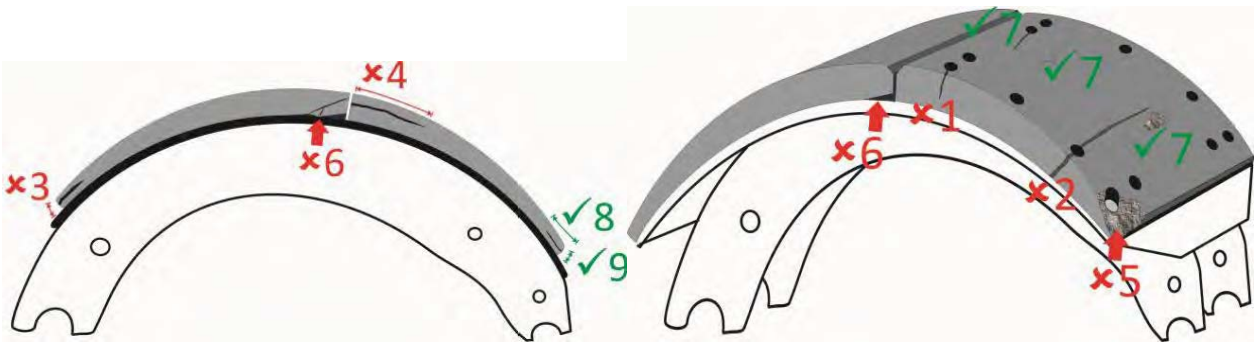
ITEM AND METHOD OF INSPECTION:	REJECT IF:
9. Air-Boosted Trailer Brake System *Additional Inspection Procedure(s):* When inspecting a trailer that uses an air-boosted brake system, inspect the system according to the service instructions provided by the ***manufacturer***.	Truck| | **Trailer|✓|** Bus| |
a) condition and operation	a) ***damaged*** or fails to ***operate as intended***
	Hazardous Condition(s) **i. brakes are *inoperative* or fail to *operate as intended***
10. Electric Brake System on Trailer *Additional Inspection Procedure(s):* Wheels and drums must be disassembled on all electric brake systems. *Note*: Inspect the wheel-end (drum or disc) brake system components, on a trailer with electric brakes, according to the relevant requirements for drum or disc brake system as outlined in this section below.	Truck| | **Trailer|✓|** Bus| |
a) wheel magnet and actuator *Additional Inspection Procedure(s):* When the ***manufacturer*** of the brake system provides a test procedure for confirming the operation of the electromagnet used to actuate the brake, the test procedure must be conducted as part of the inspection.	a) any part is broken, ***damaged***, ***loose***, or ***missing*** magnet is ***inoperative*** or seized
b) wiring	b) shorted, insulation is cracked or peeled improperly spliced or connected not secured at least every 1800 mm
c) break-away device *Note*: A break-away device is not required in all jurisdictions. Inspect according to the ***applicable requirements.*** *Additional Inspection Procedure(s):* When a break-away device is present, it must be inspected according to the service instructions provided by the ***manufacturer*** and it must be functional.	c) ***missing*** from a trailer required to have a break-away device ***damaged*** or ***inoperative***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) battery and controller *Additional Inspection Procedure(s):* Test the battery and controller according to the service instructions provided by the *manufacturer*.	d) *damaged* or fails to *operate as intended*
	Hazardous Condition(s) ***i.*** **brakes are *inoperative* or fail to *operate as intended*** ***ii.*** **required break-away device is *inoperative* or *missing***
11. Brake System Indicator Lamps	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Confirm the location and labeling of brake indicator lamps according to *manufacturer* service instructions. Check operation of brake indicator lamps according to *manufacturer* service instructions. When no *manufacturer* service instructions are available, begin with engine stopped, then turn ignition on. Lamps must turn on when ignition is first turned on. Lamps may go out after 2 – 3 seconds or may stay on until the engine is started. *Note:* Some indicator lamps may stay on, after a repair or system malfunction, until vehicle speed reaches 8 – 16 km/h.	a) *missing*, not red or amber in colour does not operate according to *manufacturer* service instructions indicates a brake system malfunction or defect
	Hazardous Condition(s) ***i.*** **any brake indicator is *inoperative* or fails to *operate as intended*** **ii. an active brake failure is indicated**
12. Drum Brake System Components *Additional Inspection Procedure(s):* When an inspection reveals evidence of a defect or abnormal condition, drum disassembly is mandatory. Refer to the instructions in Section 3 when an inspection reveals no evidence of a defect or abnormal condition. The instructions indicate when disassembly of wheel(s) and drum(s) is optional, and what measurements are required to be taken and recorded.	**Truck|✓|** **Trailer|✓|** **Bus|✓|**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) brake operation	a) a required brake is ***missing*** a brake is ***inoperative***
b) brake shoe lining condition (service brakes) *Note*: Cracks in the surface of the lining, surface erosion and minor spalling of the contact face of the lining are normal. Also inspect lining for damage caused by "rust-jacking". This includes lining material cracking, lifting or separating from backing metal, due to rust build- up. When the lining protrudes outside of the brake drum, drum removal is necessary to obtain lining thickness.	b) a crack extending partially through, or completely through the lining from the friction surface to the metal backing, passing from any rivet hole to the edge a crack in the edge of the lining that is wider than 1 mm or longer than 38 mm a piece of the lining is broken off exposing a rivet lining is distorted or separating from shoe, (e.g.: an object 1 mm thick can be inserted more than 10 mm between the lining and the backing metal) lining is contaminated by brake fluid, oil or grease (Also see section 9 item 5 for wheel seal leaks) lining protrudes outside of drum more than 3 mm lining or any lining fastener is ***loose*** - shim is used between lining and shoe shoe or lining is installed incorrectly (such as primary and secondary shoes reversed)



Examples of Brake Shoe Lining Pass and Reject Conditions:

Reject condition 1 – a partial crack in the lining, extending from a rivet hole to the edge

Reject condition 2 – a crack completely through the lining, extending from a rivet hole to the edge

Reject condition 3 – a crack in the edge of the lining wider than 1 mm

Reject condition 4 – a crack in the edge of the lining longer than 38 mm

Reject condition 5 – a piece of the lining is broken off exposing a rivet

Reject condition 6 – lining is distorted or separating from shoe

Pass condition 7 – minor crack or spalling of the lining material

Pass condition 8 – crack in edge of lining shorter than 38 mm

Pass condition 9 – crack in edge of lining less than 1 mm wide

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) brake shoe lining thickness *Additional Inspection Procedure(s):* Lining thickness must be measured at each inspection and the measurement must be recorded on the inspection report. *Note*: For minimum allowable thickness, lining measurements are taken at the thinnest point of the lining. For the purposes of recording lining thickness on the inspection report, lining thickness measurements are taken at the edge of the lining, near the centre of the brake shoe. The measurement must be taken of the thinner brake shoe lining, when there is a difference in thickness.	c) bonded brake shoe lining thickness is less than 2 mm at any point bolted or riveted brake shoe lining thickness is less than 3 mm at any point *2 mm = 0.08 in., 3 mm = 0.12 in.*
d) brake drum condition *Note:* Heat checks and some surface cracks on the friction surface are normal. A heat check has a width less than 0.5 mm and a depth less than 0.5 mm. A surface crack is at least 0.5 mm wide and 0.5 mm deep. Any surface crack, groove or worn area that is deeper than the drum wear limit is a structural weakness.	d) surface crack longer than 75% of the width of the friction surface surface crack within 25 mm of the open edge surface crack, groove or worn area that is a structural weakness external crack friction surface is ***abnormally worn***, or is hardened and blackened due to overheating ("martensite") friction surface is contaminated by grease or oil (Also see section 9 item 5 for wheel seal leaks)
e) brake drum diameter (wear) *Additional Inspection Procedure(s):* Brake drum diameter must be measured unless an exemption applies, and the measurement must be recorded on the inspection report. See Introduction to Section 3 for details and exceptions. *Note*: Drum diameter measurements must be taken using a suitable tool and with the level of accuracy defined by the measurement tolerance.	**e) measured drum diameter exceeds limit indicated on the brake drum, *OEM standard* or *industry standard*, or if limit is not available:** for nominal drum size of 350 mm (14 in.) or less: 2.3 mm more than original drum diameter for nominal drum size greater than 350 mm (14 in.): 3.0 mm more than original drum diameter *2.3 mm = 0.09 in.* *3.0 mm = 0.12 in.*
f) self-adjuster mechanism	f) ***abnormally worn***, incorrect thread direction, ***inoperative***, ***missing*** or seized

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
g) anchor pin and return spring	g) *abnormally worn*, bent, broken, *loose* or *missing* spring stretched
h) backing plate	h) bent, *damaged* or *loose* shoe contact area is grooved or worn in a manner that restricts free movement of shoes
i) axle and spindle	i) cracked
j) wheel cylinder	j) *damaged*, *inoperative* or seized, *loose* or *insecure* mounting *level 2 leak* of brake fluid dust seal is cracked, *damaged*, deteriorated, *missing*, or split
k) wheel seal	k) *level 2 leak* of bearing lubricant
	Hazardous Condition(s) **i. any part is binding, broken, *missing*, seized, or mounted incorrectly** **ii. a brake drum is in a condition where an imminent failure appears likely** **iii. *level 2 leak* of brake fluid at wheel cylinder** ***iv.* a brake is *inoperative*** **v. brake lining thickness is less than 2 mm** **vi. a piece of the lining is broken off exposing a rivet or bolt** **vii. a crack in the edge of the lining wider than 1 mm** **viii. a crack in the edge of the lining longer than 38 mm** **ix. broken or *missing* return spring, anchor pin, or spider** **x. brake lining or brake drum friction surface is contaminated by brake fluid, grease or oil** *Note:* **Also see section 9, item 5 for wheel seal leaks**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
13. Disc Brake System Components *Additional Inspection Procedure(s):* When an inspection reveals evidence of a defect or abnormal condition, wheel disassembly is mandatory.	**Truck|✓| Trailer|✓| Bus|✓|**
Refer to the instructions in Section 3 and ***manufacturer*** service instructions when an inspection reveals no evidence of a defect or abnormal condition. The instructions indicate when disassembly of wheel(s) is optional and what measurements are required to be taken and recorded.	
a) brake operation	a) a required brake is ***missing*** a brake is ***inoperative***
b) disc (rotor) condition *Note:* Heat checks and some surface cracks on the friction surface are normal. A heat check has a width less than 0.5 mm and a depth less than 1 mm. A surface crack is at least 0.5 mm wide and 1 mm deep. *Note*: Lateral run-out and parallelism only need to be checked only where there is evidence of a problem.	b) section is broken off or ***missing*** crack extends from the friction surface through to the cooling vent any surface crack is longer than 75% of the radial width, within the friction surface any surface crack extends to an outer edge groove or pitted area in rotor that reduces rotor thickness below minimum allowable value contact pattern of the pad on solid rotor material (i.e.: not rusted) is less than 75% of the radial width, around the entire rotor, on one side lateral run-out or out-of-parallelism exceeds 0.3 mm friction surface of the rotor is contaminated by brake fluid, grease or oil (Also see section 9 item 5 for wheel seal leaks) 0.3 mm = 0.01 in.
c) disc (rotor) thickness *Additional Inspection Procedure(s):* Disc (rotor) thickness must be measured. Measurements must be recorded on inspection report.	c) thickness at any point across the friction surface is less than the minimum indicated on the brake rotor, ***OEM standard*** or ***industry standard***, if limit is not available: less than 39.0 mm (+/- 0.05 mm)
d) caliper	d) any part is binding, broken, ***missing***, seized or mounted incorrectly or not equivalent to ***OEM standard***. slide pin/slider or pad slider is binding, ***damaged***, seized, mounted incorrectly, or not equivalent to ***OEM standard*** caliper movement within the anchor plate exceeds ***manufacturer*** specification, guide is welded or repaired in a way that does not meet ***OEM standard*** ***level 2 leak*** of brake fluid pad retainer is bent, ***damaged***, ***insecure*** or ***missing*** boot or bellows is cracked or deteriorated, ***damaged***, or ***missing***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) anchor plate	e) *loose* or bolt is *missing*
f) pad condition	f) broken, cracked, *damaged*, or *abnormally worn* friction material is contaminated by brake fluid, oil or grease (Also see section 9 item 5 for wheel seal leaks) friction material *loose* on pad, pad is *missing*, or pad is installed incorrectly
g) pad (friction material) thickness *Additional Inspection Procedure(s):* Pad (friction material) thickness of both inboard and outboard pad must be measured and measurement of the thinnest pad must be recorded on the inspection report. *Note*: Pad (friction material) thickness can be determined by measuring the friction material itself or by measuring the combined thickness of the friction material and pad backing plate, then deducting the thickness of the backing plate. Record the thickness of the friction material only.	g) Pad (measured friction material) thickness is less than *manufacturer* specification, or *industry standard*, or if limit is not available: • bonded friction material thickness is less than 3 mm • riveted friction material thickness is less than 5 mm • difference between inboard and outboard friction material thickness is greater than *OEM standard* or *industry standard*, or if limit is not available: difference is greater than 3 mm *3 mm = 0.12 in., 5 mm = 0.20 in.*
h) clearance between pads and rotor (caliper adjustment)	h) does not meet *manufacturer*'s specifications
	Hazardous Condition(s) **i. any part is binding, broken, *missing*, seized or mounted incorrectly** **ii. a rotor (disc) friction surface shows metal to metal contact with brake pad or severe rusting** **iii. a rotor (disc) has a crack that extends to the hub or through to the vented section** **iv. caliper movement within the anchor plate exceeds 3 mm** **v. any brake component is in a condition where an imminent failure appears likely** ***vi.* a brake is *inoperative*** **vii. brake pad friction material is worn to less than 2 mm** **viii. friction material of the pad or friction surface of the rotor is contaminated by brake fluid, grease or oil** ***Note:* Also see section 9 item 5 for wheel seal leaks.**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
14. Mechanical Parking Brake	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Refer to manufacturer service instructions for test procedure. When such instruction is not available, test as described below. With a manual transmission – Apply the parking brakes and place the transmission in the lowest gear. Engage the clutch slowly without applying the throttle. Vehicle may rock and shake, but it should not roll, and engine may stall. With an automatic transmission – Apply the parking brake and place the transmission in forward gear. Maintain the engine at idle Vehicle may shift due to torqueing of the suspension. *Note:* Some vehicles with automatic transmissions use an interlock that prevents a vehicle from being placed into gear when the parking brake is applied. Inspect such a vehicle according to the test method provided by the manufacturer.	a) parking brake does not hold in forward and backward gear.
b) indicator lamp	b) parking brake indicator lamp does not activate when control is placed in the applied position
c) control	c) binds, broken or ***missing*** ***inoperative*** or fails to lock
d) cable and/or linkage	d) broken, frayed, improperly secured, ***missing***, seized or equalizer is ***missing***
e) adjustment	e) any part of the system is improperly adjusted
f) friction material *Additional Inspection Procedure(s):* Inspecting the condition of the parking brake friction material is necessary in cases when shoes are visually accessible, or the brake is disassembled.	**f) thickness is less than specified by the *OEM*, or when not specified is less than:** • 3 mm on riveted lining • 2 mm on bonded lining *2 mm = 0.08 in., 3 mm = 0.12 in.*
	Hazardous Condition(s) **i. vehicle rolls forward with parking brake applied.**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
15. Spring-Applied Air-Released (SAAR) Parking Brake *Note:* A spring-applied air-released (SAAR) Parking Brake System uses a mechanical spring to apply the parking brake. Compressed air is used to compress the spring and release the parking brake. The parking brake control is similar to the valve used in an air brake system.	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Refer to manufacturer service instructions for test procedure. When such instruction is not available, test as described below. With a manual transmission – Apply the parking brakes and place the transmission in the second or third lowest gear. Engage the clutch slowly without applying the throttle. Vehicle may rock and shake, but it should not roll, and engine may stall. With an automatic transmission – Apply the parking brake and place the transmission in forward gear. Raise engine speed to no more than 800 rpm. Vehicle may shift due to torqueing of the suspension, but it should not roll forward or backward. *Note:* Some vehicles with automatic transmissions use an interlock that prevents a vehicle from being placed into gear when the parking brake is applied. Inspect such a vehicle according to the test method provided by the manufacturer. *Note:* SAAR systems include a low air pressure warning and air pressure gauge. The air system components are not subject to ***CMVSS*** 121 and must be inspected according to ***manufacturer*** service instructions.	a) parking brake does not hold as required

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) indicator lamp	b) parking brake indicator lamp does not activate when control is placed in the applied position
c) airline, connection and fitting	c) fitting, line or repair method does not meet *OEM standard* tubing or hose is defective as defined in the chart on page 55 fitting or connection is broken, cracked, flattened or leaking *damaged* in a way (such as: melting, flattening, deformation or kinking) that can restrict air flow
d) air tank	d) tank does not meet *OEM standard* tank is *damaged*, *loose*, welded other than factory weld, or corroded to the extent that structural integrity is compromised
e) leakage *Additional Inspection Procedure(s):* Monitor system for leaks.	e) air leak at any location
f) friction material *Additional Inspection Procedure(s):* Inspecting the condition of the parking brake friction material is necessary in cases when shoes are visually accessible, or the brake is disassembled.	**f) thickness is less than specified by the *OEM*, or when not specified is less than:** • 3 mm on riveted lining • 2 mm on bonded lining *2 mm = 0.08 in., 3 mm = 0.12 in.*
	Hazardous Condition(s) ***i.*** **brake is *inoperative* or fails to *operate as intended*** **ii. vehicle rolls forward or backward with little or no resistance when parking brake is applied**
16. Spring-Applied Hydraulic-Released (SAHR) Parking Brake *Note:* A spring-applied hydraulic-released (SAHR) Parking Brake System uses a mechanical spring to apply the parking brake. Pressurized hydraulic fluid is used to compress the spring and release the parking brake.	**Truck|✓|** Trailer| | **Bus|✓|**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) operation • refer to manufacturer service instructions for test procedure. When such instruction is not available, test as described below. • a manual transmission – Apply the parking brakes and place the transmission in the second or third lowest gear. Engage the clutch slowly without applying the throttle. Vehicle may rock and shake, but it should not roll, and engine may stall. • an automatic transmission – Apply the parking brake and place the transmission in forward gear. Raise engine speed to no more than 800 rpm. Vehicle may shift due to torqueing of the suspension, but it should not roll forward or backward. *Note:* Some vehicles with automatic transmissions use an interlock that prevents a vehicle from being placed into gear when the parking brake is applied. Inspect such a vehicle according to the test method provided by the manufacturer.	a) parking brake does not hold as required
b) indicator lamp	b) parking brake indicator lamp does not activate when control is placed in the applied position
c) line and hose *Additional Inspection Procedure(s):* Check with engine stopped and with engine running.	c) ***level 2 leak*** of hydraulic fluid broken, chafed, collapsed, cracked, leaking, ***loose*** or ***missing*** ***insecure*** mounting or incorrect type
d) release canister	d) ***damaged***, ***inoperative***, ***insecure***, or ***loose*** ***level 2 leak*** of hydraulic fluid
e) friction material *Additional Inspection Procedure(s):* Inspecting the condition of the parking brake friction material is necessary in cases when shoes are visually accessible, or the brake is disassembled.	**e) thickness is less than specified by the *OEM*, or when not specified is less than:** • 3 mm on riveted lining • 2 mm on bonded lining *2 mm = 0.08 in., 3 mm = 0.12 in.*
	Hazardous Condition(s) ***i.*** **brake is *inoperative* or fails to *operate as intended*** **ii. vehicle rolls forward or backward with little or no resistance when parking brake is applied**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
17. Anti-Lock Brake System (ABS) on a Truck or Bus	**Truck|✓|** Trailer| | **Bus|✓|**
Note: Every truck or bus manufactured on or after April 1, 2000, with a GVWR above 4,536 kg must be equipped with ABS. Every vehicle equipped with ABS that was not mandatory for the vehicle when it was manufactured must have ABS in good working order.	
a) indicator lamp *Additional Inspection Procedure(s):* Cycle the ignition off and on while monitoring the ABS indicator lamp.	a) ***inoperative*** or ***missing*** fails to turn on during bulb-check cycle when ignition is turned on indicates the presence of an active malfunction by staying on after the bulb-check cycle any visual evidence that the system has been tampered with or defeated
b) electronic control unit (ECU)	b) ***insecure*** mounting, ***missing*** or connector corroded
c) wiring *Additional Inspection Procedure(s):* Visually inspect accessible portions of the wiring. Inspect all repairs and damaged areas.	c) ***insecure*** mounting, ***missing***, or connector corroded, conductor is exposed due to damage, improper repair or other condition of wire connection or repair does not meet ***OEM standard***
d) ABS modulating valve	d) ***missing***, ***insecure*** mounting to ECU, ***level 1 leak*** of brake fluid or abnormal corrosion
e) wheel speed sensor *Note*: Different configurations of sensors and modulators are permitted by ***CMVSS***. Be sure to confirm the ***OEM*** configuration of the ABS before rejecting a vehicle due to missing wheel speed sensors.	e) ***inoperative***, ***insecure*** mounting, ***missing***, connectors corroded
	Hazardous Condition(s) **i. any malfunction of the ABS system that prevents normal brake operation**
18. Stability Control System	**Truck|✓|** Trailer| | **Bus|✓|**
a) indicator lamp/system status *Additional Inspection Procedure(s):* Check for indication of any fault or malfunction by cycling the ignition off and on while monitoring the indicator lamp.	a) lamp fails to illuminate during bulb-check or lamp remains illuminated fault or malfunction is indicated any visual evidence that the system has been tampered with or defeated

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
19. Brake Performance *Optional Additional Inspection Procedure(s):* These test methods can be used when one of the following types of performance-based brake tester (PBBT) is available. Test equipment must be calibrated and used according to ***manufacturer*** instructions. Testing a brake with non-burnished friction material may produce inconsistent test results.	**Truck|✓| Trailer|✓| Bus|✓|** *Note*: Rated wheel weight = one-half of GAWR.
a) service brake force - using a roller-type performance- based brake tester (PBBT) *Optional Additional Inspection Procedure(s):* Determine the maximum service brake force at each wheel by slowly applying the service brake pedal and increasing the pedal force until the tester terminates the test, or brake force reaches its maximum value.	a) service brake fails to lock the wheel and the maximum service brake force is less than 40% of the rated wheel weight service brake force on one side of the axle is less than 70% of the service brake force on the other side, at the point in time just prior to first wheel lockup, or test termination, whichever occurs first
b) rolling resistance force - using a roller-type performance-based brake tester (PBBT) *Optional Additional Inspection Procedure(s):* Determine average rolling resistance force of each wheel, with the brakes fully released, for one full revolution of the wheel. Discount the initial spike at start-up of the rolls.	b) average rolling resistance force of a wheel is greater than 6% of the weight of the wheel imparted on the test device
c) required brake force or stopping distance - using a decelerometer *Optional Additional Inspection Procedure(s):* Test vehicle stopping ability in a suitable area following the instructions provided by the manufacturer/supplier of the test device.	c) deceleration is below the requirement of the relevant jurisdiction balance of brake force between left and right side fails to comply with the requirement of the relevant jurisdiction *Note*: Brake force balance (left and right) cannot be measured with all types of decelerometers.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
Note: **Inspect Air System at Normal Operating Pressure** - Unless noted otherwise below, all operational checks of air brake system components are conducted with the system at its normal operating pressure (between compressor cut-in and cut-out values). ***OEM*** **Vehicle Gauge Accuracy** - The gauges on a vehicle's instrument panel showing pressure in the airbrake system are required to be accurate within plus or minus 7% of the compressor cut-out pressure. **Use Accurate Test Gauge** - When there is any doubt about any test or inspection results obtained, use of a gauge accurate to +/- 2% to confirm pressure values is recommended.	
1. Air Compressor	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation	a) *inoperative*
b) belt	*Note:* Inspect drive belt according to Section 1. Power Train, Item 10. Engine or Accessory Drive Belt.
c) mounting	c) broken, cracked, *loose* or bolts *missing*
d) air filter	d) contaminated sufficiently to restrict air flow, *missing*
e) pulley	e) bent, broken, cracked, *damaged*, *loose*, out of alignment
	Hazardous Condition(s) **i. belt or pulley is in a condition where an imminent failure appears likely** **ii. compressor mounting or mounting bolt is broken, cracked, *insecure*, or *loose*, or compressor is shifted from its normal position**
2. Air Supply System *Additional Inspection Procedure(s):* Test either "a) air pressure build up time" or "b) air pressure build-up/loss rate" as described below.	**Truck|✓|** Trailer| | **Bus|✓|**
a) air pressure build-up time	a) exceeds two (2) minutes

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
Optional Inspection Procedure(s): With spring brakes released and wheels chocked, reduce system pressure to 552 kPa (80 psi) or less. Run engine at 600-800 rpm and observe the time needed for air pressure to rise from 85 to 100 psi.	
b) air pressure build-up/loss rate *Optional Inspection Procedure(s):* With air pressure at 552 kPa (80 psi) or less, spring brakes released and service brakes fully applied and released, allow the engine to run at idle speed and observe the air pressure gauge to confirm air pressure rises.	b) air compressor is unable to cause pressure to rise during test
c) governor *Additional Inspection Procedure(s):* Determine the governor cut-in and cut-out pressure values.	c) ***inoperative***, ***missing*** or ***loose*** air leak evident at governor or connecting air lines the governor cut in pressure shall not be lower than that prescribed by the vehicle manufacturer. governor cut-out pressure is below or above that prescribed by the vehicle manufacturer and in no case shall exceed 1000 kPa (145 psi)
d) low pressure warning *Additional Inspection Procedure(s):* Test the operation of the low air pressure warning device(s). *Note*: A visible warning device is mandatory (lamp or wig- wag). An audible warning device (buzzer or alarm) is optional, but must remain functional when ***OEM*** installed.	d) visible warning is ***inoperative*** or ***missing*** visible warning is not clearly identified, lamp lens is ***missing*** audible warning is ***inoperative*** or ***missing*** warning device fails to activate or operate continuously when air pressure is lowered below 414 kPa (60 psi)
e) air pressure gauge	e) gauge is ***inoperative*** or has inaccurate reading
f) pressure drop/reserve *Additional Inspection Procedure(s):* Observe air pressure gauges while making a full service brake application.	f) pressure drops more than 138 kPa (20 psi) when a full service brake application is made
g) air leakage *Additional Inspection Procedure(s):* Monitor the system for leaks during the inspection by listening for leaks.	g) pressure drops more than 7 kPa (1 psi) per minute detectable leak at any location

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. brake system air pressure cannot be maintained between 560 and 620 kPa (80 and 90 psi), with service brakes applied or released and engine idling, during air pressure build-up/loss rate test** **ii. air pressure drops more than 20 kPa (3 psi) per minute during air leakage test** **iii. *inoperative* or inaccurate air pressure gauge** **iv. low air pressure warning is *inoperative* or fails to operate continuously when ignition is on and air pressure is below 380 kPa (55 psi)**
3. Air System Leakage on a Trailer	Truck| | **Trailer|✓|** Bus| |
a) air leakage *Additional Inspection Procedure(s):* Monitor the system for leaks during the inspection by listening for leaks.	a) detectable leak at any location
b) air loss rate *Additional Inspection Procedure(s):* Step 1. Fill the supply circuit to normal operating pressure. Shut off the air supply and seal the circuit while monitoring air pressure. Step 2. While keeping the supply circuit filled, also fill the service circuit to the same pressure. Shut off the air supply and seal the circuits while monitoring air pressure. Step 3. Supply air to all other air systems and/or accessory devices. Shut off the air supply and seal the circuits while monitoring air pressure.	b) trailer is attached to a towing vehicle and total leakage exceeds 28 kPa (4 psi) in one minute trailer is connected to non-vehicle air source and total leakage exceeds 20 kPa (3 psi) in one minute
	Hazardous Condition(s) **i. air pressure drops more than 40 kPa +/- 5 kPa (6 psi) per minute during air leakage test**
4. Air Tank	**Truck|✓| Trailer|✓| Bus|✓|**
a) contamination *Additional Inspection Procedure(s):* Open the drain valve on each tank and drain all fluid.	a) the quantity of oil or sludge, (i.e.: oil and water mixture) expelled from an air tank exceeds manufacturer service recommendations **the quantity of water expelled from an air tank exceeds *manufacturer* service recommendations
	Note: **Record excessive water on the inspection report, but do not reject the vehicle for this condition alone.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) air tank condition	b) corroded or *damaged* to the extent that structural integrity is compromised, leaking or *loose* welding other than original factory weld on air tank tank does not meet *OEM standard*
c) air tank bracket and/or strap	c) broken, cracked or *missing* does not meet *OEM standard*
d) air tank drain valve	d) *inoperative*, leaking, *loose* or *missing* does not meet *OEM standard*
e) moisture ejector	e) *inoperative*, leaking
	Hazardous Condition(s) **i. air tank is *loose*, allowing movement of more than 25 mm in any direction**
5. Air Tank Check Valves *Additional Inspection Procedure(s):* Test as outlined below, the operation of air tank check valves on each vehicle using a supply (wet) tank and primary/secondary tank arrangement. Inspect a vehicle using an integral-type air dryer (and having no supply {wet} tank) according to *manufacturer* service instructions. *Note*: A "*CMVSS* '121' system" is one with a dual circuit brake system generally manufactured after 1976. A vehicle with single circuit brake system is to be inspected according to *manufacturer* service instructions.	**Truck|✓|** Trailer| | **Bus|✓|**
Additional Inspection Procedure(s): For a vehicle with a "CMVSS '121' system". This inspection is to ensure proper function of the check valves which isolate the circuits and provide service and emergency braking in the case of a failure in one of the circuits. Inspect for proper operation as follows: **Step 1 –** Begin with air system at normal operating pressure. Open the drain valve on the supply (wet) tank.	

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) one-way check valve (between supply (wet) tank and service tanks)	a) air pressure drops in either the primary or secondary air tank
Step 2 - Open the drain valve on either the primary or secondary service tank.	
b) two-way check valve (between service tanks and brake system control valves)	b) air pressure drops on both the primary and secondary air tanks
Step 3 - Close all drain valves and increase air system to normal operating pressure. Open the drain valve on the remaining service tank (primary or secondary) that was not drained in Step 2.	
c) two-way check valve (between service tanks and brake system control valves)	c) air pressure drops on both the primary and secondary air tanks
	Hazardous Condition(s) **i. air tank check-valve is *inoperative* or *missing***
6. Brake Pedal/Actuator	**Truck|✓|** Trailer| | **Bus|✓|**
a) pedal	a) broken, cracked, *loose*, *missing* or *abnormally worn* welded or repaired in a way that does not meet *OEM standard*
b) mount	b) deteriorated or weakened by corrosion, or *insecure*
c) anti-slip feature	c) ineffective, *loose* or *missing*
	Hazardous Condition(s) **ii. pedal is *loose* or *missing*, or an imminent failure appears likely**
7. Treadle Valve and Trailer Hand Valve	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Test the operation of the treadle valve and trailer hand valve by fully applying and then releasing the service brakes.	a) *inoperative* pivot or plunger is binding or seized (fails to fully release brakes)
b) condition	b) cracked, *insecure* or *loose* mounting, mounting bracket or mounting fastener *damaged*, *missing* or stripped

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
8. Brake Valves & Controls	**Truck|✓|** Trailer|✓| **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Test the operation of all valves and controls.	a) any valve is ***inoperative***
b) condition *Additional Inspection Procedure(s):* Check the condition and security of all air brake system components.	b) broken, ***damaged***, repaired in a way that does not meet ***OEM standard*** ***loose***, ***insecure*** mounting, mounting bracket or mounting fastener ***damaged***, stripped or ***missing***
c) quick release valve, relay valve *Note:* It is important that any repair or replacement of a brake valve retains brake functionality according to original ***OEM*** design. *Additional Inspection Procedure(s):* Apply and release the service brakes and check system operation. Check for signs of improper installation or replacement of the wrong type of valve. *Note:* It is important that the inspector be familiar with the design and operating requirements of the vehicle being inspected. This is a visual inspection only.	c) ***inoperative***, air is not released quickly through exhaust port when brakes are released air leaks from valve back into the system an improper valve is visually identified
d) air system or accessory device, (e.g.: suspension, tire inflation system, pintle hook damper, tail gate, landing gear, tarp system, etc.) *Note:* The pressure protection valve must be installed so that it prevents a failure in such a system or accessory from depleting all of the pressure from the brake system.	d) any system or accessory device that draws air from the air brake system is not equipped with a functioning pressure protection valve
	Hazardous Condition(s) **i. quick release valve or relay valve is *inoperative* or *missing***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
9. Proportioning, Inversion or Modulating Valve	**Truck|✓|** Trailer| | **Bus|✓|**
a) type of limiting or proportioning valve	a) improper valve is used for vehicle type *Note*: For example: a tractor converted to a straight truck or vice versa, is not properly configured for current vehicle use.
b) operation	b) *inoperative* or *missing*
c) mounting	c) broken bracket, *insecure* or *loose*
	Hazardous Condition(s) **i. improper valve is used for vehicle type, (e.g.: bobtail system is used on a straight truck** ***ii.* required valve is *inoperative* or *missing***
10. Towing Vehicle (Tractor) Protection System	**Truck|✓|** Trailer| | **Bus|✓|**
a) towing vehicle (tractor) protection valve operation *Additional Inspection Procedure(s):* Ensure that the trailer supply valve is closed (pulled out). Place the trailer service line where it can be observed. Make a service brake application and inspect for air exhausting out of the trailer service line.	a) air flows out of the trailer service line during the test
b) trailer supply valve operation *Additional Inspection Procedure(s):* **Stage 1** - Connect trailer supply line to suitable closure, open (push in) the trailer supply valve and make a service brake application. Air will exhaust rapidly out of the trailer service line and air pressure will drop. Monitor the air pressure gauges and note the pressure when the trailer supply valve automatically closes. **Stage 2** - Increase air system to normal operating pressure, open (push in) the trailer supply valve and allow air to vent quickly from trailer supply line by removing it from the closure. Monitor the air pressure gauges and note the pressure when the trailer supply valve automatically closes.	b) both air pressure gauges are not between 140 and 300 kPa (20 and 45 psi) when the trailer supply valve closes during Stage 1 *Note*: In a case where the trailer supply valve closes with pressure above 300 kPa (45 psi), record it on the inspection report, but do not reject the vehicle for this condition alone. the trailer supply valve fails to close automatically during Stage 2 *Note:* Most valves will close with only a small drop in pressure during Stage 2. Others may allow pressure to drop to around 414 kPa (60 psi) before closing. Check *manufacturer* specifications if pressure drops below 414 kPa 60 psi.
	Hazardous Condition(s) **i. towing vehicle (tractor) protection system is *missing* or fails to *operate as intended***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
11. Parking Brake and Emergency Application on Truck or Bus	**Truck|✓|** Trailer| | **Bus|✓|**
a) parking brake application *Additional Inspection Procedure(s):* Actuate the parking brake control as necessary. Check parking brake function at each wheel.	a) brake does not apply on any wheel required to have parking brake
b) parking brake release	b) parking brake releases slowly, hangs or drags
c) manual application *Additional Inspection Procedure(s):* Apply the parking (spring) brakes by closing the parking (spring) brake control valve.	c) parking (spring) brakes do not immediately apply automatically
	Hazardous Condition(s) **i. parking brake does not *operate as intended***
12. Parking Brake and Emergency Application on Trailer	Truck| | **Trailer|✓|** Bus| |
a) parking brake application *Additional Inspection Procedure(s):* Actuate the parking brake control as required. Check parking brake function at each wheel.	a) brake does not apply on any wheel required to have parking brake
b) parking brake release	b) parking brake releases slowly, hangs or drags
c) emergency application *Additional Inspection Procedure(s):* Actuate emergency application of the parking brakes by exhausting the trailer supply/emergency line, using the trailer supply valve, by removing the gladhand, or by using a suitable test device.	c) parking brakes do not immediately apply automatically time required for air pressure in the chambers to fall to atmospheric pressure is more than 3 seconds *Note:* For this test, atmospheric pressure is considered 21 kPa (3 psi) or less.
	Hazardous Condition(s) **i. parking brake does not *operate as intended***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

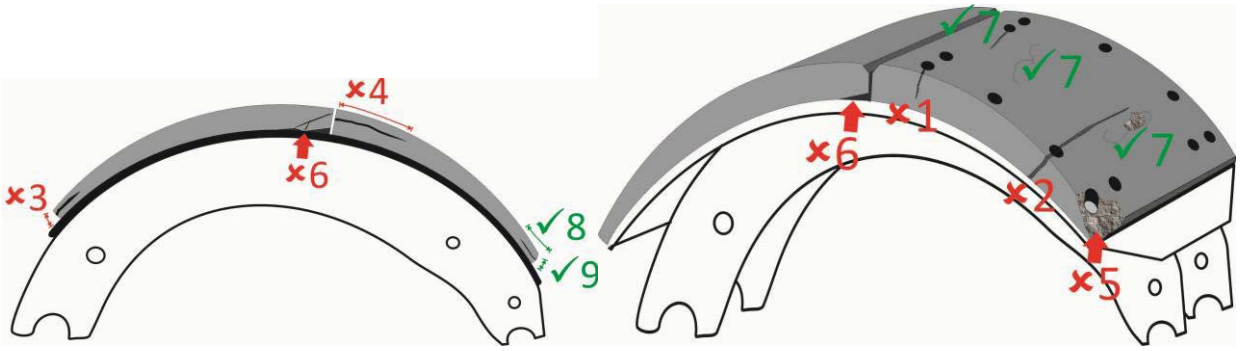
ITEM AND METHOD OF INSPECTION:	REJECT IF:
13. Air System Components	**Truck|✓| Trailer|✓| Bus|✓|**
a) gladhand	a) corroded or *insecure* mounting, cracked or *damaged* seal *damaged* or *missing*
b) gladhand screen *Note*: Gladhand screens are required on certain trailers in certain jurisdictions. Inspect according to the *applicable requirements*.	b) on a trailer, required screens are *missing* plugged or ruptured
c) air line, connection and fitting *Note:* Improper installation, repairs and modifications can negatively affect brake operation, and particularly brake timing. Improper use of fittings, additional elbows, and replacing an air line with one that is too small, are examples of improper procedures. *Additional Inspection Procedure(s):* Check for improper installations, modifications or repairs.	c) fitting, line, repair method, installation or modification does not meet *industry standard* or *OEM standard* tubing or hose is defective as defined in the chart on page 55 fitting or connection is broken, cracked, flattened or leaking *damaged* in a way (such as: melting, flattening, deformation or kinking) that can restrict air flow
d) air system or accessory device, (e.g. suspension, tire inflation system, pintle hook damper, tail gate, landing gear, tarp system) *Additional Inspection Procedure(s):* Visually inspect for presence of correct type of valve.	d) any system or accessory device that draws air from the air brake system is not equipped with a functioning pressure protection valve
e) leakage *Additional Inspection Procedure(s):* Monitor system for leaks.	e) an air leak at any location
	Hazardous Condition(s) **i. an air line bulges under pressure** ***ii.* air line modification or repair does not meet *industry standard* or *OEM standard*** **iii. air line has damage extending through the outer reinforcement ply** **iv. an inner layer of an air line is exposed due to abrasion or rubbing** **v. air leak at other than a proper connection** **vi. air line is *damaged* by heat, broken, or crimped in such a manner as to restrict airflow**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
14. Brake Chamber	**Truck|✓| Trailer|✓| Bus|✓|**
a) brake chamber *Note*: Includes DD3 chamber on a bus.	a) improper type or size brake chamber is used corroded, cracked, ***damaged***, ***insecure*** mounting, ***loose***, ***missing***, or leaking drain hole is not directed downward or is plugged mixed long-stroke and standard stroke chambers on an axle mismatched chamber size on an axle piston return spring is broken or binding
b) spring brake chamber	b) park brake-apply spring is caged by caging bolt or made ***inoperative*** by other mechanical means chamber caging plate is misaligned or hung up preventing installation of caging bolt park brake-apply spring is broken
c) chamber mounting bracket	c) broken, cracked, deformed, ***loose*** or ***missing***
d) type DD3 chamber *Additional Inspection Procedure(s):* Apply the parking brake and deplete system pressure starting with the supply (wet) tank.	d) brake fails to remain fully applied at any wheel with Type DD3 chamber
	Hazardous Condition(s) **i. air leak at a chamber** **ii. caging plate in a chamber is out of position or 'hung up'** **iii. non-manufactured hole or crack in a chamber** **iv. *insecure*, *loose* or *missing* chamber** **v. mismatched chamber type or size on active or passive steer axle** **vi. improper type or size brake chamber is used on a steer axle**
15. Drum Brake System Components *Additional Inspection Procedure(s):* When an inspection reveals evidence of a defect or abnormal condition, disassembly of wheel(s) and drum(s) is mandatory. Refer to the instructions in Section 3 when an inspection reveals no evidence of a defect or abnormal condition. The instructions indicate when disassembly of wheel(s) and drum(s) is optional, and what measurements are required to be taken and recorded.	**Truck|✓| Trailer|✓| Bus|✓|**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) brake operation	a) a required brake is ***missing*** a brake is ***inoperative***
b) brake shoe lining condition (service brakes) *Note*: Cracks in the surface of the lining, surface erosion and minor spalling of the contact face of the lining are normal. Also inspect lining for damage caused by "rust-jacking". This includes lining material cracking, lifting or separating from backing metal, due to rust build- up. When the lining protrudes outside of the brake drum, drum removal is necessary to obtain lining thickness.	b) a crack extending partially through, or completely through the lining from the friction surface to the metal backing, passing from any rivet hole to the edge a crack in the edge of the lining that is wider than 1 mm or longer than 38 mm a piece of the lining is broken off exposing a rivet or bolt lining is distorted or separating from shoe, (e.g.: an object 1 mm thick can be inserted more than 10 mm between the lining and the backing metal) lining is contaminated by oil or grease (Also see section 9 item 5 for wheel seal leaks) lining protrudes outside of drum more than 3 mm lining or any lining fastener is ***loose*** shim is used between lining and shoe shoe or lining is installed incorrectly (such as primary and secondary shoes reversed)



Examples of Brake Shoe Lining Pass and Reject Conditions:

Reject condition 1 – a partial crack in the lining, extending from a rivet hole to the edge

Reject condition 2 – a crack completely through the lining, extending from a rivet hole to the edge

Reject condition 3 – a crack in the edge of the lining wider than 1 mm

Reject condition 4 – a crack in the edge of the lining longer than 38 mm

Reject condition 5 – a piece of the lining is broken off exposing a rivet

Reject condition 6 – lining is distorted or separating from shoe

Pass condition 7 – minor crack or spalling of the lining material

Pass condition 8 – crack in edge of lining shorter than 38 mm

Pass condition 9 – crack in edge of lining less than 1 mm wide

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) brake shoe lining thickness *Additional Inspection Procedure(s):* Lining thickness must be measured at each inspection and the measurement must be recorded on the inspection report. *Note*: For minimum allowable thickness, lining measurements are taken at the thinnest point of the lining. For the purposes of recording lining thickness on the inspection report, lining thickness measurements are taken at the edge of the lining, near the centre of the brake shoe. The measurement must be taken of the thinner brake shoe lining, when there is a difference in thickness.	c) bonded or riveted continuous strip brake shoe lining thickness is less than 5 mm at any point bolted or riveted block type brake shoe lining thickness is less than 8 mm at any point 8 mm = 0.3 (5/16) in., 5 mm = 0.2 (3/16) in.
d) brake drum condition *Note:* Heat checks and some surface cracks on the friction surface are normal. A heat check has a width less than 0.5 mm and a depth less than 0.5 mm. A surface crack is at least 0.5 mm wide and 0.5 mm deep. Any surface crack, groove or worn area that is deeper than the drum wear limit is a structural weakness.	d) surface crack longer than 75% of the width of the friction surface surface crack within 25 mm of the open edge surface crack, groove or worn area that is a structural weakness external crack friction surface is ***abnormally worn***, or is hardened and blackened due to overheating ("martensite") friction surface is contaminated by grease or oil (Also see section 9 item 5 for wheel seal leaks)
e) brake drum diameter (wear) *Additional Inspection Procedure(s):* Brake drum diameter must be measured at most inspections and the measurement must be recorded on the inspection report. See Introduction to Section 3A for details and exceptions. *Note*: Drum diameter measurements must be taken using a suitable tool and with the level of accuracy defined by the measurement tolerance.	**e) measured drum diameter exceeds limit indicated on the brake drum, *OEM standard* or *industry* standard, or if limit is not available:** • for nominal drum size of 350 mm (14 in) or less: 2.3 mm more than original drum diameter • for nominal drum size greater than 350 mm (14 in): 3.0 mm more than original drum diameter 2.3 mm = 0.09 in., 3 mm = 0.12 in.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) wheel seal	f) *level 2 leak* of bearing lubricant
g) return spring	g) *missing*, broken or stretched (fails to hold both rollers against cam)
h) spider	h) bent, broken, *loose*, welded or repaired in a way that does not meet *OEM standard* mounting bolt *missing*
	Hazardous Condition(s) **i. any part is binding, broken, *missing*, seized, or mounted incorrectly** **ii. a brake drum is in a condition where an imminent failure appears likely** ***iii.* a brake is *inoperative*** **iv. bonded or riveted continuous strip brake shoe lining thickness is less than 5 mm at centre of shoe** **v. bolted or riveted block type brake shoe lining thickness is less than 7 mm, at centre of shoe** **vi. brake shoe lining is less than 1 mm at any point** **vii. a piece of the lining is broken off exposing a rivet or bolt** **viii. a crack in the edge of the lining wider than 1 mm** **ix. a crack in the edge of the lining longer than 38 mm** **x. broken or missing return spring, anchor pin, or spider** **xi. brake lining or drum friction surface is contaminated by grease or oil** *Note:* **Also see section 9 item 5 for wheel seal leaks** 5 mm = 0.2 (3/16) in., 7 mm = 0.25 in. (1/4) in.
16. S-Cam Drum Brake System *Note*: Also applies to T-Cam brake system.	**Truck|✓| Trailer|✓| Bus|✓|**
a) camshaft condition *Additional Inspection Procedure(s):* Check the condition and mounting of each brake camshaft, and check for movement in the bushings.	a) camshaft is bent, twisted, repaired by welding, incorrectly installed or incorrect type movement of camshaft in bushing exceeds 2.0 mm or O.E.M. standard

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) camshaft mounting	b) mounting bracket broken or *loose*
c) pushrod, clevis yoke, clevis pin and locking device *Note*: Brake pushrod stroke indicators are required by CMVSS 121 on vehicles manufactured on and after May 31, 1996. These indicators normally consist of markings on the brake chamber pushrod, but can also be mounted on, or adjacent to, the brake linkage. They must be capable of showing an over- stroke condition.	c) bent, binding, broken, cracked, *missing*, welded or repaired in a way that does not meet *OEM standard* clevis yoke lock nut is *loose* linkage is misaligned to slack adjuster or brake chamber does not form correct angle with slack adjuster when brakes are applied brake stroke indicator is *missing*
d) brake adjuster *Note*: Self-adjusting brake adjusters are required by *CMVSS* 121 on vehicles manufactured on and after May 31, 1996. They cannot be replaced with manual brake adjusters.	d) not equipped with self-adjuster as required adjuster is *inoperative* or improperly installed improper type or size brake adjuster is used any part is bent, broken or *abnormally worn* the self-locking sleeve on a manual slack adjuster is seized or fails to lock
e) slack adjuster effective length	e) the distance from the centre of a camshaft to the centre of the clevis pin is not the same on all brakes of an axle
f) brake shoe roller	f) flat spots, *missing*, wrong size
g) brake shoe anchor pin	g) *missing*, wear allows the lining to protrude beyond outside edge of brake drum
h) brake stroke *Additional Inspection Procedure(s):* Measure and record the applied push rod stroke of each brake with 620 to 690 kPa (90 to 100 psi) in the air tanks, the spring brakes released, the engine shut off and service brakes fully applied. *Note*: The stroke measurements of all brakes are to be recorded on the inspection report. When the stroke of a self-adjusting brake adjuster is found to be at or beyond the stroke limit, the brake requires repairs. A manual adjustment will not correct the problem.	h) stroke is at or beyond the limit of the brake chamber as shown in the chart below difference between stroke measurements is greater than 6 mm on an axle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) ***i.*** **camshaft is incorrectly installed, incorrect type, or mounting is *insecure*** **ii. improper type or size camshaft roller is used** **iii. improper type or size brake adjuster is used on a steer axle** **iv. broken or missing cam roller, camshaft, pushrod, yoke, clevis pin, clevis pin retainer, (e.g., cotter pin),** **v. stroke of any brake is beyond the limit of the brake chamber as shown in the chart below**

Brake Stroke Limits for Clamp-Type Brake Chambers

Note:
Measurement tolerance is +/- 1 mm

Chamber Type (Size)	Stroke Limit (mm)	Stroke Limit (in.) +/- 1/32 in.
6	32 mm	1- 1/4 in.
9	35 mm	1 -3/8 in.
12	35 mm	1 -3/8 in.
12 LS	44 mm	1 -3/4 in.
16	44 mm	1- 3/4 in.
16 LS	51 mm	2 in.
20	44 mm	1-3/4 in.
20 LS	51 mm	2 in.
24	44 mm	1-3/4 in.
24 LS	51 mm	2 in.
30	51 mm	2 in.
30 LS	64 mm	2-1/2 in.
30 DD3	57 mm	2-1/4 in.
36	57 mm	2-1/2 in.

17. Brake Shoe Travel (Wedge Brakes)	**Truck|✓| Trailer|✓| Bus|✓|**
a) brake shoe movement *Additional Inspection Procedure(s):* Inspect wedge brakes according to item 15 above and then check brake operation and measure shoe movement. Brake shoe movement must be measured and measurements must be recorded on the inspection report.	a) brakes fail to operate, shoes do not move or shoe movement exceeds 2 mm

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. shoe movement is greater than 2 mm** ***ii.* any wedge brake is *inoperative***
18. Disc Brake System Components *Additional Inspection Procedure(s):* When an inspection reveals evidence of a defect or abnormal condition, wheel disassembly is mandatory. Refer to the instructions in Section 3 and *manufacturer* service instructions when an inspection reveals no evidence of a defect or abnormal condition. The instructions indicate when disassembly of wheel(s) is optional and what measurements are required to be taken and recorded.	**Truck|✓| Trailer|✓| Bus|✓|**
a) brake operation	a) a required brake is *missing* a brake is *inoperative*
b) disc (rotor) condition *Note:* Heat checks and some surface cracks on the friction surface are normal. A heat check has a width less than 0.5 mm and a depth less than 1 mm. A surface cracks is at least 0.5 mm wide and 1 mm deep. *Note*: Lateral run-out and parallelism only need to be checked only where there is evidence of a problem.	b) section is broken off or missing crack extends from the friction surface through to the cooling vent any surface crack is longer than 75% of the radial width, within the friction surface any surface crack extends to an outer edge groove or pitted area in rotor that reduces rotor thickness below minimum allowable value contact pattern of the pad on solid rotor material, (i.e.: not rusted) is less than 75% of the radial width, around the entire rotor, on one side lateral run-out or out-of-parallelism exceeds 0.3 mm friction surface of the rotor is contaminated by grease or oil (Also see section 9 item 5 for wheel seal leaks) 0.3 mm = 0.01 in.
c) disc (rotor) thickness *Additional Inspection Procedure(s):* Disc (rotor) thickness must be measured. Measurements must be recorded on inspection report.	c) thickness at any point across the friction surface is less than the minimum indicated on the brake rotor, or *manufacturer* specification, or equivalent industry standard, if limit is not available: less than 39.0 mm (+/- 0.05 mm)

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) caliper	d) any part is binding, broken, seized, missing, or mounted incorrectly or not equivalent to ***OEM standard***. slide pin/slider or pad slider is binding, *damaged*, seized, mounted insecurely, or not equivalent to ***OEM standard***. caliper movement within the anchor plate exceeds *manufacturer* specification, guide is welded or repaired in a way that does not meet *OEM standard* pad retainer is bent, *damaged*, *insecure* or *missing* boot or bellows is cracked or deteriorated, *damaged*, or *missing*
e) anchor plate	e) *loose* or bolt is *missing*
f) pad condition	f) broken, cracked, *damaged*, or *abnormally worn* friction material is contaminated by oil or grease (Also see section 9 item 5 for wheel seal leaks) rivet *loose* on pad, pad *loose* on bonded lining, pad is *missing*, or pad is installed incorrectly
g) pad (friction material) thickness *Additional Inspection Procedure(s):* Pad (friction material) thickness of both inboard and outboard pad must be measured and measurement of the thinnest pad must be recorded on the inspection report. *Note*: Pad (friction material) thickness can be determined by measuring the friction material itself or by measuring the combined thickness of the friction material and pad backing plate, then deducting the thickness of the backing plate. Always record the thickness of the friction material only.	g) **measured friction material thickness is less than *OEM standard* or *industry standard*, or if limit is not available:** bonded friction material thickness is less than 3 mm riveted friction material thickness is less than 5 mm difference between inboard and outboard friction material thickness is greater than amount indicated in *manufacturer* service instruction or equivalent industry standard, or if limit is not available: difference is greater than 3 mm 3 mm = 0.12 (1/8) in., 5 mm = 0.20 (3/16) in.
h) clearance between pads and rotor (caliper adjustment)	h) does not meet *manufacturer* specifications

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. any part is binding, broken, *missing*, seized, or mounted incorrectly** **ii. a rotor (disc) friction surface shows metal to metal contact with brake pad or severe rusting** **iii. a rotor (disc) has a crack that extends to the hub or through to the vented section** **iv. caliper movement within the anchor plate exceeds 3 mm** **v. any brake component is in a condition where an imminent failure appears likely** ***vi.* a brake is *inoperative*** ***vii.* brake pad friction material worn to less than 2 mm or a portion of the friction material is *missing*** **viii. *loose* or *missing* brake chamber or caliper mounting bolt** **ix. friction material of the pad or friction surface of the rotor is contaminated by grease or oil** ***Note:* Also see section 9 item 5 for wheel seal leaks** 2 mm = 0.08 in., 3 mm = 0.12 (1/8) in.
19. Anti-Lock Brake System (ABS) on Truck and Bus *Note*: Every truck and truck-tractor with air brakes manufactured on or after April 1, 2000 must be equipped with ABS. Every towing vehicle with air brakes manufactured on or after March 1, 2001 must be capable of PLC communication with any towed trailer. Every vehicle equipped with ABS that was not mandatory for the vehicle when it was manufactured must have ABS in good working order.	**Truck|✓|** Trailer| | **Bus|✓|**
a) indicator lamp *Additional Inspection Procedure(s):* Cycle the ignition off and on while monitoring the ABS indicator lamp.	a) ***inoperative*** or ***missing*** fails to turn on during bulb-check cycle when ignition is turned on indicates the presence of an active malfunction by staying on after the bulb-check cycle any visual evidence that the system has been tampered with or defeated

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) wiring *Additional Inspection Procedure(s):* Visually inspect accessible portions of the wiring. Inspect all repairs and damaged areas. *Note:* Also see requirement for towing vehicle to supply constant power to trailer for trailer ABS. See Section 7 item 3.	b) ***insecure*** mounting, ***missing***, or connector corroded • conductor is exposed due to damage, improper repair or other condition of wire • connection or repair does not meet ***OEM standard***
c) electronic control unit (ECU)	c) ***missing***, ***insecure*** mounting, connectors corroded
d) relay/ABS modulating valve	d) ***missing***, leaking, ***insecure*** mounting to ECU, abnormal corrosion
e) wheel speed sensor *Note*: Different configurations of sensors and modulators are permitted by ***CMVSS***. Be sure to confirm the ***OEM*** configuration of the ABS before rejecting a vehicle due to missing wheel speed sensors.	e) ***missing***, ***insecure*** mounting, ***inoperative***, connectors corroded
f) PLC communication *Additional Inspection Procedure(s):* Connect the vehicle to a suitable test device or a trailer that has an active ABS malfunction to confirm PLC communication.	f) PLC signal from trailer or test device fails to activate the trailer ABS indicator lamp on instrument panel
g) operation	**g) missing on vehicles manufactured on or after April 1, 2000.**
	Hazardous Condition(s) **i. any malfunction of the ABS system that prevents normal brake operation**
20. Anti-Lock Brake System (ABS) on Trailer *Note*: Every trailer with air brakes manufactured on or after April 1, 2000 must be equipped with ABS. *(see exceptions below) Every vehicle equipped with ABS that was not mandatory for the vehicle when it was manufactured including those listed in the exceptions below must have ABS in good working order.	Truck| | **Trailer|✓|** Bus| |

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) indicator lamp (trailer-mounted) *Additional Inspection Procedure(s):* Proper operation of the ABS must be confirmed using one of the methods listed below: Test Method #1. Connect to towing vehicle manufactured after March 1, 2001 that has been verified to have a properly functioning ABS. Test Method #2. Using suitable test equipment, confirm that trailer ABS control module sends required signal to operate dash mounted ABS lamp in towing vehicle. * *Exceptions for ABS* ABS is not required by ***CMVSS*** 121 for: trailers with width greater than 2.6 m, any vehicle equipped with an axle that has a GAWR greater than 13,154 kg; GVWR greater than 54,332 kg – "heavy hauler trailer"; and any load divider dolly.	a) ***missing***, not amber in colour is not marked "ABS" on the lamp itself, or not marked "ABS" within 150 mm of the lamp is not between 150 mm and 600 mm away from the left rear red side marker lamp fails to turn on during bulb-check cycle when power is supplied to auxiliary circuit (centre pin, blue wire) indicates the presence of an active malfunction by staying on after the bulb-check cycle any visual evidence that the system has been tampered with or defeated
b) wiring *Additional Inspection Procedure(s):* Visually inspect accessible portions of the wiring. Inspect all repairs and damaged areas.	b) ***insecure*** mounting, ***missing***, or connector corroded conductor is exposed due to damage, improper repair or other condition of wire connection or repair does not meet ***OEM standard***
c) electronic control unit (ECU)	c) ***missing***, ***insecure*** mounting, connectors corroded
d) relay/ABS modulating valve	d) ***missing***, leaking, ***insecure*** mounting to ECU, abnormal corrosion
e) wheel speed sensor *Note*: Different configurations of sensors and modulators are permitted by ***CMVSS***. Be sure to confirm the ***OEM*** configuration of the ABS before rejecting a vehicle due to missing wheel speed sensors.	e) ***missing***, ***insecure*** mounting, ***inoperative***, connectors corroded
f) PLC Signal to towing vehicle *Note*: Power Line Carrier (PLC) communication is required for all trailers built on or after March 1, 2001.	f) PLC signal is not transmitted by trailer ABS *Note*: When using Test Method 1 for the indicator lamp (trailer-mounted) above, PLC communication from the trailer is verified when the dash-mounted trailer ABS lamp in the towing vehicle turns on during bulb- check, and then turns off or stays on, to show the presence of a malfunction in conjunction with the trailer-mounted indicator lamp. (A malfunction may be described as a Fault, Diagnostic Fault Code, or Diagnostic Trouble Code.)

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
g) operation	**g) missing on vehicles manufactured on or after April 1, 2000.**
	Hazardous Condition(s) **i. any malfunction of the ABS system that prevents normal brake operation**
21. Stability Control System on Truck or Bus *Additional Inspection Procedure(s):* Check the ECU for indication of any fault or malfunction.	**Truck|✓|** Trailer| | **Bus|✓|**
a) indicator lamp	a) **fails to illuminate or lamp remains illuminated **fault or malfunction is indicated
Additional Inspection Procedure(s): Cycle the ignition off and on while monitoring the indicator lamp.	*Note*: Each of the conditions above marked with a double asterisk (**) are to be recorded on the inspection report, however a vehicle is not rejected for this condition alone.
b) operation	b) any visual evidence that the system has been tampered with or defeated (see note below) *Note*: The condition above is to be recorded on the inspection report, however a vehicle is not rejected for this condition alone.
22. Stability Control System (Electronic Stability Control [ESC] or Roll Stability System [RSS]) on Trailer *Additional Inspection Procedure(s):* Check the ECU for indication of any fault or malfunction in conjunction with inspection of the ABS as described in item 20 above.	Truck| | **Trailer|✓|** Bus| |
a) operation	a) **there is evidence that the system has been tampered with or defeated **the system has an active fault (light or indicator) *Note*: Each of the conditions above marked with a double asterisk (**) are to be recorded on the inspection report, however a vehicle is not rejected for this condition alone.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

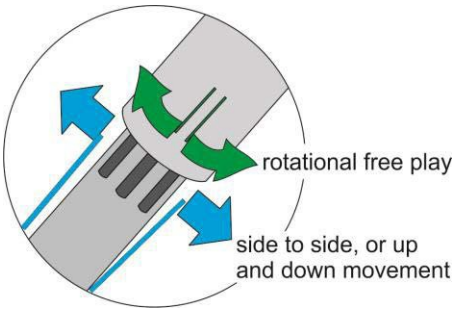
ITEM AND METHOD OF INSPECTION:	REJECT IF:
23. Brake Performance *Optional Additional Inspection Procedure(s):* These test methods can be used when one of the following types of performance-based brake tester (PBBT) is available. Test equipment must be calibrated and used according to ***manufacturer*** instructions. Testing a brake with non-burnished friction material may produce inconsistent test results.	**Truck|✓| Trailer|✓| Bus|✓|** *Note*: Rated wheel weight = one-half of GAWR.
a) service brake force - using a roller-type performance- based brake tester (PBBT) *Optional Additional Inspection Procedure(s):* Determine the maximum service brake force at each wheel by slowly applying the service brake pedal and increasing the pedal force until the tester terminates the test, or brake force reaches its maximum value.	a) service brake fails to lock the wheel and the maximum service brake force is less than 40% of the rated wheel weight service brake force on one side of the axle is less than 70% of the service brake force on the other side, at the point in time just prior to first wheel lockup, or test termination, whichever occurs first
b) parking brake output force - using a roller type brake tester *Optional Additional Inspection Procedure(s):* For wheels equipped with spring-brake type chambers used for parking. Determine the maximum parking force at each wheel by fully applying the parking brake control until the tester terminates the test, or parking brake force reaches it maximum value.	b) parking brake fails to lock the wheel and the maximum parking brake force is less than 20% of rated wheel weight parking brake force on one side of the axle is less than 50% of the force on the other side, at the point in time just prior to first wheel lockup, or test termination, whichever occurs first
c) rolling resistance force - using a roller-type performance-based brake tester (PBBT) *Optional Additional Inspection Procedure(s):* Determine average rolling resistance force of each wheel, with the brakes fully released, for one full revolution of the wheel. Discount the initial spike at start-up of the rolls.	c) average rolling resistance force of a wheel is greater than 6% of the weight of the wheel imparted on the test device
d) required brake force or stopping distance - using a decelerometer *Optional Additional Inspection Procedure(s):* Test vehicle stopping ability in a suitable area following the instructions provided by the manufacturer/supplier of the test device.	d) deceleration is below the requirement of the relevant jurisdiction balance of brake force between left and right side fails to comply with the requirement of the relevant jurisdiction *Note*: Brake force balance (left and right) cannot be measured with all types of decelerometers.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section 4 – Steering

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Steering Control and Linkage *Additional Inspection Procedure(s):* Check the steering components listed below using tools and methods according to ***manufacturer*** service instructions.	**Truck|✓| Trailer|✓| Bus|✓|**
a) steering box or rack and pinion unit	a) ***loose*** or ***insecure*** mounting, mounting bolt ***loose*** or ***missing*** housing broken, cracked, or ***level 2 leak*** of oil or fluid
b) bellow, clamp and boot	b) ***insecure***, ***missing***, split or torn clamp ***missing***
c) tie rod	c) bent, broken, cracked or welded, or repaired in a way that does not meet ***OEM standard***
d) tie rod end, drag link and ball and socket joint	d) bent, ***insecure***, ***loose*** or worn threads stripped or repaired a ball and socket joint is worn beyond ***manufacturer*** specifications ***damaged***, welded or repaired in a way that does not meet ***OEM standard*** part is used that does not meet ***OEM standard***
e) pitman arm	e) bent, ***damaged***, ***insecure*** or ***loose*** on spline ***repaired by welding***
f) ball-joint in upper or lower control arm	f) ***loose*** in knuckle or control arm wear exceeds limit shown by wear-indicator, ***OEM standard*** limit or ***industry standard*** limit, or is injected with repair material ***insecure*** or ***loose*** improper or ***loose*** retainer
g) cotter pin or similar retaining device	g) ***missing***, or deficient part is used that does not meet ***OEM standard***
h) steering dampener	h) ***inoperative*** or ***missing*** ***level 2 leak*** of dampener fluid

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
i) steering column	i) ***insecure*** mounting or ***loose*** mounting fastener ***loose*** or ***missing***
j) telescopic/tilt steering *Additional Inspection Procedure(s):* Check the operation of locking device(s). With unit locked, grasp the steering column and attempt to move it horizontally and vertically on its mounts.	j) movement exceeds ***manufacturer*** specification, or when specification is not available, is greater than 6 mm
k) steering shaft universal joint and yoke	k) binding, ***loose***, seized, welded or repaired in a way that does not meet ***OEM standard*** horizontal or vertical movement within the universal joint can be detected by hand clamp bolt ***loose*** or ***missing***, or spline ***loose*** or stripped
l) steering column slip joint *Additional Inspection Procedure(s):* Grasp the sections of the slip joint and check rotational free play by twisting in opposite directions. Then check the total side to side, or up and down movement of the slip joint perpendicular to the line of rotation.	l) rotational free play between splines exceeds 1.0 mm total side to side, or up and down movement exceeds 6 mm 
m) adjusting sleeve	m) bent, ***loose*** or welded or repaired in a way that does not meet ***OEM standard*** tightening bolt is in a position that interferes with normal steering
n) remote (right hand) steering control	*Note*: Inspect as described in Section 5 - Instruments and Auxiliary Equipment

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) ***i.*** **any crack, modification or other condition that interferes with free movement of any steering component, or repair that does not meet** *OEM standard* **Steering Box or Rack & Pinion Unit** ***ii.*** **cracked, *loose* or *insecure* mounting, mounting bolt *loose* or *missing* or has been repaired in way, (e.g.: welded) that does not meet *OEM standard*** **Steering Linkage** **iii. any ball and socket joint has looseness in line with the shank or neck of the ball greater than** *manufacturer* **specification, or when specification is not available, greater than 3.0 mm** **iv. the socket of a ball and socket joint is injected with any repair material, or a ball and socket joint has been repaired in way, (e.g.: welded) that does not meet *OEM standard*** ***v.*** **pitman arm is *loose* on steering gear output shaft spline or has been repaired in way, (e.g.: welded) that does not meet *OEM standard*** ***vi.*** **any nut is *loose* or *missing*** **vii.** *loose* **clamp, clamp bolt or nut on tie rod, drag link, pitman arm, or steering arm** **viii. any looseness in any threaded joint** **Steering Column and Related Parts** ***ix.*** **adjusting sleeve is *loose* or *insecure*** **x. *loose* or *insecure* mounting, mounting bolt *loose* or *missing*** **xi. column fails to lock into position** ***xii.*** **a universal joint has been repaired in way, (e.g.: welded) that does not meet *OEM standard*** **xiii. any looseness of the yoke-coupling at the steering gear input shaft**
2. Power Steering System (Hydraulic and Electric) *Additional Inspection Procedure(s):* Inspect the power steering components with the engine stopped. Then with engine running, turn wheels fully to the left and right and check system operation.	**Truck|✓|** Trailer| | **Bus|✓|**
a) fluid	a) below indicated minimum level or fluid is contaminated

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) belt	*Note:* Inspect drive belt according to Section 1. Power Train, Item 10. Engine or Accessory Drive Belt.
c) hose	c) cracked, worn by or is in contact with moving parts distance to exhaust system component is less than 25 mm ***level 2 leak*** of power steering fluid
d) pump	d) ***inoperative***, ***insecure*** mounting, or ***loose*** ***level 2 leak*** of power steering fluid
e) cylinder	e) ***inoperative***, ***insecure*** mounting, ***loose, or missing*** ***level 2 leak*** of power steering fluid
f) mounting bracket	f) broken, cracked or ***loose*** bolt ***loose*** or ***missing***
g) assist	g) does not ***operate as intended*** (i.e.: power-assist provided is noticeably reduced requiring more than normal steering effort to turn the wheels left or right)
	Hazardous Condition(s) ***i.*** **power steering does not *operate as intended*** **ii. any steering component is in a condition where imminent failure appears likely** **iii. *level 3 leak* of power steering fluid** ***iv.*** **auxiliary power assist cylinder is** *loose*
3. Steering Operation (Active Steer Axle) *Note:* An active steer axle is one that is directly controlled by the steering wheel. Check steering operation after inspecting steering control and linkage, and checking power steering as described above.	**Truck|✓|** Trailer| | **Bus|✓|**
a) steering wheel	a) broken, ***damaged***, ***loose*** on spline or modified diameter is not *OEM* or equivalent
b) rotation and travel *Additional Inspection Procedure(s):* Turn wheels fully to the left and right and check system operation.	b) binds or jams during rotation number of rotations from centre to full left does not equal the number of rotations from centre to full right, +/- ½ turn

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) steering lash or free-play *Additional Inspection Procedure(s):* Check vehicle having power steering with engine running. Measure lash or free-play beginning with wheels in straight-ahead position. Then turn steering wheel just until turning motion can be observed at the front wheels. Mark rim of steering wheel and turn the steering wheel in the opposite direction until motion can just be observed. Measure the distance of steering wheel rotation that does not cause turning of the wheels.	c) steering lash or free-play is greater than the distance shown below **Maximum permissible lash (free play) for power steering system** steering wheel diameter of 500 mm & less: 75 mm steering wheel diameter over 500 mm: 87 mm **Maximum permissible lash (free play) for manual steering system** steering wheel diameter of 500 mm & less: 87 mm steering wheel diameter over 500 mm: 100 mm
d) tire clearance	d) space between tire and frame, fender or other vehicle part is less than 25 mm at any point in turn
e) steering stop	e) improperly adjusted or ***missing***
	Hazardous Condition(s) **i. steering binds or jams during rotation** **ii. steering lash or free-play is greater than the distance shown below:** **power steering system** **steering wheel diameter of 500 mm & less:** 87 mm **steering wheel diameter over 500 mm:** 100 mm **manual steering system** **steering wheel diameter of 500 mm & less:** 140 mm **steering wheel diameter over 500 mm:** 196 mm
4. Kingpin *Additional Inspection Procedure(s):* Raise the axle to unload the kingpin. Turn the wheels through a full right and left turn.	**Truck|✓| Trailer|✓| Bus|✓|**
a) lateral movement *Additional Inspection Procedure(s):* Rock the wheel in and out, by hand or using a bar, to check for kingpin movement. Measure lateral movement at the outer edge of the tire. Use a dial gauge if necessary.	**a) not within *manufacturer* specification or when *manufacturer* specification is not available:** • for wheels under 20 in.: lateral movement is more than 3 mm • for wheels 20 in. or larger: lateral movement is more than 5 mm

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) vertical movement *Additional Inspection Procedure(s):* Place a bar under the tire and check for vertical movement between spindle support and axle. Use a dial gauge if necessary.	b) not within ***manufacturer*** specification or when ***manufacturer*** specification is not available, greater than 2.5 mm
c) condition	c) binding or jamming is detected while turning wheel
	Hazardous Condition(s) **i. binding or jamming caused by the kingpin or thrust bearings**
5. Self-Steer and Controlled-Steer Axle *Note*: These are passive steer axles. A passive steer axle responds only to lateral force to turn wheels. The suspension components on a self-steer or controlled steer axle must be inspected according to Section 2, items 1-4. The steering components must be inspected according to items 1 & 4 above. *Additional inspection procedure(s):* Additional items may require inspection than those listed below. Refer to ***manufacturer*** service instructions related to the particular axle - for items in addition to those listed below - that are required to be inspected as part of a periodic safety inspection.	**Truck|✓| Trailer|✓| Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Raise the vehicle and turn the wheels through a full right and left turn.	a) binding or jamming is detected while turning wheels
b) clearance	b) there is less than 25 mm between the tire and frame, fender or other vehicle part
c) steering stop	c) ***missing*** or not adjusted properly
d) air pressure regulator	d) ***inoperative*** or ***missing***
e) pressure gauge	e) inaccurate, ***inoperative*** or ***missing*** not equipped with legible instruction indicating the minimum centering force pressure requirement

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) operating instruction label	f) not equipped with legible instruction indicating safe operation (such as: stating the speed at which the axle locks)
	Hazardous Condition(s) **i. cracked, *loose* or *insecure* mounting, mounting bolt *missing* or *loose*, or has been repaired in way that does not meet *OEM standard*** **ii. *inoperative* or *missing* steering lock on a C-dolly** **iii. steering locks in any position except centred** *Note:* **Also see Hazardous Conditions for items 1 to 4 in this section above**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

Section 5 - Instruments & Auxiliary Equipment

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Fire Extinguisher	**Truck|✓| Trailer|✓| Bus|✓|**
a) presence and type *Note:* Fire extinguisher requirements vary by jurisdiction. Inspection must be conducted according to the ***applicable requirements***. On a school bus, inspect to the applicable ***CSA*** D250 Standard.	a) ***missing*** or incorrect type not in a quick-release holder within reach of driver not F.M., U.L. or U.L.C. approved and labelled ***missing*** on a vehicle required to meet ***CSA*** B620, D409, D435 or D436 standards on a school bus, does not meet requirements of jurisdiction and applicable ***CSA*** D250 Standard
b) condition *Additional Inspection Procedure(s):* Check mounting security. Remove unit from holder and shake contents.	b) ***insecure*** or ***loose*** seal is broken or gauge shows less than minimum charge no movement of chemical is detected when unit is shaken nozzle or hose is clogged, defective or ***missing*** safety pin is ***missing***
2. Hazard Warning Kit *Note:* Hazard warning kit requirements vary by jurisdiction. Inspection must be conducted according to the ***applicable requirements***.	**Truck|✓|** Trailer| | **Bus|✓|**
a) presence and type	a) ***missing*** on a vehicle wider than 2.05 m incorrect type where triangle reflectors are required; they are broken, ***damaged*** and ***inoperative***, ***missing*** or ***insecure*** mounting
3.Horn *Additional Inspection Procedure(s):* Test horn operation. *Note:* Every vehicle must have at least one operating horn.	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation	a) ***inoperative*** or not clearly audible
b) control	b) not identified and readily accessible to the driver does not function as intended not a pressure-type switch

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
4. Instruments and Gauges on a Bus	Truck| | Trailer| **Bus|✓|**
a) required gauges and/or indicators *Additional Inspection Procedure(s):* Inspect indicator lamp operation (bulb check) when ignition is on and engine stopped. *Note:* Inspect according to *OEM* vehicle design.	a) engine temperature gauge or indicator is *inoperative* oil pressure gauge or indicator is *inoperative* ammeter, voltmeter or charge indicator is *inoperative* on a school bus, fuel gauge is *inoperative* or *missing*, or fails to provide accurate information
5. Speedometer	**Truck|✓|** Trailer| **Bus|✓|**
a) operation	a) *inoperative* or *missing* not clearly visible from the primary driving position
6. Odometer	**Truck|✓|** Trailer| **Bus|✓|**
a) operation *Note:* *OEM* odometer must be operative. A functional test is not required.	a) *inoperative* or *missing*
7. Windshield Wiper/Washer	**Truck|✓|** Trailer| **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Confirm that the windshield wipers and control operate in all modes and positions.	a) fail to operate properly in any speed or position fail to park
b) wiper blade	b) hardened, *missing* or torn swept area is less than *OEM* wiper blades fails to contact windshield properly
c) wiper arm	c) bent, broken or *missing*
d) windshield washer *Additional Inspection Procedure(s):* Test the operation of the windshield washer and control.	d) *inoperative* or *missing* fails to direct sufficient washer fluid at correct position on windshield
	Hazardous Condition(s) **i. wiper on the driver's side is *inoperative, missing*, or has damage that renders it ineffective**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
8. Heater & Windshield Defroster	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Test the operation of the heater/defroster and control in all operating modes and positions.	a) *inoperative* at any setting low air flow or fails to deliver heated air
b) heater core	b) *level 2 leak* of coolant
9. Fuel-burning Auxiliary Heater	**Truck|✓|** Trailer| | **Bus|✓|**
a) condition *Additional Inspection Procedure(s):* Inspect the exhaust system and fuel system, according to the appropriate type of fuel used, as described in Section 1.	a) *insecure* or *loose*
10. Chain/ "Headache" Rack	**Truck|ü|** Trailer| | Bus| |
a) condition	a) *insecure* or *loose*, mounting fastener *loose* or *missing* broken or weld cracked
11. Auxiliary Controls and Devices	**Truck|✓|** Trailer| | **Bus|✓|**
Note: This includes equipment that is primarily inside a vehicle and includes controls for devices such as: PTO, wet lines, tarp systems, vehicle-mounted lifting and transporting devices, snow plow, dump box, front- mount hydraulic pump, roll-on roll-off, packer, etc.	
a) condition *Additional Inspection Procedure(s):* Check security of controls and devices visually, manually and using suitable tools as necessary. No functional test is to be conducted.	a) device is in such an unsafe condition that could be a risk to the driver or a passenger device is *insecure* or *loose*, or in danger of shifting in a way that could impede normal operation of the vehicle *level 2 leak* of oil or other operating fluid
	Hazardous Condition(s) **i. control or device is in such an unsafe condition that is an imminent risk to the driver or a passenger** **ii. control or device is *insecure* or *loose*, or in imminent danger of shifting in a way that impedes normal operation of the vehicle**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
12. Auxiliary Drive Controls *Additional Inspection Procedure(s):* Inspect according to ***manufacturer*** service and safety instructions. When such instruction is not available, inspect and test auxiliary drive control devices according to the relevant steering, brake and power train items, and the relevant additional items below.	**Truck|✓|** Trailer| | Bus| |
a) auxiliary steering station *Note:* An auxiliary steering station normally uses a "tee type" gear box at the primary steering station and a "90-degree type" gear box at the secondary steering station(s).	a) gear box is ***insecure*** or ***loose*** connecting shaft or u-joint is ***loose***, or u-joint is out of phase lash (free play) is greater at the auxiliary station than at the main steering wheel
b) auxiliary brake control	b) any service or parking brake control fails to ***operate as intended*** two-way check valve is leaking or ***inoperative***
c) auxiliary lamp control	c) any lamp control at the auxiliary control position fails to ***operate as intended***, or interferes with any other normal lamp operation
d) auxiliary throttle control	d) throttle control fails to ***operate as intended***
13. On-board Auxiliary Equipment on a Bus *Note:* The requirements for the specific auxiliary equipment that must be carried on board a particular vehicle vary by jurisdiction. (For example: axe, spare tire, shovel, tools, tire chains.) Inspection must be conducted according to the ***applicable requirements***.	Truck| | Trailer| | **Bus|✓|**
a) presence and type	a) incorrect or ***missing*** equipment
b) securement	b) ***insecure*** or ***loose*** on a school bus, does not meet requirements of jurisdiction and applicable ***CSA*** D250 Standard
14. First Aid Kit on a Bus *Note:* The requirements for first aid kits vary by jurisdiction. Inspection must be conducted according to the ***applicable requirements***. Inspection of contents is not required.	Truck| | Trailer| | **Bus|✓|**
a) presence and location	a) does not meet requirements of jurisdiction on a school bus, does not meet ***applicable requirements*** and applicable ***CSA*** D250 Standard

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
15. Accessibility Features and Equipment on a Bus *Note:* Accessibility features are items that are provided on "accessible vehicles" specifically designed for entry, accommodation and exiting of persons with various physical conditions that may limit their mobility. Many of these features are designed to provide access to the vehicle by means of a mobility assistive device (such as a cane, walker, wheel chair or scooter). The items listed in this section apply only to those features on this type of accessible vehicle.	Truck| | Trailer| | **Bus|✓|**
a) door on entrance for person with mobility assistive device *Additional Inspection Procedure(s):* Test the operation of all accessible doors. Check that the door is held in the open position by a detent or latch. Test the operation of a power door and check the closing safety feature.	a) door fails to hold in open position power door fails to stop closing and/or reverse when stopped by an object
b) entrance for person with mobility assistive device (with no ramp or lift)	b) contrasting colour stripe on step or floor edge is worn off or not readily visible has no light above or beside each entrance door illuminating the steps and actuating automatically when the door opens
c) entrance/exit handle and grab bar	c) has no grab bar or handle accessible from ground level at the side of each entrance that remains inside vehicle when the door is closed has no grab bar or handle at any seat intended for accessible passenger handle or grab bar, located away from seat or door, is smaller than 20 mm, or larger than 50 mm when unpadded, or larger than 75 mm when padded
d) seat belt in location designated as an accessible seating position	d) any seat does not have a fully functioning Type 1 (lap) or Type 2 (3-point) seat belt
e) ramp condition	e) not fully covered in anti-skid material anti-skid material is not fully secured to ramp surface not fitted with a raised guard (edge) on each side in a contrasting colour, or colour is worn off

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) powered ramp or lift operation *Additional Inspection Procedure(s):* Operate device into the fully deployed and stowed positions to confirm it operates as intended by the ***manufacturer***.	f) any moving part of the power mechanism is not protected by a guard ***inoperative*** or fails to operate in the manner intended by the manufacturer device fails to operate smoothly
g) interlock and over-ride of power ramp or lift device *Additional Inspection Procedure(s):* Operate device to confirm it operates as intended by the ***manufacturer***. Attempt to operate the vehicle to confirm operation is prohibited as intended.	g) ***inoperative***, ***missing*** or fails to operate in the manner intended by the ***manufacturer***
h) mobility assistive device securement system	h) ***inoperative***, ***missing*** or fails to operate in the manner intended by the ***manufacturer***
i) occupant restraint for person in mobility assistive device	i) ***inoperative***, ***missing*** or fails to operate in the manner intended by the ***manufacturer***
	Hazardous Condition(s) **i. fails to fully retract or store as intended by the *manufacturer***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section6 –Lamps

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Required Lamps	**Truck|✓| Trailer|✓| Bus|✓|**
a) operation of all required lamps *Note*: See (page 143 to 148) for details on CMVSS 108 requirements for lamps, lamp location and colour. *Additional Inspection Procedure(s):* Test the operation of all required lamps, lamp switches and controls, and lamp indicators.	a) fails to illuminate fully and correctly in response to the switch or control fails to turn off in response to the switch or control broken, cracked, ***insecure*** mounting or ***missing***, lens is clouded or reduces transmission of light is not clearly visible or is covered in any manner does not meet ***CMVSS***, DOT or SAE standards 25% or more of LEDs of any one lamp assembly are ***inoperative***
b) headlamp *Note*: This applies to truck and bus only. "HID" = high-intensity discharge lamp	b) broken, cracked, ***inoperative*** or ***missing*** moisture is present inside the lamp assembly headlamp beam pattern is not directed toward right hand side of roadway *Note:* A crack is acceptable in a lamp assembly with a replaceable bulb if no moisture is present inside the lamp assembly. a non-functional diode in LED headlamp HID bulb is installed in an incandescent headlamp housing HID assembly does not display either HG, DC, DR or DCR codes headlamp switch, or beam (high and low) selector, is broken, ***inoperative***, ***missing***, does not meet ***OEM standard*** high beam indicator lamp on instrument panel is ***inoperative*** vehicle modification or installation of lamp causes headlamp to be higher or lower than permitted by ***CMVSS*** 108 (see page 143 to 148) **the headlamps fail to meet any of the following requirements:** • two or four facing front as far apart as practical • white (correlated color temperature (CCT) rating of 2854K-5000K) • illuminate correctly when operated by headlamp control on high and low beam

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) tail lamp	c) broken, cracked, *inoperative* or *missing* vehicle modification or installation of lamp causes tail lamp to be higher or lower than permitted by *CMVSS* 108 **the tail lamps fail to meet any of the following requirements:** • minimum of two lamps facing the rear, located at rear of vehicle and as far apart as practical, red in colour • illuminate correctly when operated by headlamp control
d) stop (brake) lamp	d) broken, cracked, *inoperative* or *missing* **the stop lamps fail to meet any of the following requirements:** • minimum of two lamps facing the rear, located at rear of vehicle and as far apart as practical, red in colour • illuminate correctly when service brakes are applied
e) centre high mount stop lamp *Note:* Required on every truck with a width under 2.05 m, and GVWR of 4,536 kg and less, built after January 10, 1997. Not required on trailers.	e) broken, cracked, *inoperative* or *missing* **the centre high mount stop lamp fails to meet any of the following requirements:** • facing rear of vehicle • red in colour, illuminates correctly when service brakes are applied
f) turn signal lamp *Note:* Not required on front of trailers.	f) broken, cracked, *inoperative* or *missing* control is broken, *inoperative* or *missing* control fails to hold selected position on a vehicle less than 2.05 m wide, control fails to cancel automatically when steering returns to centre turn signal indicator lamp on instrument panel is *inoperative* **the turn signal lamps fail to meet any of the following requirements:** • minimum of two facing the front, as far apart as practical, amber in colour • minimum of two facing the rear, as far apart as practical, amber or red in colour • illuminate correctly when operated by turn signal control

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
g) hazard warning lamp *Note:* Can operate same lamps as turn signals.	g) broken, cracked, ***inoperative*** or ***missing*** control is broken, ***inoperative*** or ***missing*** hazard warning indicator lamp on instrument panel is ***inoperative*** **the hazard warning lamps fail to meet any of the following requirements:** • minimum of two facing the front, as far apart as practical, amber in colour • minimum of two facing the rear, as far apart as practical, amber or red in colour • illuminate correctly and flash simultaneously when operated by hazard warning control
h) side marker lamp *Note:* A single lamp may serve as both a side marker and a clearance lamp, provided it is clearly visible from both the side and the rear. Vehicles 9.1 m or more in length require amber intermediate lamps. Intermediate side marker lamps are not required on vehicles less than 9.1 m in length.	h) broken, cracked, ***inoperative*** or ***missing*** amber intermediate side marker lamps are ***inoperative*** or ***missing*** on a vehicle over 9.1 m in length **the side marker lamps fail to meet any of the following requirements:** • minimum of four in total, two at the rear and two at the front, facing the side, • located as close to corners as practical • front are amber in colour • rear are red in colour
i) clearance lamp *Note:* Clearance lamps are required at the front and rear on all vehicles 2.05 m or more in width. Rear clearance lamps are not required on truck-tractors.	i) broken, cracked, ***inoperative*** or ***missing*** **the clearance lamps fail to meet any of the following requirements:** • minimum of four in total, located as far apart as practical at the widest point of the vehicle • two facing the front, as high as practical, amber in colour • two facing the rear, red in colour
j) identification lamp *Note:* Identification lamps are required at the front and rear on all vehicles 2.05 m or more in width, except as noted below. Rear identification lamps are not required on truck- tractors. Front identification lamps are not required on trailers.	j) broken, cracked, ***inoperative*** or ***missing*** **the identification lamps fail to meet any of the following requirements:** • minimum of six in total • three facing the front, amber in colour • three facing the rear, red in colour

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
k) back up lamp *Note:* Back up lamps are required on all trucks, truck-tractors and buses manufactured after January 1, 1971. Back up lamps are not required on trailers.	k) broken, cracked, ***inoperative*** or ***missing*** not white in colour or not located at rear fail to illuminate with engine running and transmission in reverse gear
l) licence plate lamp *Note:* A licence lamp may not be required in cases where no licence plate is required to be displayed.	l) broken, cracked, ***inoperative*** or ***missing*** not white, fails to illuminate licence plate
m) daytime running lamp *Note:* Required on all trucks and buses manufactured after December 1, 1989.	m) broken, cracked, ***inoperative*** or ***missing*** **the daytime running lamps fail to meet any of the following requirements:** • located on front of vehicle • white or yellow in colour • operate continually when engine is operating and master lighting switch is not in the "ON" position
n) fog lamp *Note:* These are not required lamps, unless specifically required by a particular jurisdiction. Fog lamps must comply with these requirements if the lamps are operational.	**n) the fog lamps fail to meet any of the following requirements:** • lens designation is "F" • located on front and/or rear of vehicle • white or amber in colour on front, red in colour on rear • illuminate correctly and only when headlamp control is switched to low beam
o) high beam driving lamp *Note:* These are not required lamps, unless specifically required by a particular jurisdiction. Driving lamps must comply with these requirements if the lamps are operational.	**o) the high beam driving lamps fail to meet any of the following requirements:** • lens designation "Y" • located on front of vehicle • white in colour • illuminate correctly and only when headlamp control is switched to high beam

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
p) low beam driving lamp *Note:* These are not required lamps, unless specifically required by a particular jurisdiction. Driving lamps must comply with these requirements if the lamps are operational.	**p) the low beam driving lamps fail to meet any of the following requirements:** • lens designation "Y" • located on front of vehicle • white in colour • illuminate correctly and only when headlamp control is switched to low beam
q) special equipment lamp *Note:* Some jurisdictions require or prohibit certain lamps in certain operations. Inspector must be familiar with the *applicable requirements*.	q) a lamp required for vocational or specialized operation is *inoperative* or *missing* a lamp that is prohibited by the *applicable requirements* installed a lamp that is required to be covered when not in use, has no cover
	Hazardous Condition(s) **i. not at least one head lamp is operative on a power unit** **ii. not at least one tail lamp is operative on the rear visible from 150 m** **iii. not at least one stop lamp is operative on the vehicle visible from 150 m** **iv. not at least one turn signal lamp is operative on each side at the rear, visible from 150 m** **v. not at least one turn signal lamp is operative on each side at the front, visible from 150 m** **vi. any required lamp is *inoperative* or obstructed during times when the lamp is required**
2. Reflex Reflector *Note:* A lamp's lens may also function as a reflex reflector.	
a) required reflectors *Note:* See (page 143 to 148) for details on *CMVSS* 108 requirements for reflex reflector location and colour.	a) any required reflex reflector, or part of a reflex reflector, is broken, *missing*, obscured or not clearly visible not labelled to show compliance with *CMVSS*, DOT or SAE standards
b) rear reflector	b) **rear reflectors fail to meet any of the following requirements:** minimum of two, located as far apart as practical, red in colour, between 380 and 1530 mm from centre of reflector to the ground

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) front and rear side, and intermediate reflex reflector *Note:* Amber intermediate reflectors are required on all vehicles over 9.1 m in length.	c) amber intermediate reflex reflector is ***missing*** on a vehicle over 9.1 m in length **front and rear reflex reflectors fail to meet any of the following requirements:** • minimum of four in total, located as far apart as practical, between 380 and 1530 mm from centre of reflector to the ground • two at the front, amber in colour • two at the rear, red in colour
3. Retro-Reflective Marking *Note:* Required on all truck-tractors manufactured after November 19, 2001. Required on all trailers manufactured after January 10, 1997. In some jurisdictions applies retroactively to all trailers with a width of 2.05 m or more, and GVWR of 4,536 kg or more, regardless of manufacture date. Inspector must be familiar with the ***applicable requirements***. See (page 143 to 148) for details on ***CMVSS*** 108 requirements for retro-reflective markings.	**Truck|✓| Trailer|✓| Bus|✓|**
a) presence	a) any required section is ***missing***
b) type/markings	b) consist of anything other than alternating red and white retro-reflective sheeting that is marked DOT- C2 (50 mm wide), DOT-C3 (75 mm wide) or DOT-C4 (100 mm wide) for the purpose of school buses, consists of anything other than conspicuity markings as specified in the applicable CSA D250 standard
c) condition	c) peeling off or reflective properties are compromised on an area exceeding 77 cm^2 (12 in.2) of the entire surface of the required reflective material *Note:* On 50 mm wide material, this means a total length of 15 cm having some loss of reflective property.
d) location and type	d) retro-reflective markings fail to meet the requirements of ***CMVSS*** 108 as shown on page 143 to 148.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) location of retro-reflective material voluntarily applied to straight truck *Note:* Having the retro-reflective material too close to a lamp makes it more difficult to see the lamp.	e) red coloured retro-reflective marking is located closer than 75 mm to the edge of the lens of any amber lamp white coloured retro-reflective marking is located closer than 75 mm to the edge of the lens of any lamp

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. more than 50% of retro-reflective material of any required section is compromised or *missing***
4. Instrument Panel Lamp	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation *Note:* Inspect according to ***OEM*** vehicle design. Minor loss of illumination of some parts of the instrument panel is not cause for rejecting a vehicle. Illumination is required on the speedometer, and the vehicle operating status gauges required by this standard, and originally illuminated by the ***OEM***.	a) ***inoperative*** or no illumination is provided on required instrument or gauge
5. Headlamp Aim	**Truck|✓|** Trailer| | **Bus|✓|**
a) aim *Additional Inspection Procedure(s):* Check headlamp aim using an aiming screen or using equipment specifically designed for such use, following the equipment ***manufacturer*** instructions. *Note*: Headlamp aim must be checked when vehicle is unloaded.	a) not within ***manufacturer*** specification, or when specification is not available, when positioned 7.6 m from aiming screen does not comply with the requirements below **for low beam lens marked as type 2:** • left edge of beam must be within 100 mm left or right of straight ahead • top edge of beam must not be above, and no more than 100 mm below the horizontal line **for high beam lens marked as type 1 and any unmarked lens:** • centre of beam must not be above, and no more than 100 mm below the horizontal line • centre of beam must be no more than 100 mm left or right of straight ahead
b) headlamp aim adjusters	b) broken, ***inoperative***, ***insecure*** mounting or ***missing***

Visual Screen Method of Headlamp Aiming–Setting Up an Aiming Screen

A. Aiming Area Required

It is desirable to have a specific aiming area in a darkened location. This should be sufficient for the vehicle plus an additional 7.6 m measured from face of lamps to the front of the visual screen.

The floor on which the motor vehicle rests must be flat and level with the bottom of the screen.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
B. Aiming Screen If a regular commercial aiming screen is not available, the screen may consist of a vertical wall having a clear uninterrupted area approximately 1.8 m high and 3.6 m wide. The surface should be finished with washable non-gloss white paint. Adjustable black tapes should be provided for use as guidelines. After the aiming screen has been set up in its permanent location, it is necessary to paint a reference line on the floor directly under the lens of the lamps to indicate the proper location of the headlamps when they are being aimed. This reference line should be parallel to the aiming screen and exactly 7.6 m from it.	
	Hazardous Condition(s) **i. aiming of headlamp is so severely out of alignment that it is likely to impair the vision of the driver or other motorists**
6. Interior Lamps on a Bus *Note*: Inspection must be conducted according to the requirements of the relevant jurisdiction and applicable *CSA* D250, D409, D435 & D436 Standard. Inspector must be familiar with the *applicable requirements*. *Additional Inspection Procedure(s):* Activate interior lamps, then operate each entrance door. Emergency exit doors are excluded.	Truck| | Trailer| | **Bus|✓|**
a) step well lamp	a) not white in colour, *inoperative* or *missing* fails to illuminate step well area stays on when door is closed
b) aisle and overhead lamps	b) more than 10% of the lamps on any lamp circuit are *inoperative*
c) accessible vehicle lighting	c) lamp installed for accessibility device (such as a ramp or lift) is *inoperative* or *missing*

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
7. School Bus Additional Lamps *Note*: Applies to school bus only. Inspection must be conducted according to the requirements of the relevant jurisdiction and applicable *CSA* D250 Standard. Inspector must be familiar with the *applicable requirements*.	Truck| | Trailer| | **Bus|✓|**
a) alternating warning lamps *Additional Inspection Procedure(s):* Activate warning system in pre-stop phase (stop arm not deployed) and then with warning system in full stop phase (stop arm deployed). "LED" = light emitting diode	a) not equipped, or do not operate as required by the relevant jurisdiction and applicable *CSA* D250 Standard b) 25% or more of LEDs of any lamp assembly are inoperative. c) alternating warning lamp indicator on instrument panel or switch is *inoperative* or *missing*
b) strobe lamp	b) *inoperative* where required by jurisdiction strobe lamp indicator on instrument panel or switch is *inoperative* or *missing*
c) service door exterior lamp *Additional Inspection Procedure(s):* Open and close service door as required to test operation of exit lamp.	c) not equipped, or does not operate as required by the relevant jurisdiction and applicable *CSA* D250 Standard
	Hazardous Condition(s) **i. on a school bus, alternating overhead warning lamps are *inoperative* or obstructed**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

IMPORTANT NOTE: Every lamp, reflex reflector, and conspicuity treatment must be permanently attached in the location specified below and must comply with all applicable requirements prescribed for it by FMVSS/CMVSS 108. The face of any device on the front/rear and sides should be, respectively perpendicular and parallel to the vehicle's centerline, unless it is photometrically certified at installation angle. No part of the vehicle shall prevent any device from meeting its prescribed requirements unless an auxiliary device meeting all prescribed requirements is installed.

IN CANADA: Manufacturers and importers of vehicles must have the proper certification test records demonstrating compliance of lighting components with all prescribed requirements.

BASIC EQUIPMENT REQUIRED ON ALL TRUCKS, BUSES & MPVs

DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height mm(in.) from the ground
1	Headlamps - Lower Beam US requires "DOT" lettering on lens US&Canada - light source code required on lens	(H, HR)	Forward road illumination	Minimum 2	White	On the front - symmetrical as far apart as practicable If 4 lamp system - outboard or above upper beams	560-1370 (22-54)
	Headlamps - Upper Beam US requires "DOT" lettering on lens US&Canada - light source code required on lens	(H, HR)	Forward road illumination	Minimum 2	White	On the front - symmetrical If 4 lamp system - inboard or below lower beams	560-1370 (22-54)
	Parking Lamps Vehicles less than 2032mm wide	(P)	Indicate parked vehicle	Minimum 2	White or amber	On the front - symmetrical as far apart as practicable	380-1830 (15-72)
	Daytime Running Lamps (DRL) Canada - required / US - option US requires "DRL" lettering on lens if not headlamp	(Y2)	Indicate in use vehicle	Minimum 2	White or amber	On the front - symmetrical as far apart as practicable	380 (15) min. Max. depends on type of DRL
	Front Turn Signal/ Hazard Warning Lamps	(I)	Indicate direction of turn/ identify disabled vehicle	Minimum 2	Amber	On the front- symmetrical as far apart as practicable	380-2110 (15-83)
2	Front Clearance Lamps Vehicles 2032mm wide or wider *photometrically certified at installation angle	(P2, PC* or P3, PC2*)	Show vehicle's width	Minimum 2	Amber	At widest point - symmetrical on the front or near the front facing forward	As high as practicable
3	Front Identification Lamps (ID) Vehicles 2032mm wide or wider	(P2 or P3)	Indicate presence of a wide vehicle	Exactly 3	Amber	On the front - center horizontally spaced 150 mm (6 in.) to 300 mm (12 in.) apart	As high as practicable or on top of the cab
4a	Front Side Marker Lamps *photometrically certified at installation angle	(P2, PC* P3, PC2*)	Front and rear side marker lamps / side reflex reflectors indicate vehicle's presence and length	Minimum 2	Amber	Each side at front as far forward as practicable	380 (15) minimum
4b	Front Side Reflex Reflectors	(A)		Minimum 2	Amber	Each side at front as far forward as practicable facing sideward	380-1530 (15-60)
5a	Rear Side Marker Lamps ** *photometrically certified at installation angle	(P2, PC* or P3, PC2*)		Minimum 2	Red	Each side at rear as far back as practicable	380 (15) minimum
5b	Rear Side Reflex Reflectors ** **not required on Truck Tractors	(A)		Minimum 2	Red	Each side at rear as far back as practicable facing sideward	380-1530 (15-60)
6	Rear Clearance Lamps Vehicles 2032mm wide or wider Not required on Truck Tractors *photometrically certified at installation angle	(P2, PC* or P3, PC2*)	Show vehicle's width MAY NOT be combined with tail lamps	Minimum 2	Red	At widest point - symmetrical on the rear or near the rear facing rearward	As high as practicable may be lower only if rear ID lamps are at the top
7	Rear Identification (ID) Lamps Vehicles 2032mm wide or wider Not required on Truck Tractors	(P2 or P3)	Indicate presence of a wide vehicle	Exactly 3	Red	On the rear - center horizontally spaced 150mm (6 in.) to 300mm (12 in.) apart facing rearward	At the top may be lower if door header narrower than 25mm
8	Tail Lamps	(T)	Indicate vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1830 (15-72)
	Stop Lamps	(S)	Indicate braking	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1830 (15-72)
	Rear Turn Signal/ Hazard Warning Lamps	(I)	Indicate direction of turn/ identify disabled vehicle	Minimum 2	Red or amber	On the rear - symmetrical as far apart as practicable	380-2110 (15-83)
	Rear Reflex Reflectors	(A)	Show vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1530 (15-60)
9	Backup Lamp	(R)	Illuminates ground behind the vehicle and alert road users	Minimum 1	White	Rear	No requirement
10	License Plate Lamp(s)	(L)	Illuminates license plate	Minimum 1	White	On the rear - above or at the sides of license plate	No requirement
11	Center High Mounted Stop Lamp Vehicles less than 2032mm wide and 4536kg	(U3)	Indicates braking	1	Red	On the rear - centerline of the vehicle	860 (34) minimum

ADDITIONAL EQUIPMENT FOR SPECIFIC VEHICLES

VEHICLES 9.1m (30 ft.) LONG OR LONGER

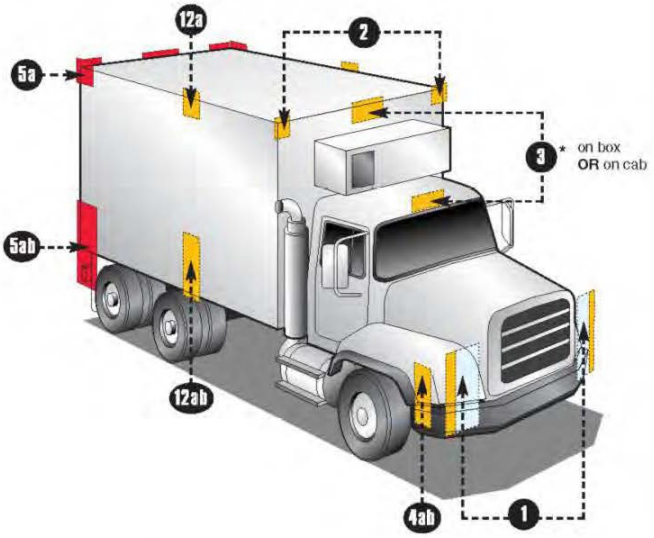
DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height mm(in.) from the ground
12a	Intermediate Side Marker Lamps	(P2 or P3)	Indicate presence of a long vehicle	Minimum 2	Amber	Each side near center	380 (15) minimum
12b	Intermediate Side Reflex Reflectors	(A)	Indicate presence of a long vehicle	Minimum 2	Amber	Each side near center facing sideward	380-1530 (15-60)

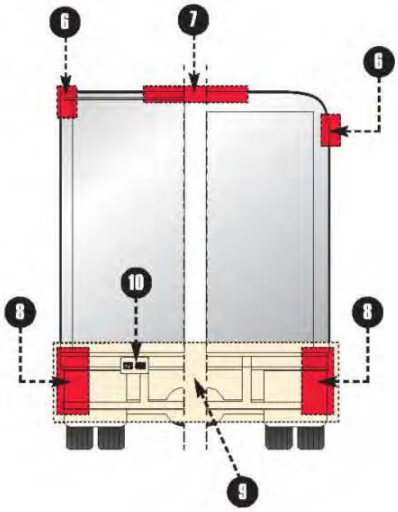
Truck Tractors

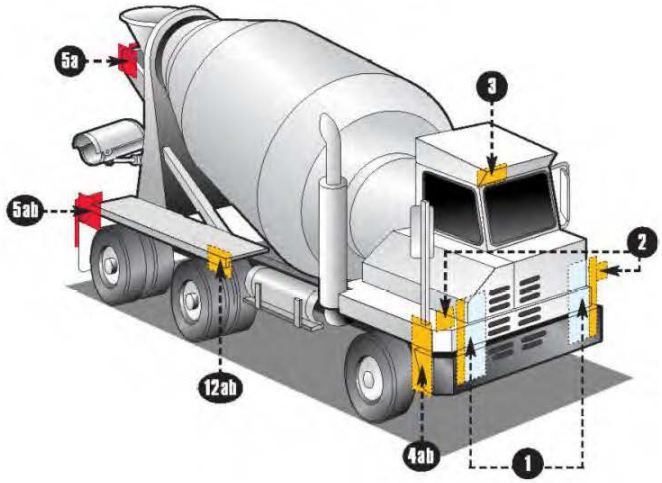
DESCRIPTION		MANDATORY REQUIREMENTS					
Area	Conspicuity Treatment	DOT Coding	Quantity	Color	Location	Height	Options
13	Rear Upper Body Markings	DOT-C DOT-C2 DOT-C3 DOT-C4	Exactly 2 pairs of 300mm long strips	White	Rear upper corners of cab facing rearward	As high as practicable excluding fairings	
14	Rear Marking		Exactly 2 sections of min. 600mm each	Red/ White	Rear - facing rearward - on fenders, on mud flap brackets, or within 300mm below the top of mud flaps	As horizontal as practicable and not higher than 1525mm from the ground	If mud flaps not used - on the cab or frame mounted brackets

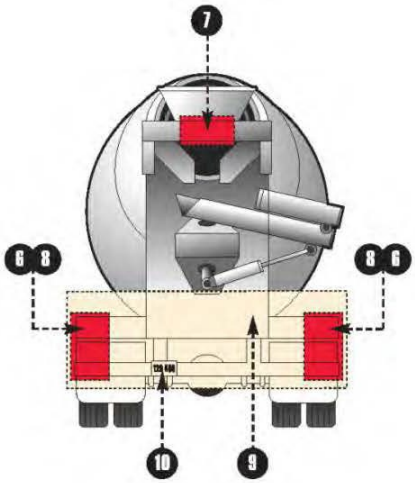
NOTE: The edge of red conspicuity tape shall not be closer than 75 mm to the edge of any amber lamp and the edge of white conspicuity tape shall not be closer than 75 mm to the edge of any lamp

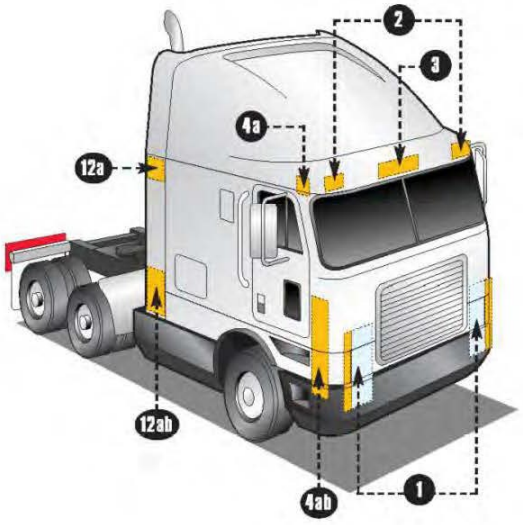
Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

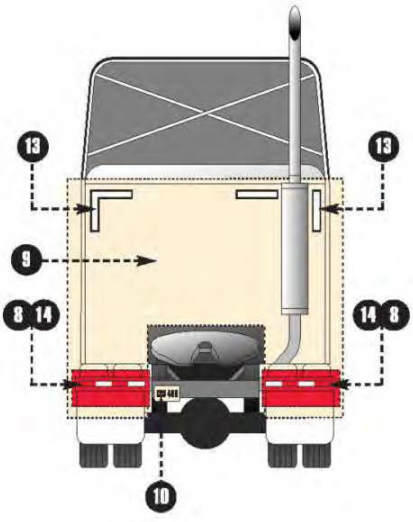












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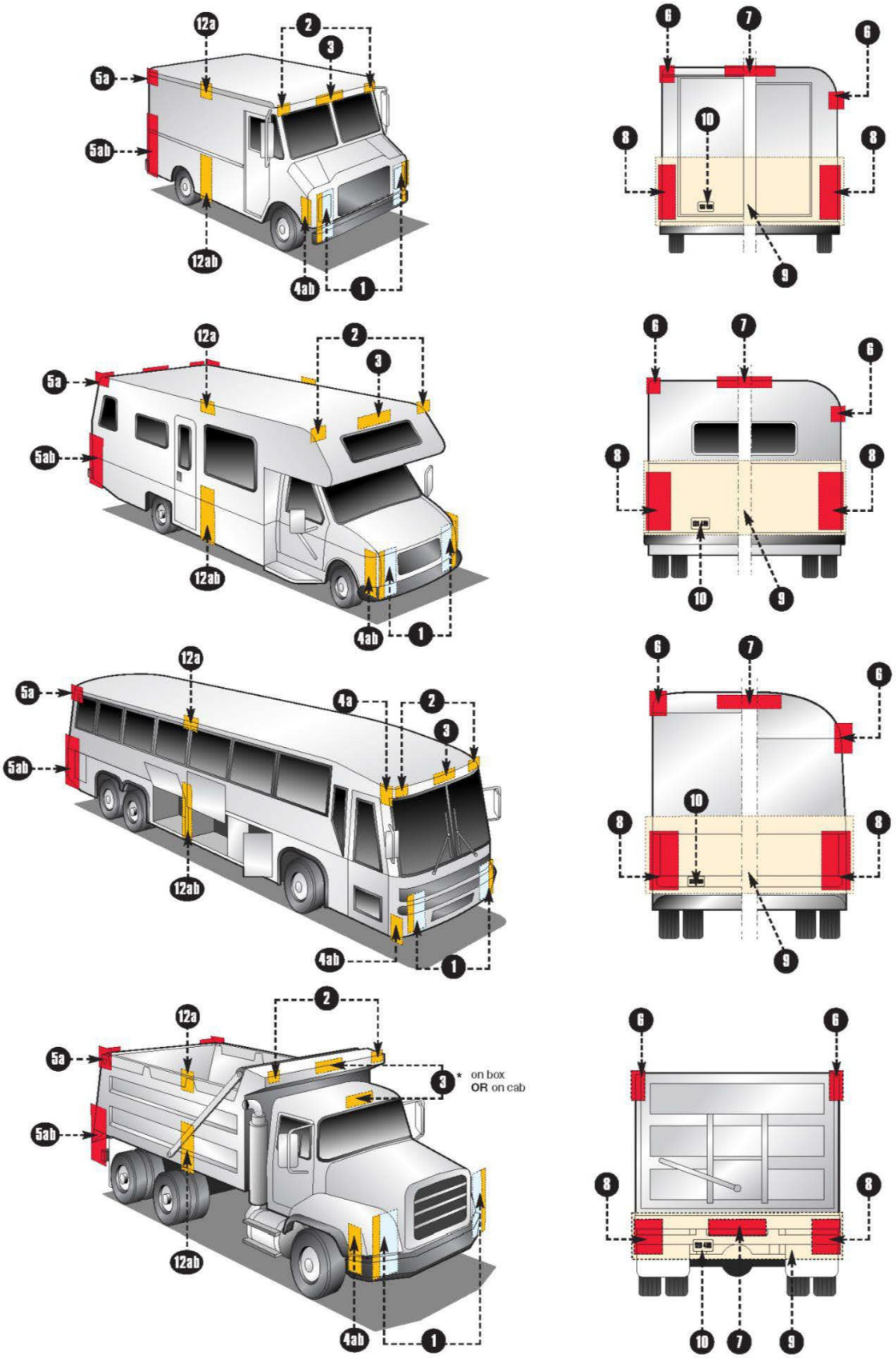


Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

IMPORTANT NOTE: Every lamp, reflex reflector, and conspicuity treatment must be permanently attached in the location specified below and must comply with all applicable requirements prescribed for it by FMVSS/CMVSS 108. The face of any device on the front/rear and sides should be, respectively perpendicular and parallel to the vehicle's centerline, unless it is photometrically certified at installation angle. No part of the vehicle shall prevent any device from meeting its prescribed requirements unless an auxiliary device meeting all prescribed requirements is installed.

IN CANADA: Manufacturers and importers of vehicles must have the proper certification test records demonstrating compliance of lighting components with all prescribed requirements.

BASIC EQUIPMENT REQUIRED ON ALL TRAILERS

DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height mm(in.) from the ground
1	Tail Lamps	(T)	Indicate vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1830 (15-72)
	Stop Lamps	(S)	Indicate braking	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1830 (15-72)
	Rear Turn Signal Lamps	(I)	Indicate direction of turn	Minimum 2	Red or Amber	On the rear - symmetrical as far apart as practicable	380-2110 (15-83)
	Rear Reflex Reflectors	(A)	Indicate vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical as far apart as practicable facing rearward	380-1530 (15-60)
2	License Plate Lamp(s)	(L)	Illuminates license plate	Minimum 1	White	On the rear - above or at the sides of license plate	No requirement
3	Rear Side Marker Lamps *photometrically certified at installation angle	(P2, PC* or P3, PC2*)	Front and rear side marker lamps / side reflex reflectors indicate vehicle's presence and length	Minimum 2	Red	Each side at rear as far back as practicable	380-1530 (15-60) no max. for veh. under 2032mm (80") wide
	Rear Side Reflex Reflectors	(A)		Minimum 2	Red	Each side at rear as far back as practicable facing sideward	380-1530 (15-60)
4a	Front Side Marker Lamps *photometrically certified at installation angle	(P2, PC* or P3, PC2*)		Minimum 2	Amber	Each side at front as far forward as practicable	380 (15) minimum
4b	Front Side Reflex Reflectors	(A)		Minimum 2	Amber	Each side at front as far forward as practicable facing sideward	380-1530 (15-60)

ADDITIONAL EQUIPMENT FOR TRAILERS EXCEEDING THE FOLLOWING PARAMETERS

Length 9.1m (30 ft.) or longer

DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height mm(in.) from the ground
5a	Intermediate Side Marker Lamps *photometrically certified at installation angle	(P2, P3, PC* or PC2*)	Indicate presence of a long vehicle	Minimum 2	Amber	Each side near center facing sideward	380 (15) minimum
5b	Intermediate Side Reflex Reflectors	(A)	Indicate presence of a long vehicle	Minimum 2	Amber	Each side near center facing sideward	380-1530 (15-60)

Width 2032mm (80 in.) or wider

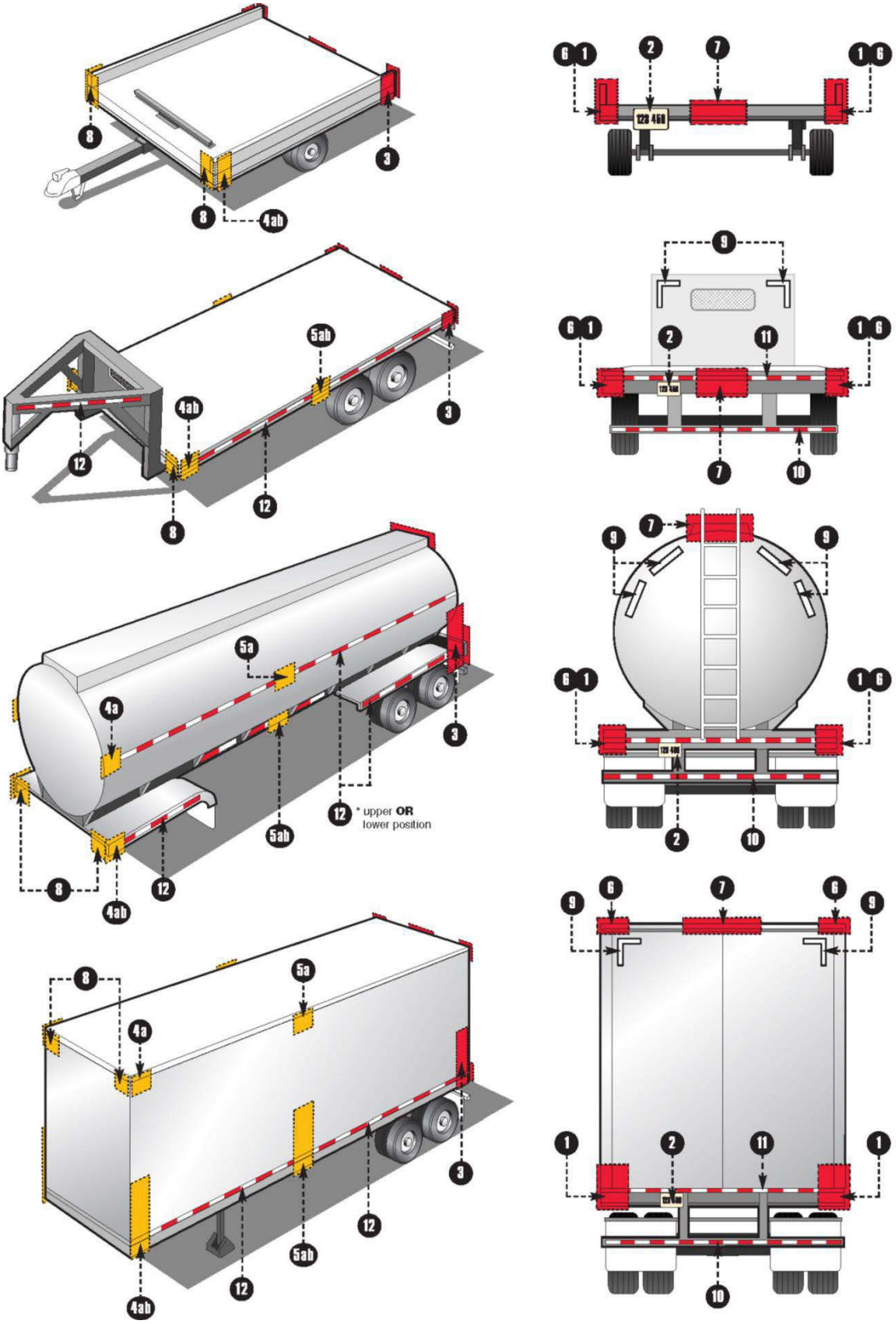
DESCRIPTION			MANDATORY REQUIREMENTS				
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height
6	Rear Clearance Lamps *photometrically certified at installation angle	(P2, PC* or P3, PC2*)	Show vehicle's width MAY NOT be combined with tail lamps	Minimum 2	Red	At widest point - symmetrical on the rear or near the rear facing rearward	As high as practicable may be lower only if ID lamps are at the top
7	Rear Identification (ID) Lamps	(P2 or P3)	Indicate presence of a wide vehicle	Exactly 3	Red	On the rear - center horizontally spaced 150mm (6 in.) to 300mm (12 in.) apart facing rearward	At the top - may be lower if door header narrower than 25mm
8	Front Clearance Lamps *photometrically certified at installation angle	(P2, PC* or P3, PC2*)	Show vehicle's width	Minimum 2	Amber	At widest point - symmetrical on the front or near the front facing forward	As high as practicable

Width 2032mm (80 in.) or wider AND GVWR 4536 kg (10,000 lb.) or more

DESCRIPTION		MANDATORY REQUIREMENTS					
Area	Conspicuity Treatment	DOT Coding	Quantity	Color	Location	Height	Options
9	Rear Upper Body Markings	DOT-C, DOT-C2, DOT-C3, DOT-C4	Exactly 2 pairs of 300mm long strips	White	On the rear upper corners facing rearward	At the top	Reflex reflectors may not be required if they are replaced in their required location with conspicuity treatment. **Optional in Canada:** Rear lower body and side conspicuity treatment may also be solid white, solid yellow, or white and yellow.
10	Bumper Bar Marking		Continuous	Red/White	On the rear bumper bar's horizontal element full width - facing rearward	No requirement	
11	Rear Lower Body Marking		Continuous	Red/White *(see options)*	On the rear full width of the vehicle facing rearward	As horizontal as practicable and as close as practicable to the range of 375 to 1525mm from the ground	
12	Side Marking		(see location)	Red/White *(see options)*	Each side - facing sideward continuous, or evenly spaced over minimum of 50% of length starts and ends as close to the front and rear of the vehicle as practicable	As horizontal as practicable and as close as practicable to the range of 375 to 1525mm from the ground	

NOTE: The edge of red conspicuity tape shall not be closer than 75 mm to the edge of any amber lamp and the edge of white conspicuity tape shall not be closer than 75 mm to the edge of any lamp

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.



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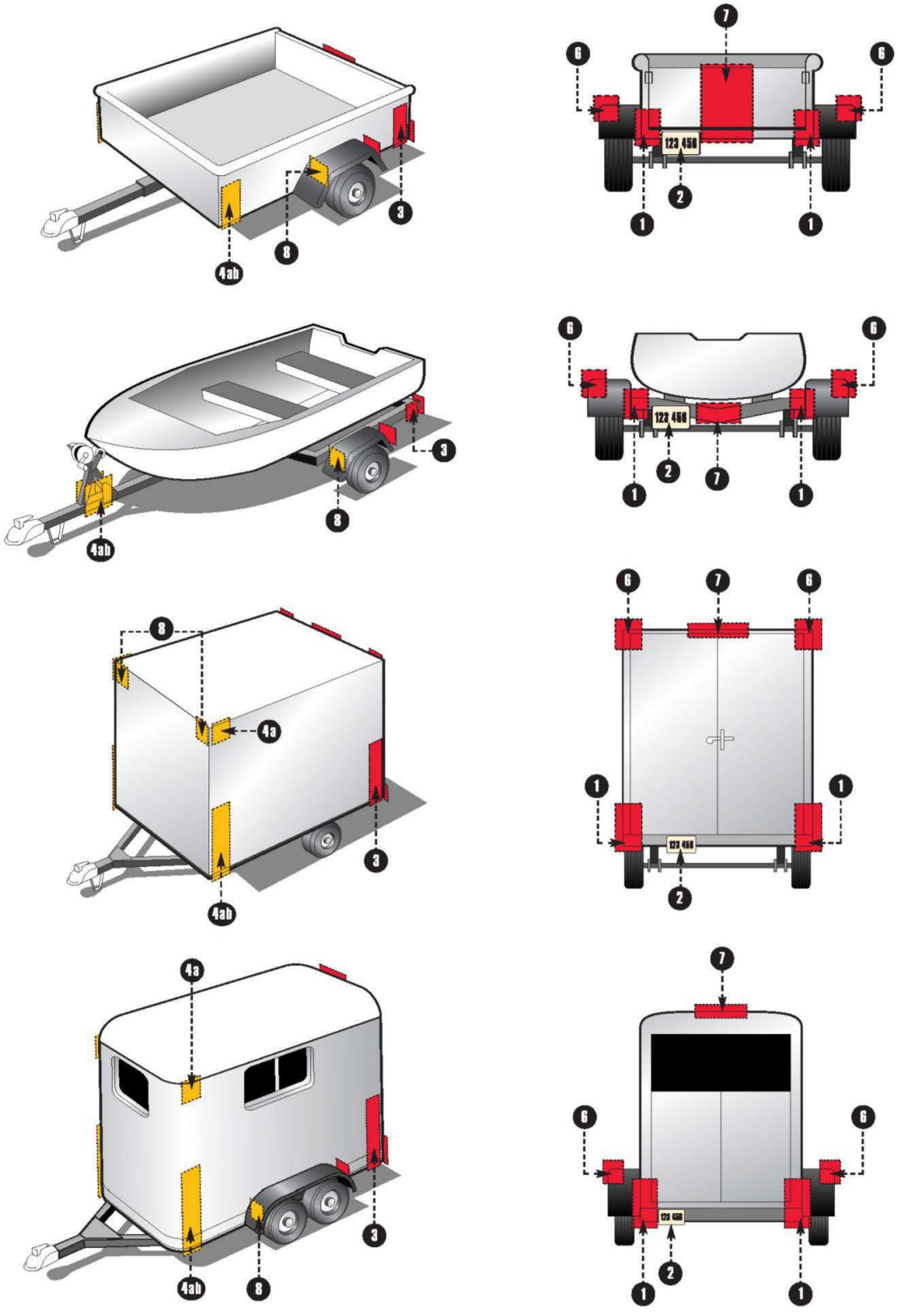

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section7 –Electrical System

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Wiring *Additional Inspection Procedure(s):* Inspect wiring, harnesses and connections that are accessible and visible. Pay particular attention to battery, starter and charging system circuits.	**Truck|✓| Trailer|✓| Bus|✓|**
a) security	a) *loose* or improperly supported, and able to contact moving parts chafed section resulting from contact with vehicle parts not secured at least every 1800 mm
b) insulation	b) conductor is exposed, other than at a proper connector
c) condition	c) cut, shorted or deteriorated connection is *loose*, abnormally corroded, burnt
d) circuit loading *Note:* Circuit protection requirements are based on *manufacturer* design and specifications. Circuit testing is not required. Inspection is visual and based on knowledge of the normal design and specifications.	d) circuit load protection is *missing* or bypassed circuit is overloaded beyond normal circuit capacity circuit protection device (fuse, circuit breaker or fusible link) exceeds circuit capacity circuit is improperly grounded
	Hazardous Conditions **i. any electrical component or wiring shows signs of shorting, arcing, or a hot spot** **In the engine compartments of a bus:** **ii. electrical cable insulation is burnt, chafed, *damaged*, or frayed, exposing the conductor** ***iii.* protective grommet insulating an electrical cable through metal is *damaged* or *missing*** **iv. electrical component is broken or mounting is *insecure*** **v. electrical cable is unsupported, or a clamp is *missing*, causing chafing or fraying** **vi. lubricating oil is leaking from an electrical component such as the alternator or auxiliary heater**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
2. Battery	**Truck|✓| Trailer|✓| Bus|✓|**
a) posts and connections	a) corrosion or deterioration is present that prevents proper electrical contact, *loose* or burnt
b) mount	b) cracked or *missing*, perforated or weakened due to corrosion
c) cover and hold down	c) *insecure*, *missing*, does not meet *OEM standard* battery is not secured in place
d) condition	d) *level 2 leak* of battery fluid
	Hazardous Conditions **i. any electrical component or wiring shows signs of shorting, arcing, or a hot spot** **In the battery compartments of a bus:** **ii. electrical cable insulation is burnt, chafed, *damaged*, or frayed, exposing the conductor** ***iii.* protective grommet insulating an electrical cable through metal is *damaged* or *missing*** **iv. electrical component is broken or mounting is *insecure*** **v. electrical cable is unsupported, or a clamp is *missing*, causing chafing or fraying**
3. Trailer Cord (output to towed vehicle)	**Truck|✓| Trailer|✓| Bus|✓|**
a) insulation	a) cut, cracked, deteriorated or melted through to wire conductor
b) connection *Note*: A trailer cord must be repaired only by using *industry standard* methods.	b) cracked, ends split, improper repair or connection
c) constant ABS power on auxiliary circuit *Note:* Also refer to Section 3A, Item 19 f) PLC communication). Every vehicle equipped for towing another vehicle with air brakes, manufactured after April 1, 2000, must supply constant power to the trailer auxiliary circuit (center pin, blue wire) while the ignition is in the "on" position. *Additional Inspection Procedures(s):* Confirm that voltage is present at the auxiliary pin in the trailer cord when the ignition is 'on' by one of the following methods: Option 1 – Test with a voltmeter. Option 2 – Connect to a test device.	c) power is not continuously supplied to the auxiliary circuit when ignition is "on" a switch is installed that can interrupt power to the auxiliary circuit voltage is below required minimum when circuit is loaded to *industry standard* value

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
4. Alternator Output on a School Bus *Note*: Applies to school bus only. Inspection must be conducted according to the requirements of the relevant jurisdiction and applicable *CSA* D250 Standard.	
a) output rate *Additional Inspection Procedure(s):* Test alternator output using test method #1 or test method #2. Test method #1 – Test alternator using a load test device. Test Method #2 - Test the output of the charging system with all lamps, heaters, defrosters, and other electrical accessories on at highest settings, with engine operating at 1500 rpm.	a) during test method #1, fails to produce 70 amps at idle or fails to produce 130 amps at 1500 rpm during test method #2, voltage drops below 12.4 volts, or charge indicator shows a discharge condition charge indicator is *inoperative*

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

Section 8 – Body

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Hood or Engine Enclosure *Additional Inspection Procedure(s):* Test the operation of the hood or engine enclosure doors, attachment, latches and safety devices.	**Truck|✓|** Trailer| | **Bus|✓|**
a) condition	a) ***damaged***, ***insecure***, or deteriorated in a manner that it is likely to become detached or ***missing***
b) latch (primary or secondary)	b) broken, ***inoperative***, ***insecure*** mounting, ***missing*** or seized effectiveness is compromised due to deteriorated condition, (e.g.: rubber or similar type of latch) fails to open or close normally welded or repaired in a way that does not meet ***OEM standard***
c) safety cable, assist spring, support/dampener	c) broken, insecurely attached or ***missing***
d) hinge and support spring	d) hinge or hinge part is broken, cracked, ***missing***, seized or ***abnormally worn***
	Hazardous Condition(s) **i. both primary and secondary latch are *inoperative***
2. Tilt Cab *Additional Inspection Procedure(s):* Test the operation of the tilt cab operation, its attachment, latches and safety devices.	**Truck|✓|** Trailer| | Bus| |
a) latch (primary or secondary)	a) broken, ***insecure*** mounting, ***missing*** or seized fails to open or close normally welded or repaired in a way that does not meet ***OEM standard***
b) hinge	b) hinge or hinge part is broken, cracked, ***missing***, seized or ***abnormally worn*** parts do not align correctly

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. latch fails to secure the cab (latch is incapable of holding cab from moving forward)**
3. Air-Suspended Cab *Additional Inspection Procedure(s):* Check the cab with air system at normal operating pressure.	**Truck|✓|** Trailer| | Bus| |
a) air bag	a) leaking, cracked to reinforcing layer, ***damaged*** or patched not properly inflating or cab tilts to one side
b) air line, connection and fitting	b) fitting, line or repair method does not meet ***OEM*** or ***industry standard***, tubing or hose is defective as defined in the chart on page 55 fitting or connection is broken, cracked, flattened or leaking ***damaged*** in a way (such as: melting, flattening, deformation or kinking) that can restrict air flow
c) mount, rod and attachment	c) bent, broken, ***loose*** or welded or repaired in a way that does not meet ***OEM standard***
d) pressure protection valve	d) ***missing*** or improper type
e) height control valve	e) ***inoperative*** (as indicated by cab height being above or below its normal position) equipped with a single valve which is not in ***OEM*** location, or not near centre of cab
f) shock absorber	f) broken, ***damaged***, disconnected, ***loose*** or ***missing*** ***level 2 leak*** of oil
	Hazardous Condition(s) **i. any component is so *insecure* or *loose* that it is an imminent hazard or it could become detached from vehicle**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
4. Cab and Passenger-Vehicle Body	**Truck|✓|** Trailer| | **Bus|✓|**
a) condition	a) any section is in a condition that could be hazardous to driver, passenger, pedestrian or cyclist due to being: loose, protruding, torn or having an exposed sharp edge corroded or torn in a manner that reduces structural integrity of a panel or floor, or allows exhaust gases to enter the occupant compartment modified in a manner that may reduce structural integrity (unless the condition or the repair is approved by the *OEM*, *manufacturer* or an engineer) body component integrity is reduced due to a *loose* body component, broken weld, missing fastener or failed adhesive hole is present in panel or floor body panel or floor is welded or repaired in a way that does not meet *OEM standard*
b) body mount/support	b) allows abnormal amount of movement broken, cracked, *loose* or *missing* parts improper mount used support cracked, broken or bulging welded or repaired in a way that does not meet *OEM standard*
c) body moulding or trim	c) Is in a condition that could be hazardous to driver, passenger, pedestrian, or cyclist due to being: loose, protruding, torn or having an exposed sharp edge
d) fender	d) *missing*, ***damaged*** so that road spray is not controlled corroded or *damaged* in a manner that *OEM* type lamps cannot be properly secured not the full width of the tire(s)

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. any component is so *insecure* or *loose* that it is an imminent hazard or it could become detached from vehicle** **ii. any section has exposed sharp edge, is torn or protrudes out in a manner that is hazardous to driver, passenger, pedestrian or cyclist** **iii. any body part or attachment is broken, cracked perforated, or sagging, in a manner that permits the body to contact any moving part**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
5. Cargo Body *Additional Inspection Procedure(s):* Where any sheet metal, structural item or fastener is suspected of being ***loose*** or perforated, determine the integrity of the suspect item or area by lightly tapping it with a hammer. *Note*: Minor surface rust and corrosion is normal.	**Truck|✓|** **Trailer|✓|** Bus| |
a) sheet metal	a) any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist panel is ***insecure***, ***loose*** or corroded through rivet is ***loose***, ***missing*** welded or repaired in a way that does not meet ***OEM standard***
b) floor & deck	b) has any condition that allows a person or cargo to fall through has a hole larger than 200 mm across the longest dimension welded or repaired in a way that does not meet ***OEM standard***
c) frame & sub-frame	c) bulge caused by corrosion resulting in distortion of 10 mm or more (unless the condition or the repair is approved by the ***OEM***, ***manufacturer*** or an engineer) stress crack at side rail or rub-rail rivet is ***loose***, ***missing***, dimpled by corrosion bent, broken, cracked or ***insecure*** welded or repaired in a way that does not meet ***OEM standard***
d) cross-member	d) bent, broken, collapsed, cracked or ***missing*** perforated or weakened by corrosion

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) inner or outer side rail and body-long sills	e) bulge caused by corrosion resulting in distortion of 10 mm or more (unless the condition or the repair is approved by the *OEM*, *manufacturer* or an engineer) rivet is *loose*, *missing* bent, broken, cracked or *insecure* welded or repaired in a way that does not meet *OEM standard*
f) stake pocket/tiedown, cargo securing point or cargo securing device (including portable anchors)	f) broken, cracked or *insecure* elongated or distorted.
g) tailgate, hopper, or end-dump door	g) broken, or cracked hinge is broken, cracked or *missing*, or pin lock is *missing* *insecure*, or will not close and latch properly any gap exists that ~~would allow~~ leakage, loss or spillage of cargo welded or repaired in a ~~way that does~~ not meet *manufacturer* standard
h) body to frame attachment *Note:* Includes body to frame attachment device such as 'U- bolt', pivot hinge, cheek plate mount, flex-mount hardware, body clamp and 'J-Bar'.	h) bent, broken, cracked, *loose* or *missing* spring is broken spacer or insulator is abnormally worn, crushed, dislodged or missing
i) body rail and structural member	i) upper or lower cargo body rail is bent, buckled, has a crack longer than 25 mm, or has a fastener *loose* or *missing* floor cross member is bent, *loose* or sagging roof support is bent, *loose* or sagging
j) body panel	j) any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist panel or panel fastener is *insecure*, *loose*, *missing*, or corroded through rivet is *loose* repaired in a way that does not meet *OEM standard* any gap exists that would allow leakage, loss or spillage of cargo

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. any component is so *insecure* or *loose* that it is an imminent hazard or it could become detached from vehicle** **ii. any section has exposed sharp edge, is torn or protrudes out in a manner that is hazardous to driver, passenger, pedestrian or cyclist** **iii. any body part or attachment is broken, cracked perforated, or sagging, in a manner that permits the body to contact any moving part, or imminent collapse appears likely** **iv. any gap exists allowing leakage, loss or spillage of cargo** **v. a cargo body upper or lower rail is buckled, bowed, cracked through, sagging or has two or more adjacent *loose* or missing fasteners** ***vi.* two or more adjacent floor cross members are bent, *loose* or sagging** **vii. two or more adjacent roof supports are bent, *loose* or sagging**
6. Frame, Rails & Mounts	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition *Note*: Some rust and corrosion on the outer surface of exposed metal parts is normal. When a high amount of rust or corrosion is present and visibly reduces the thickness of the material, structural deterioration is possible.	a) welded, modified or repaired in a way that does not meet *OEM standard* bent, broken or cracked perforated or separated due to corrosion between mount and frame member rusted, worn or corroded to a depth sufficient to become weakened bulge caused by corrosion resulting in distortion of 10 mm or more (unless the condition or the repair is approved by the *OEM*, *manufacturer* or an engineer) any condition of the frame assembly allows a frame component, or a part of the body or power train, to be more than 25 mm out of its normal position, or to contact a moving part

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) frame fastener	b) ineffective, *loose* or *missing*
c) cross-member	c) bent, broken, cracked, *loose* or *missing* cut, notched, rusted or corroded to a depth sufficient to cause weakness repaired using material or method, that does not meet *OEM standard* or *industry standard* any condition of a cross member allows a frame component, or a part of the body or power train, to be more than 25 mm out of its normal position, or to contact a moving part
d) sub-frame assembly *Note:* This only applies to a structural frame assembly that is not part of the main frame assembly, and carries a load or provides strength to the vehicle structure, i.e.: engine cradle, or suspension sub-frame.	d) bent, broken, cracked, *loose* or *missing* cut, notched, rusted or corroded to a depth sufficient to cause weakness repaired using material or method that does not meet OEM standard or industry standard any condition of the sub-frame assembly allows a frame component, or a part of the body or power train, to be more than 25 mm out of its normal position, or to contact a moving part
	Hazardous Condition(s) **i. any frame side-rail or cross-member is cracked as follows:** • **longer than 38 mm** • **longer than 25 mm in the bottom flange** • **from the web extending around the radius and into the bottom flange** **ii. any condition of the frame allows a frame component, or a part of the body or power train, to be more than 38 mm out of its normal position, or to contact a moving part** ***iii.*** **imminent failure appears likely due to a frame member that is *damaged* or deteriorated, or has been repaired using material or method, that does not meet *OEM standard* or *industry standard***

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Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
7. Unitized Body Elements	**Truck|✓| Trailer|✓| Bus|✓|**
a) load carrying panel, bulkhead, structural element and mounts *Note*: Some rust and corrosion on the outer surface of exposed metal parts is normal. When a high amount of rust or corrosion is present and visibly reduces the thickness of the material, structural deterioration is possible.	a) bent, broken, cracked, *loose* or *missing* cut or notched more than 25 mm, or rusted or corroded to a depth sufficient to cause weakness welded or repaired in a way that does not meet *OEM standard* any rivet is *loose* or *missing* any condition of the unitized body allows a part of the body or power train, to be more than 25 mm out of its normal position, or to contact a moving part
	Hazardous Condition(s) **i. any component is so *insecure* or *loose* that it could become detached from the vehicle** **ii. structural body component has a crack, cut or notch longer than 38 mm** **iii. any condition of a unitized body component allows a part of the body or power train to be more than 38 mm out of its normal position, or to contact a moving part** ***iv.* imminent failure appears likely due to a body component that is *damaged* or deteriorated, or has been repaired using material or method, that does not meet *OEM standard* or *industry standard***
8. Cab or Cargo Door	**Truck|✓| Trailer|✓|** Bus| |
a) condition and operation *Additional Inspection Procedure(s):* Test the operation of each door. *Note*: This includes a partition door between the occupant and cargo area.	a) binds or fails to lock securely *insecure* mounting to hinge, *insecure* hinge or severely corroded in hinge area panel is corroded through welded or repaired in a way that does not meet OEM standard door fails to operate or latch on both primary and secondary latches gap exists that may allow exhaust gases to enter cab, passenger compartment, and/or sleeper seal is out of position, *damaged* or *missing*, and is able to allow exhaust gases to enter cab, passenger compartment, and/or sleeper any gap exists that would allow leakage, loss or spillage of cargo

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) door openers and handles	b) broken, *inoperative* or *missing* catch or latch is broken, *loose* or *missing*
	Hazardous Condition(s) **i. cab door fails to latch on both primary and secondary latches** **ii. cargo door fails to latch** **iii. gap exists and exhaust gases are entering cab, passenger compartment or sleeper** **iv. any gap exists allowing leakage, loss or spillage of cargo**
9. Cargo Tank or Vessel *Note*: Code, (e.g.: dangerous goods *CSA* B620, edible product, dry bulk) cargo tanks are frequently subject to additional inspection requirements. Inspections conducted in accordance with this standard address only a limited portion of the compliance requirements. This inspection does not include any procedure that requires operation of any valve, hatch or product handling item. Technician-inspector must take precautions to avoid exposure to any cargo or residual material.	**Truck**|✓| **Trailer**|✓| Bus| |
a) condition	a) welded or repaired in a way that does not meet *OEM standard* *loose* on mounts *level 2 leak* of any liquid transported by the tank or vessel crack or broken weld in tank, frame or support movement, bulge or weakness caused by corrosion between tank and frame
b) valve	b) cap *loose* or *missing* *level 2 leak* of any liquid transported by the tank or vessel
c) hose	c) *loose* or improperly secured
d) hatch	d) *insecure*, *loose* or *missing* latch *inoperative* hinge, broken or *inoperative*

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. any component is so *insecure* or *loose* that it could become detached from vehicle** ***ii.* required internal valve is *missing*** **iii. internal valve remains open when it is required to be closed** ***iv.* access/fill/inspection opening cover is improperly secured or *missing*** ***v.* required venting device, emergency device, or discharge valve, is *missing***
10. Body, Device or Equipment Attached or Mounted to the Vehicle	**Truck|✓| Trailer|✓| Bus|✓|**
Note: This section applies primarily to external devices or equipment attached to a vehicle. Examples include a crane, cargo lifting and transporting machine, load covering equipment, cargo dispensing equipment, APU, refrigeration-heater (reefer) unit, generator, ready-mix unit, sander body, feed & grain body, snow plow, service/ utility body, vacuum tank, flatbed, roll- on/roll-off, lugger, ISO container chassis, etc. The criteria in this section only apply to a mounted body, device or equipment to the extent that the condition could affect the safe operation of the vehicle on the highway. The functionality of the mounted equipment does not need to be tested or inspected.	
a) security and condition *Additional Inspection Procedure(s):* Check security of attached body, device or equipment visually, manually and using suitable tools as necessary. No functional test is to be conducted.	a) equipment or device is in such an unsafe condition that is a risk to other motorists, the driver, a passenger, pedestrian or cyclist equipment or device is *insecure* or *loose*, or in danger of shifting in a way that could impede normal operation of the vehicle any section has an exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist *level 3 leak* of any oil, hydraulic fluid or liquid product

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

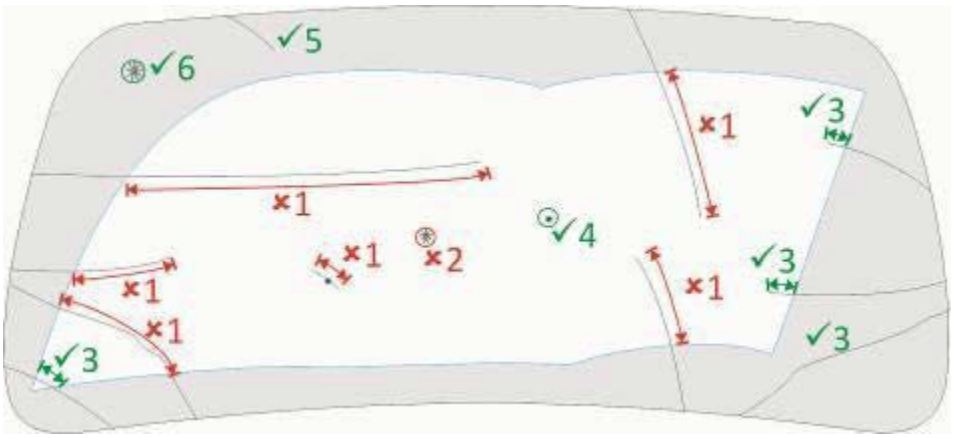
ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) ***i.*** **any article, component or device is so *insecure* or *loose* that it could become detached from vehicle** **ii. equipment or device is in such an unsafe condition that is a risk to other motorists, the driver, a passenger, pedestrian or cyclist** **iii. any section has an exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist**
11. Refrigeration/Heater Unit System (Reefer or Auxiliary Power Unit [APU])	**Truck|✓| Trailer|✓| Bus|✓|**
a) security and condition *Note:* *Additional Inspection Procedure(s):* Check security of attached body, device or equipment visually, manually and using suitable tools as necessary. No functional test is to be conducted. Inspect the exhaust system and fuel system, according to the appropriate type of fuel used, as described in Section 1 – Power Train.	a) equipment or device is in such an unsafe condition that is a risk to other motorists, the driver, a passenger, pedestrian or cyclist equipment or device is *insecure* or *loose*, or in danger of shifting in a way that could impede normal operation of the vehicle any section has an exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist *level 3 leak* of any oil, hydraulic fluid or liquid product **Hazardous Condition(s)** ***i.*** **any article, component or device is so *insecure* or *loose* that it could become detached from vehicle** **ii. equipment or device is in such an unsafe condition that is a risk to other motorists, the driver, a passenger, pedestrian or cyclist** **iii. any section has an exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist**
12. Bumper *Note*: Applies only to the front bumper on a truck or truck- tractor. Applies to the front and rear bumper on a bus.	**Truck|✓|** Trailer| | **Bus|✓|**
a) condition	a) broken, *loose* or *missing* any section has exposed sharp edge, is torn or protrudes in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) design	b) replacement part does not meet *OEM standard*, or is weaker than *OEM* design solid portion does not extend from one frame rail to the other (except for a unitized body design)
	Hazardous Condition(s) **i. imminent failure appears likely** **ii. any section has exposed sharp edge, is torn or protrudes in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
13. Windshield	**Truck|✓|** Trailer| | **Bus|✓|**
a) obstruction *Note*: Forward/rearward facing camera safety devices may be mounted up to 50 mm from the outer edge of the area swept by ***OEM*** wipers.	a) decal or device obscures vision in the area swept by ***OEM*** windshield wipers clouded, ***damaged*** or deteriorated in such a way that driver's normal vision is materially impaired in the area swept by ***OEM*** windshield wipers
b) crack *Note*: See image below for examples of pass and fail windshield crack conditions.	b) a crack extends through both layers of glass a crack of any length extends more than 50 mm within the area swept by ***OEM*** windshield wipers



Examples of Windshield Pass and Reject Conditions:

Reject condition 1 - Crack through one layer that extends more than 50 mm into the area swept by wipers

Reject condition 2 - Star chip larger than 13 mm in diameter in area swept by wipers

Pass condition 3 - Crack extends less than 50 mm into the area swept by wipers

Pass condition 4 - Star chip smaller than 13 mm in diameter in area swept by wipers

Pass condition 5 - Crack through one layer that is more than 50 mm long, but outside the area swept by wipers

Pass condition 6 - Star chip larger than 13 mm in diameter, but outside the area swept by wipers

c) chip	c) a chip that is larger than 13 mm in diameter within the area swept by ***OEM*** windshield wipers
d) discolouration	d) more than 10% of total glass area is discoloured due to age or other deterioration

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) tinting *Note:* OEM tinting does not block more than 30% of light. This is rated and expressed as minimum 70% light transmittance. "AS" = American National Safety Standard and (*ANSI*/SAE Z26.1)	e) any after-market tint is applied driver's normal vision is materially impaired tint or sunscreen other than that allowed by *ANSI*/SAE Z26.1 standards tinting extends more than 75 mm from top of windshield, or beyond AS line
f) material type	f) is not marked as type AS-1 or AS-10
g) condition	g) *missing* vision is obscured or limited due to surface condition
	Hazardous Condition(s) **i. windshield is missing** **ii. windshield is *damaged* or deteriorated in such a way that driver's normal vision is materially impaired in the area swept by *OEM* windshield wipers**
14. Side Windows	**Truck|✓|** Trailer| | **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Test the operation of the driver's (left) side window.	a) fails to open or close normally
b) condition *Note:* Applies to any window forward of the driver's seat back.	b) clouded, *damaged* or deteriorated in such a way that normal driver vision is materially impaired window has an exposed sharp edge, is broken or part of window is missing window originally fitted with metal banding has any *damaged* or missing banding
c) material type *Note:* Applies to every side window.	c) is not marked as type AS-1, AS-2, *AS-3, AS-10 or AS-11 *AS-3 is only acceptable for side windows to the rear of the driver location.
d) tinting (where tinting is prohibited by the jurisdiction) *Note:* Applies to any window forward of the driver's seat back.	d) any after-market tint is applied

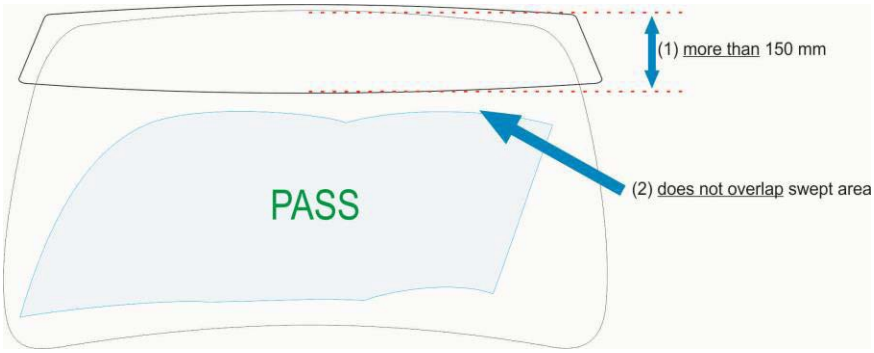
Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) tinting (where tinting is permitted by the jurisdiction) *Optional Additional Inspection Procedure* Where aftermarket tinting is applied to any side window forward of the driver's seat back, test the light transmittance using a suitable test device.	e) light transmittance value is less than 70% (more than 30% of light is blocked)

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
15. Rear Window	**Truck|✓|** Trailer| | **Bus|✓|**
a) condition	a) broken or exposed sharp edge
b) material type *Note:* Rigid material may be used in place of glass or rigid plastic, when the vehicle is equipped with an outside rear-view mirror on each side.	b) is not marked as glass type AS-1, AS-2, AS-10 or AS- 11, or rigid plastic AS-4 or AS-5
16. Interior Sun Visor	**Truck|✓|** Trailer| | **Bus|✓|**
a) location	a) *missing* on driver's side
b) attaching parts	b) bent, broken, *loose* or *missing*
c) adjustment	c) cannot be maintained in a set position
d) modified or non-*OEM* sun visor on a school bus	d) does not meet *applicable standard*
17. Exterior Windshield Sun Visor	**Truck|✓|** Trailer| | **Bus|✓|**
a) obstructed view	a) any part of an exterior visor, at any point: 1. extends more than 150 mm below the upper edge of the windshield; and **2.** overlaps the portion of the windshield swept by the *OEM* wiper arm and wiper blade

Fig 1.



Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:

Fig 2.

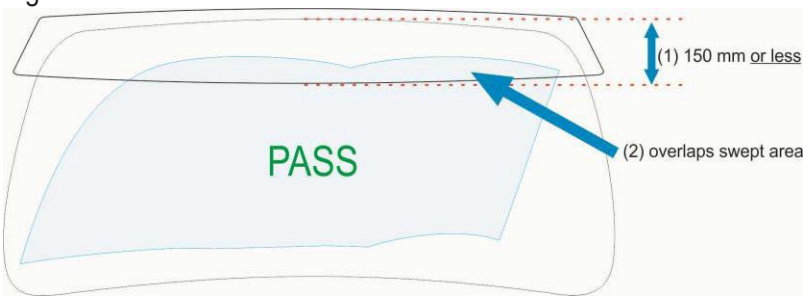


Fig 3.

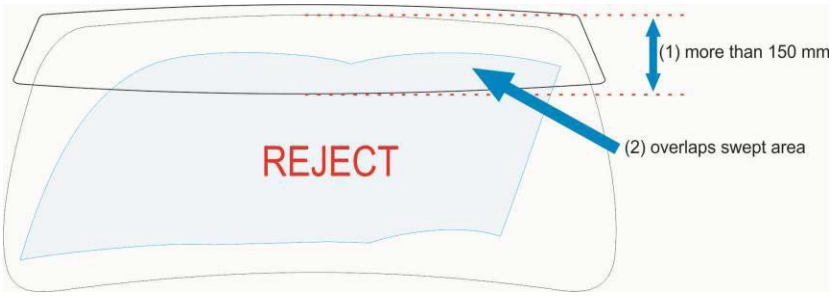
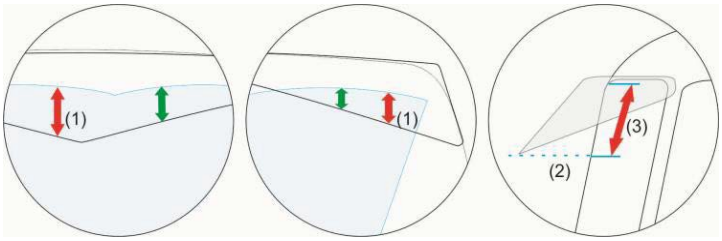


Fig 4.



Sun Visor Measurement Location and Method:

1. Identify the location where the sun visor vertically overlaps furthest over the swept area of the wiper.
2. Extend a level line to the surface of the windshield from the location identified in step (1).
3. Measure upwards along the surface of the windshield. Reject if measurement is greater than 150 mm.

Note:
"Swept area" means the portion of the windshield swept by an ***OEM*** wiper blade attached to an ***OEM*** wiper arm.

	Hazardous Condition(s) **i. any part of an exterior visor, at any point:** • **extends more than 150 mm below the upper edge of the windshield; and** • **overlaps the portion of the windshield swept by the *OEM* wiper arm and wiper blade**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
18. Rear-view Mirror	**Truck|✓|** Trailer| | **Bus|✓|**
a) location *Note:* Every vehicle requires an external rear-view mirror on the left side. When a vehicle does not have an interior rear-view mirror that provides an unobstructed view through a rear window, an external mirror is also required on the right side.	a) required rear-view mirror is ***missing***
b) view	b) view to the rear is obstructed on a required mirror
c) mount	c) broken, ***insecure*** or ***loose*** fails to hold mirror in correct position
d) glass condition	d) cracked vision is obscured due to condition of glass or reflective surface, over 5% of total surface area of mirror
e) surface area of external mirror *Note:* ***OEM*** mirrors are required to meet these same area requirements as per ***CMVSS*** 111. When a convex mirror is installed onto a rear-view mirror, its area is included.	**e) when non-*OEM* mirror is used, surface area of mirror is less than:** for a vehicle with GVWR of 4536 kg or less: 125 cm^2 for a vehicle with GVWR of more than 4536 kg: 325 cm^2
	Hazardous Condition(s) **i. an external rear view mirror is *missing*, obscured, *insecure* or adjustment is seized**
19. Seat *Note:* Excludes passenger seats on a bus. (See item 32 below for bus passenger seat requirements.)	**Truck|✓|** Trailer| | **Bus|✓|**
a) condition *Additional Inspection Procedure(s):* Test the operation of the driver seat position controls.	a) ***loose*** or ***insecure*** mounting frame broken covering material torn and exposing a metal component or spring driver seat cannot be adjusted forward or backward driver seat back recline mechanism fails to adjust - driver seat pedestal removed or seat assembly does not meet ***OEM standard***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) seat position lock *Additional Inspection Procedure(s):* Test the operation of the driver seat position locking function.	b) driver seat adjustment fails to lock into position
	Hazardous Condition(s) **i. driver's seat *loose*, insecure or fails to lock into position**
20. Seat Belt/Occupant Restraint *Additional Inspection Procedure(s):* Confirm the operation of each seat belt latch and retractor.	**Truck|✓|** Trailer| | **Bus|✓|**
a) type and condition	a) ***missing*** or not equipped at each seating position as originally required to meet applicable ***CMVSS*** webbing material is broken, cut frayed or torn air ride, hydraulic or spring seat does not have lap belts attached to the seat, or is not equipped with a secondary belt from the seat to the floor
b) anchor	b) broken, ***insecure*** mounting or ***missing***
c) retractor	c) broken, ***insecure*** mounting or ***missing*** fails to allow belt to extend to its maximum length or fails to retract properly
d) belt release and buckle *Additional Inspection Procedure(s):* Buckle each seatbelt assembly and extend the belt to test the belt retractor.	d) broken, ***insecure*** mounting or ***missing*** any part is not properly attached to the belt material latch fails to lock in position or fails to release easily when belt is under tension
e) supplemental restraint system (SRS) *Additional Inspection Procedure(s):* Cycle the ignition off and on and check the status of the SRS indicator lamps.	e) an air bag is disconnected, ***inoperative***, ***missing*** or not re-installed to ***OEM*** service instructions the air bag indicator (SRS) lamp indicates a malfunction or fails to operate according to ***OEM*** service instructions air bag has been deactivated permanently without a provision to turn off and on by a key lock, or does not have an illuminated message to indicate when the air bag has been switched off air bag cover ***damaged***
f) pre-tensioner and load limiter	f) pre-tensioner has been activated and system not repaired or replaced to meet ***OEM standard*** load limiter has been activated and system not repaired or replaced to meet ***OEM standard***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. a required seat belt is *inoperative* or *missing***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
21. Fender/Mud Flap	**Truck|✓| Trailer|✓| Bus|✓|**

Note:
A mud flap is required behind every wheel or axle group, where the full width of the tire is not enclosed by a body element, such as a fender, down at least as far as the wheel's horizontal centre line. Unless exempt as noted below, the mud flap must meet the following dimensions.

Mud flap width - at least as wide as the tires.

Bottom of mud flap - no more than 210 mm from the ground.

Top of mud flap - must extend upward at least as high as the top of the tire(s), or up to a body element that extends below the top of the tire.

Mud flap exemptions:

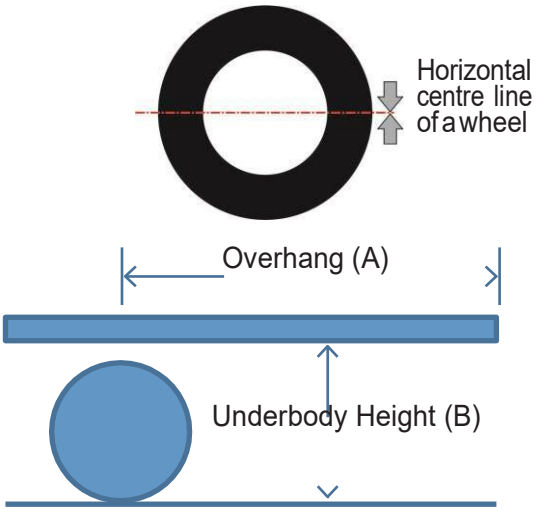
A mud flap is not required where the body overhang is more than three times the underbody height.

Overhang = (A) the distance from the vertical centre line of the tire to the end of the body

Underbody height = (B) the distance from the bottom of the body overhang to the ground

Mud flap location and dimensions may vary on a vocational vehicle or highway tractor, where the mud flap will interfere with vehicle operation, and on a vehicle with movable suspension, where there is inadequate room for a full size mud flap.

Vocational vehicle: Vocational truck means a truck chassis with permanently mounted equipment or body features intended to perform or support a specific job or group of related jobs and includes dump trucks, garbage trucks, concrete mixers, snow plows, and hydrovacs but does not include trucks solely intended to tow other vehicles such as a truck tractor or only intended to carry or transport goods such as van body or flat deck type trucks.



Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) condition and location	a) fender or mud flap is broken, has ***insecure*** mounting, is ***loose*** or ***missing*** fender or mud flap has a tear or wear hole exists that is larger than 100 mm across the longest dimension, or the aggregated longest dimensions of multiple holes in a single mud flap equal more than 100 mm the distance from the bottom of the mud flap to the ground exceeds 210 mm the mud flap does not cover the full tread width of the tire(s) the top of the mud flap does not reach up to the top of the tires or a body element

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. required mud flap is missing**
22. Landing Gear on Trailer	Truck| | **Trailer|✓|** Bus| |
a) operation *Additional Inspection Procedure(s):* Test the operation of the landing gear in all speed settings.	a) binding, *inoperative* or seized
b) condition	b) landing gear or brace is bent, broken or cracked *insecure* mounting pad broken, *insecure* or *loose*, or *missing*
c) crank handle	c) cannot be stowed or secured so that it remains within the outer dimensions of the vehicle
	Hazardous Condition(s) **i. any part of the landing gear is *insecure* or *loose* or so as to become detached from vehicle**
23. Sliding Axle Assembly (Sliding Bogie) on Trailer	Truck| | **Trailer|✓|** Bus| |
a) frame and sub-frame rail	a) welded or repaired in a way that does not meet *OEM standard* bent, broken or cracked any attaching weld is broken or cracked perforated or separated due to corrosion between mount and frame member rusted or corroded to a depth sufficient to become weakened
b) slider-guide/hold-down bracket & locking device	b) cracked or *missing* *inoperative* or fails to lock securely any lock pin is broken, cracked, disengaged or *missing* locking device (pin) is worn causing 25% or greater reduction in diameter locking-pin hole measures more than 25 mm larger than its original size

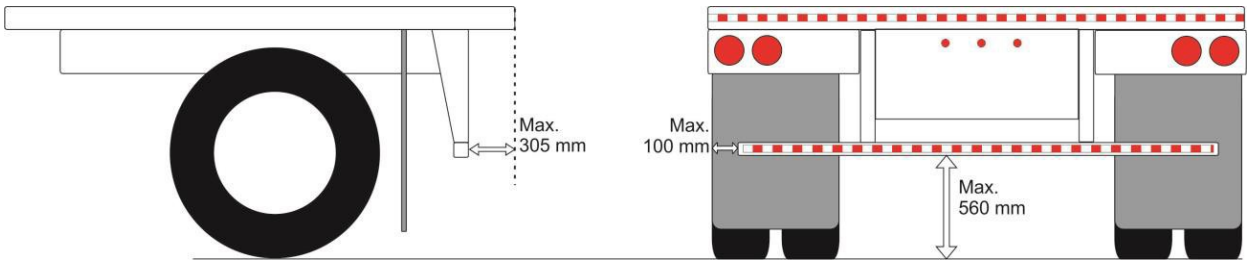
Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) stop	c) bent, cracked, *loose* or *missing*
	Hazardous Condition(s) **i. more than one-fourth of the slider locking pins or locking pin holes that are in use have any one of the following conditions:** **• locking pin is missing or not engaged** **• locking-pin hole measures more than 25 mm larger than its original size** **• the material from the hole in use to an adjacent hole, or the material from the hole in use to the edge of the rail, is torn or split** **ii. more than one-fourth of the slider-guide/hold- down brackets are missing or disengaged** **iii. the sliding suspension attachment member (undercarriage body rail) on either side has a crack of any length in more than 50 percent of its attachment welds** **iv. a sliding suspension member's (undercarriage body rail) attachment welds are cracked completely through along a 1.2 m continuous length of the body rail** **v. a sliding suspension attachment member (undercarriage body rail) is cracked completely through along a 1.2 m continuous length**
24. Aerodynamic Device and Attachment	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition and security	a) *insecure* or *loose* any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist
	Hazardous Condition(s) **i. aerodynamic device is so *insecure* or *loose* it is likely to become detached from the vehicle** **ii. any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
25. Rear Impact Guard (RIG) on Trailer	Truck| | **Trailer|✓|** Bus| |
Note: Every trailer with a GVWR of 4,536 kg or greater manufactured on or after September 23, 2007, except as noted below, must be fitted with a rear impact guard (RIG) that meets the requirements of *CMVSS* 223. Trailers not required by *CMVSS* to have RIG include: • pole trailer • pulpwood trailer • wheels-back trailer • trailer designed to be used as temporary living quarters • low chassis trailer • trailer designed to interact with, or having, work performing equipment located in or moving through the area that would be occupied by a RIG	
a) dimensions *Note:* All RIG dimensions are based on the trailer being in an unloaded condition, suspension at normal ride height and tires properly inflated.	a) RIG does not conform to dimensions shown in figure 1 below (based on *industry standard* - TMC RP 732)
b) condition *Note:* Multiple bends are permitted. When there is visible damage to the RIG, also carefully inspect the trailer frame and floor for structural damage.	b) broken, *loose* or *missing* has cracked welds in the horizontal or vertical member or in the supporting structure or any attachment to vehicle structure the horizontal member is bent inward, downward, upward or outward, beyond 75 mm as shown in figure 2 below the vertical supports and/or supporting structure are weakened, bent or distorted (See figure 3 below)

Figure 1 – Rear Impact Guard Dimensions



Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:

Figure 2 – Limits of Damage to Horizontal RIG Member

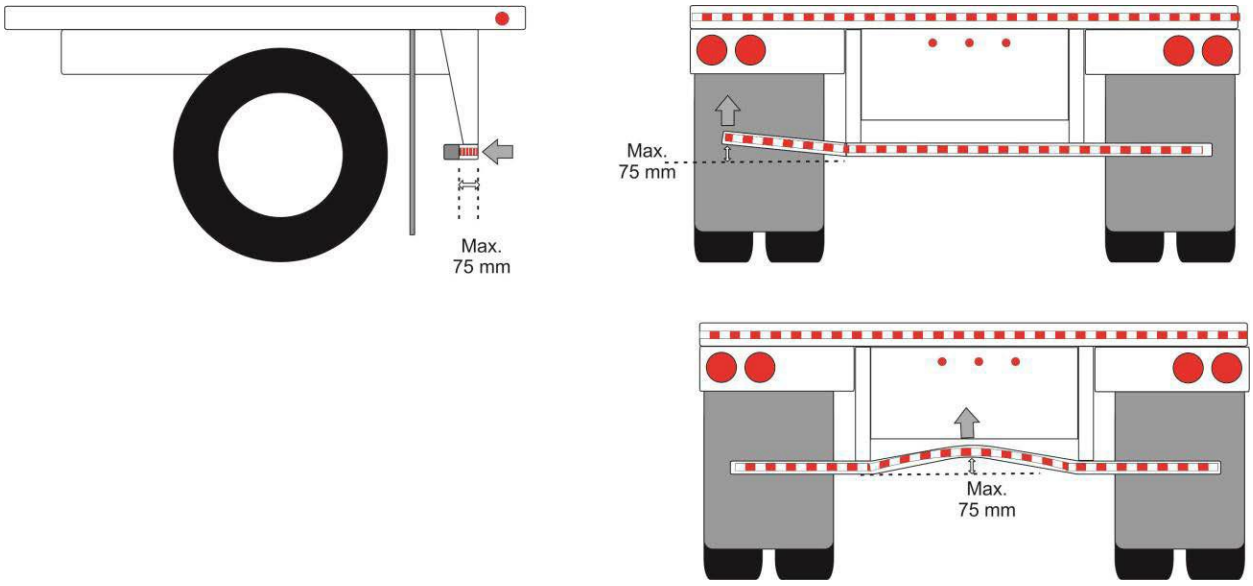
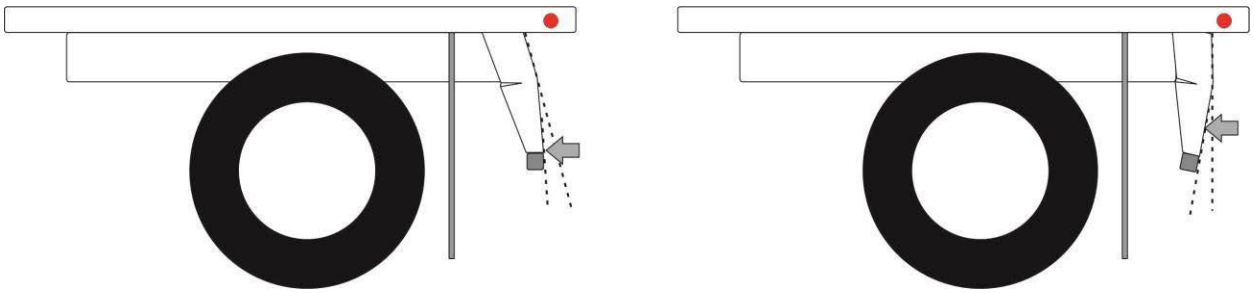


Figure 3 – Example of Damaged Vertical RIG member



Hazardous Condition(s)

i. any part of the RIG is so *insecure* or *loose* it is likely to become detached from the vehicle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
26. Floor Pan/Baggage Floor/Step Well on a Bus	Truck| | Trailer| | **Bus|✓|**
a) floor condition	a) bent or deformed in a way that causes unevenness in any aisle, improper attachment of any seat or interferes with any system or control cracked, split or has any non-manufactured hole that is not properly patched rusted or corroded sufficiently to result in structural weakness allows exhaust gases to enter occupant compartment any rivet is *loose* or *missing*
b) floor covering *Note:* Slip resistant covering is required on the passenger compartment floors and aisles of all buses. Floor covering is not required in baggage areas.	b) cracked, torn or worn through, or not sealed at seams *loose* or curled and posing a tripping hazard missing or improper type not a smooth surface material under the seats on a school bus, not a ribbed surface material in the aisle, or required ribbed surface of floor covering is worn smooth
c) step well condition *Note:* Slip resistant covering is required on all step tread surfaces.	c) bent or deformed in a way that causes unevenness on any step surface cracked, split or has any non-manufactured hole that is not properly patched rusted or corroded sufficiently to result in structural weakness nose of tread does not have band of contrasting colour (only applicable where a contrasting colour was originally equipped by *OEM*)
27. Interior Body and Fixtures on a Bus	Truck| | Trailer| | **Bus|✓|**
a) stanchion and guard rail	a) *OEM* equipped stanchion is *missing* *loose*, support or fastener *missing* energy absorbing material is *missing* and exposing any area of metal with the longest dimension greater than 25 mm energy-absorbing material deeper than 6 mm, is *missing* on any one element, on one or more sections that equal more than 100 mm, when the longest dimension of all such areas are added together
b) grab handle	b) *OEM* equipped grab handle is *missing* broken or *loose* on a school bus, drawstring block or security block (that prevents draw strings from being caught) is *missing*

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) retainer barrier on a school bus *Note:* A school bus must be equipped with a seat or retainer barrier forward of each passenger seat. A seat acts as a retainer barrier to the seat immediately behind it.	c) ***missing***, not located forward of any seat any part is not padded on the rear face on the upper 300 mm
d) metal condition	d) any metal is torn in a way that could be hazardous to a person
28. Service and Exit Door on a Bus	Truck| | Trailer| | **Bus|✓|**
a) condition and operation *Additional Inspection Procedure(s):* Test the operation of each door.	a) binds or fails to lock securely ***insecure*** mounting, or severely corroded in hinge area panel is corroded through welded or repaired in a way that does not meet ***OEM standard*** door fails to operate or fails to latch on both primary and secondary latches gap exists that allows exhaust gases to enter occupant compartment
b) door openers and handles	b) broken, ***inoperative*** or ***missing*** catch or latch is broken, ***loose*** or ***missing***
c) remote door operator	c) ***inoperative***, ***missing*** or not equipped binds, jams or malfunctions manual override device on power operated door is ***inoperative*** or ***missing*** control is not accessible from seated driving position
d) door edge material	d) material is ***loose*** or torn strip seal along the bottom edge of the door is ***missing*** or torn ***missing*** or improper type of material
e) window of school bus door *Note:* Applies to school bus only.	e) has fog or visible moisture between panes fails to meet any of the following requirements: OEM type and size double paned or equipped with a means of keeping glass clear of frost marked as type AS-1, AS-2,AS-10 or AS-11
	Hazardous Condition(s) **i. door is *inoperative* or fails to remain in the closed position**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
29. Emergency Exit (Door, Window and Roof Hatch) on a Bus *Note:* Inspection must be conducted according to the ***applicable requirements***.	Truck| | Trailer| | **Bus|✓|**
a) condition and operation *Additional Inspection Procedure(s):* Confirm that each exit (door, window and roof hatch) opens, closes and latches as intended.	a) passage to any door is blocked release or latch fails to operate normally from the inside or outside hinge fails to operate normally fails to open fully and smoothly
b) label and signage *Note:* Inspection must be conducted according to the ***applicable requirements.***	b) fails to display required label or sign identifying emergency exit fails to display required label or sign displaying operating instructions
c) emergency door and roof hatch	c) interlock system on emergency door or roof hatch fails to ***operate as intended***
d) emergency exit window warning on a school bus	d) warning device ***inoperative*** or ***missing*** on emergency window
	Hazardous Condition(s) **i. required and or marked emergency exits are *inoperative*, *missing*, or obstructed** **ii. vehicle operates with emergency door locked**
30. Passenger Compartment Window on a Bus (Except Emergency Exit Window) *Note:* Items a), b) & c) below apply to all passenger compartment side windows.	Truck| | Trailer| | **Bus|✓|**
a) operation *Additional Inspection Procedure(s):* Test the operation of each opening side window.	a) fails to open, close or latch as intended

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) condition	b) broken, exposed sharp edge, single pane glass is cracked or dual pane window is cracked on inside exposed edge is not banded on a school bus, double-paned windows or windows equipped with frost shields, are not fitted where required by the *applicable requirements*
c) material type	**c) not marked as one of the two material listed below:** • glass type AS-1, AS-2, AS-3, AS-10 or AS-11 • rigid plastic type AS-4, AS-5 or AS-12
d) window tint *Note*: This item applies only to the windows directly to the left and right of the driver.	d) aftermarket tint or sun screen is applied to the windows directly to the left and right of the driver (including windows in doors)
e) window tint on a school bus	e) aftermarket tint or sun screen is applied to any window that is required to be double-paned by the *applicable requirements*
31. School Bus Exterior Mirror (Except Standard Left and Right Side Mirror) *Note*: Applies to school bus only.	Truck| | Trailer| | **Bus|✓|**
a) left and right side convex rear-view mirror	a) required convex mirror is broken, *insecure, loose*, *missing*, or fails to meet any applicable requirement of the relevant jurisdiction
b) cross-over convex mirror *Note*: A school bus manufactured after Nov. 29, 1997 requires two cross-over mirrors.	b) not equipped with required one, or two, fender-mounted *OEM* or equivalent, cross-over mirrors mirrors fail to provide the driver with the required view of the front, and front-left and front-right sides of the school bus mirror, or mirror mounting, is *insecure* or *loose*, or fails to maintain adjustment power operated mirror fails to *operate as intended* mirror is broken, cracked or pitted, on an aggregated area larger than 5% of the mirror surface, has any condition that deteriorates, or interferes with, the normal view from the mirror
c) mirror heating and controls	c) does not function as intended

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
Additional Inspection Procedure(s): Test the operation of exterior mirror heaters. *Note:* Confirm compliance based on vehicle age with the ***applicable requirements***. Any amount of heat produced by the mirror is sufficient to indicate functionality.	
	Hazardous Condition(s) **i. mirror is *insecure*, *loose* or *missing***
32. Passenger Seat on a Bus *Additional Inspection Procedure(s):* Manually check the condition and security of each passenger seat.	Truck| | Trailer| | **Bus|✓|**
a) frame and mounting	a) broken, ***loose*** or not securely attached to the floor or wall as required
b) seating surface	b) covering material is torn, exposing the seat base or springs padding or energy absorbing material thickness is reduced by more than 25%, over an aggregated area greater than 10% of the seating surface a tear in the covering is longer than 75 mm covering has a hole, or covering is ***missing***, where the longest measurement across the area is more than 100 mm on a school bus, seat bottom is not secured to the frame
c) seat back and barrier surface	c) ***loose*** or ***missing*** a tear in the covering is longer than 75 mm covering has a hole, or covering is ***missing***, where the longest measurement across the area is more than 50 mm energy-absorbing material is reduced in thickness by more than 25%, where the longest measurement across the area is more than 75 mm

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
33. School Bus Body Exterior *Note*: Applies to school bus only.	Truck| | Trailer| | **Bus|✓|**
a) paint	a) body is not the required colour hood is not the required colour bumper is not the required colour
b) rub rail	b) broken, corroded, cracked, ***loose*** or torn sections, ***missing*** or removed any rivet is ***loose*** or ***missing*** bent and protruding from the side of the bus
c) signs	c) any required sign is ***missing***, not clearly visible and legible, ***damaged***, or fails to comply with an applicable requirement of the relevant jurisdiction
d) stop arm and control *Additional Inspection Procedure(s):* Actuate the stop arm control to confirm it operates in the manner intended by the ***manufacturer***.	d) fails to operate in the intended manner red paint has faded to less than 70% of original intensity (minimum intensity is equivalent to Pantone® PMS 7607U) *Note*: Use an industry standard colour-reference chart as necessary.
e) stop arm lamp *Additional Inspection Procedure(s):* Check in conjunction with stop arm.	e) ***inoperative*** or fails to comply with an applicable requirement of the relevant jurisdiction
f) pedestrian crossing arm *Additional Inspection Procedure(s):* Actuate the pedestrian crossing arm to confirm it operates in the manner intended by the ***manufacturer***.	f) bent, broken or ***inoperative*** incorrect length
	Hazardous Condition(s) **i. rub rail is protruding from the side of the bus** **ii. any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
34. Auxiliary Compartment on a Bus	Truck| | Trailer| | **Bus|✓|**
a) access and baggage doors *Additional Inspection Procedure(s):* Operate all baggage compartment doors.	a) fails to open or close normally latch fails to hold hinge is broken, ***inoperative***, ***missing*** or seized hinge mounting area is ***insecure*** counter balance cable is frayed or will not maintain open position
b) passenger compartment baggage area partition	b) does not have a securely attached barrier, separating baggage from occupant seating area
c) overhead shelf/parcel rack	c) ***insecure*** or ***loose*** mounting fastener is broken, ***insecure*** or ***missing*** has no means of preventing articles from unintentionally falling out
	Hazardous Condition(s) **i. access or baggage door latch fails to hold door in closed position**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section 9 –Tires and Wheels

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Tire Tread Depth *Additional Inspection Procedure(s):* Inspect the tire tread to locate the area where the tread depth is lowest. Measure the tread depth at a major tread groove using a suitable tread depth gauge. Do not measure tread depth on a wear bar. Tread depth measurements are to be recorded on an inspection report. The tread depth that is recorded must reflect the lowest tread depth measurement used to determine pass/fail condition. *Note*: When any tire is replaced after a failed-inspection, the tread depth of both the original ('before') and replacement ('after') tire(s) are to be recorded. A "major tread groove" is one of several of the deepest moulded grooves around a tire through the full thickness of tread rubber that include wear bars.	**Truck|✓| Trailer|✓| Bus|✓|**
a) tires on any active steering axel(s) of a motor vehicle	a) tread depth is less than 3 mm
b) all other tires *Note:* Some jurisdictions require tread depth on certain vehicles to be at least 3 mm on all tires. Inspect according to ***applicable requirements***.	b) tread depth is less than 2 mm
	Hazardous Condition(s) **i. tread depth is less than 2 mm on a front tire** **ii. tread depth is less than 1 mm on a rear tire**
2. Tire Tread Condition	**Truck|✓| Trailer|✓| Bus|✓|**
a) retread (re-capped or rebuilt tire) installation *Note*: An active steering axle is one that is directly controlled by the steering wheel. A passive steering axle responds to lateral force to turn wheels. Retreaded tires are permitted on a tag axle of a bus having either active or passive steering.	a) retreaded tire is installed on an active steering axle
b) retread condition	b) retread material is ***loose***, ***missing***, or separated at the interface where the retread is bonded to the tire casing

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) tread condition	c) crack or cut, that is greater than 25 mm long, that extends deeper than a major tread groove crack or cut, extends into body cord, or any body cord is exposed any piece of original tire tread is ***missing*** and the longest dimension across the missing section is greater than 25 mm
d) regrooving	d) regrooving has been performed on a tire not marked "Regroovable"
	Hazardous Condition(s) **i. any part of a belt, breaker strip or casing ply is visible in the tread area** **ii. visible bump or bulge in the tread area indicating tread separation** **iii. regrooved, recapped, or retreaded tire on front steering axle of any bus** **iv. retread material is *loose*, *missing*, or separated at the interface where the retread is bonded to the tire casing and the longest dimension across the section is greater than 50% of the tread width** **v. any piece of tire tread is *missing* and the longest dimension across the missing section is greater than 50 mm** **vi. tire contacts any part of the vehicle**
3. Tire Sidewall and Manufacturer Markings	**Truck|✓| Trailer|✓| Bus|✓|**
a) matching and application *Note*: Nominal tire size is based on the size designation and marking provided by the tire ***manufacturer***. Tire diameter is determined by measuring the tire.	a) nominal tire size difference on an axle is greater than 25 mm dual-mounted tire diameters differ by more than 13 mm wheel/rim size does not match tire size required tire is ***missing*** radial tire is mixed with non-radial on an axle any tire is labelled "Not for Highway Use" or in any way that indicates the tire is not intended for on-road use

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) condition *Note*: A bulge of up to 9 mm in height, due to a sidewall repair, is acceptable. This bulge may sometimes be identified by a blue triangular label in the immediate vicinity.	b) ply separation is evident or body cords are exposed tire has a bump or bulge caused by tread or sidewall separation casing is broken or distorted presence of plug-type repair, or rubber coated or cured rubber plug is used in the sidewall UV degradation damage more than 3 mm deep
	Hazardous Condition(s) **i. sidewall is cut or *damaged* exposing the cord** **ii. bias and radial tires are used on the same axle** **iii. visible bump or bulge in the sidewall area greater than 9 mm in height** **iv. dual tires make contact or any tire makes contact with any vehicle component** **v. rubber coated or cured rubber plugs are used in the sidewall** **vi. tire contact with any part of the vehicle** **vii. any tire is labelled «Not for Highway Use» or in any way that indicates the tire is not intended for on-road use**
4. Tire Inflation Pressure *Additional Inspection Procedure(s):* Measure tire inflation pressure using a suitable gauge. Record pressure values on the inspection report. *Note:* If a tire fails inspection due to over/under inflation condition, it is acceptable to remove/add air prior to completing the inspection. When inflation pressure is corrected, record found ('before') and adjusted ('after') pressure values on the inspection report.	**Truck|✓| Trailer|✓| Bus|✓|**
a) inflation pressure *Note*: Recommended tire inflation pressure is based on data provided by the vehicle *manufacturer*, or tire *manufacturer* relevant to tire application and load.	a) more than 10% above or below recommended pressure difference between dual-mounted tires is more than 10% leaking or inflation cannot be maintained within recommended pressure

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) valve stem	b) cracked, *damaged* or inaccessible preventing gauging of pressure or re-inflation, or leaking valve stem cap is *damaged* or *missing*
c) tire inflation system	c) is in a condition that any part of it could be hazardous to a person, or is in danger of falling off leaking air
	Hazardous Condition(s) **i. any tire is inflated to 50% or less of the maximum inflation pressure marked on the sidewall** **ii. tire is leaking** **iii. tire inflation system is in a condition that any part of it is hazardous to a person, or is in danger of falling off**
5. Wheel Hub	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition *Note*: Bearing fit in the hub is checked only when disassembled.	a) repaired by welding bent, broken, cracked, *damaged* or distorted bearing cup is loose in hub bore
b) stud/bolt hole	b) any stud/bolt hole is enlarged or *damaged* in a way that prevents proper fitting and retention of studs
c) wheel seal	c) *level 2 leak* of bearing lubricant from oil lubricated hub seal is allowing grease to be lost from hub seal is out of position
d) lubricant (oil lubricated) *Note*: Some hub/wheel-end assemblies use pre-set, unitized or extended service bearings, with sealed hubs. When contaminated lubricant is suspected, refer to the service literature provided by the *manufacturer*. Confirm that a proper diagnosis is carried out before rejecting the vehicle, opening or disassembling this type of hub/wheel-end assembly.	d) lubricant level is below indicated minimum lubricant is contaminated with moisture or metal fragments *level 2 leak* of bearing lubricant from hub or hub cap
e) lubricant (grease lubricated)	e) grease is leaking from hub hub cap is cracked, *loose* or *missing*

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) **i. any condition that exposes the internal components** **ii. any evidence of overheating of the hub or lubricant** **iii. lubricant not visible or measurable in hub** **iv. wheel seal is leaking and contaminating the tire or the brake friction material or surface**
6. Wheel Bearing *Additional Inspection Procedure(s):* Check wheel bearing with axle raised sufficiently to rotate the wheel and hub assembly. Rotate the wheel by hand through several full revolutions to check for bearing roughness or binding. Check wheel bearing end-play/adjustment by pushing wheel assembly or hub inward and outward parallel to axle centreline. *Note:* Checking in this manner may reveal movement in the hub and bearing that is additional to the bearing axial end play, e.g. a radial play between the bearings and spindle components may also be felt. Confirm bearing axial end-play/adjustment on a non-sealed type hub with dial gauge if necessary. For pre-set, unitized or extended service bearings see additional note. *Note*: Some hub/wheel-end assemblies use pre-set, unitized or extended service bearings, with sealed hubs. When there is evidence of bearing damage, excessive wear, or excessive bearing end play, refer to the service literature provided by the ***manufacturer***. Confirm that a proper diagnosis is carried out before rejecting the vehicle, opening or disassembling this type of hub/wheel-end assembly.	**Truck|✓| Trailer|✓| Bus|✓|**
a) axial end play/adjustment	a) does not meet ***OEM standard*** or ***industry standard***, or when specification is not provided, is less than 0.02 mm, or more than 0.13 mm 0.02 mm = 0.001 in., 0.13 mm = 0.005 in.
b) condition	b) binding or roughness is detected while rotating the bearing

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) locking device *Optional Inspection Procedure(s):* Must be inspected when the locking device is visually accessible at the time of inspection.	c) bearing adjustment locking device is ***missing***, not engaged or non-functional
d) damage *Optional Inspection Procedure(s):* Must be inspected when the bearing is disassembled at the time of inspection.	d) race or roller is ***damaged*** or shows evidence of overheating
e) spindle or axle stub *Optional Inspection Procedure(s):* Must be inspected when the bearing is disassembled at the time of inspection. *Note*: Spindle or axle stub cracks or damage may involve non-destructive test/inspection to detect.	e) bearing fit onto spindle or axle stub does not meet OEM standard or industry standard spindle or axle stub is cracked, or ***damaged*** in a way that does not meet ***OEM standard*** or ***industry standard*** bearing condition or fit of the bearing onto the spindle prevents proper end play or adjustment from being maintained
	Hazardous Condition(s) **i. axial end play is so excessive that imminent failure seems likely** **ii. any evidence of overheating** **iii. lubricant not visible or measurable in hub** **iv. binding or roughness is detected while rotating the bearing**
7. Wheel/Rim (Applies to all wheel types)	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition	a) wheel/rim is bent, broken, cracked, ***damaged*** or distorted wheel/rim has been welded or repaired in a way that does not meet ***OEM standard*** wheel/rim is ***damaged*** or discoloured as a result of heating
b) matching	b) wheel/rim size does not match tire size
	Hazardous Condition(s) **i. wheel/rim, or any weld, is broken or cracked** **ii. any welded repair on an aluminum wheel** **iii. wheel/rim has been welded or repaired in a way that does not meet *OEM standard*** **not meet *OEM standard***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
8. Multi-Piece Wheel/Rim	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition	a) a component is bent, cracked, ***damaged***, distorted, improperly assembled or shifted out of position, severely corroded or pitted ***damaged*** due to heating any component has been ***repaired by welding***
b) lock ring	b) there is less than 3 mm clearance between butt ends of the lock ring
c) matching	c) mismatched wheel/rim component
	Hazardous Condition(s) **i. a lock ring is bent, broken, cracked, sprung, mismatched or improperly seated** **ii. wheel/rim, or any weld, is broken or cracked** ***iii.*** **wheel/rim has been welded or repaired in a way that does not meet *OEM standard***
9. Spoke Wheel/Demountable Rim System	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition *Additional Inspection Procedure(s):* Elevate the axle so that the tire(s) are clear of the floor and rotate the wheel(s) to check alignment.	a) there is damage in the 28° mounting area resulting from rim slippage, wear, corrosion or pitting there is evidence of rim slippage or incorrect positioning of rim on spokes lateral run-out exceeds 6 mm at sidewall of tire
b) rim clamp	b) any rim clamp is broken, cracked, ***missing***, repaired by welding, mismatched, twisted or worn out in the 28° mounting area any heelless clamp is bottomed or gap between clamp and spoke is more than 10 mm gap between clamp and spoke of a heel type clamp is more than 6 mm
c) spacer band	c) any spacer is collapsed, cracked, distorted, ***missing***, the incorrect size or type, welded or repaired in a way that does not meet *OEM standard*
	Hazardous Condition(s) **i. wheel/rim, or any weld, is broken or cracked** **ii. any welded repair on an aluminum wheel** **iii. wheel/rim has been welded or repaired in a way that does not meet *OEM standard***

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
10. Disc Wheel System	**Truck|✓| Trailer|✓| Bus|✓|**
a) installation	a) incompatible wheel or component is used on a wheel system wheel is incorrectly installed
b) condition	b) there is evidence of a ***loose*** or ineffective fastener there is evidence of damage or deterioration, foreign material, excessive or uncured paint on a hub, drum or wheel mounting face bolt/stud hole is elongated
	Hazardous Condition(s) **i. bolt/stud hole is elongated** **ii. wheel/rim, or any weld, is broken or cracked** **iii. any welded repair on an aluminum wheel** ***iv.*** **wheel/rim has been welded or repaired in a way that does not meet *OEM standard***
11. Wheel Fasteners (Nuts, Bolts and Studs)	**Truck|✓| Trailer|✓| Bus|✓|**
a) installation	a) incorrect fastener type, thread direction or style is installed any nut is not fully engaged with the stud or bolt
b) condition	b) any fastener is bent, broken, ***damaged*** or ***missing***
c) fastener security *Additional Inspection Procedure(s):* Using a torque wrench set to the torque value specified by ***OEM*** or ***industry standard***, attempt to rotate each wheel nut to the set value. *Note:* A fastener that requires less than 1/6-turn to reach the specified torque value should be considered slightly loose. A fastener that requires more than 1/6- turn to reach the specified torque value should be considered very loose. Wheels should be disassembled for a full inspection when: • any fastener is very loose • two adjacent wheel fasteners are slightly loose • three wheel fasteners on a single wheel are slightly loose	c) any fastener rotates before the torque value specified by ***OEM standard*** or ***industry standard*** is applied

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) ***i.*** **wheel is *loose*** **ii. any wheel nut or stud is broken, cracked,** *loose*, *missing*, **or threads are stripped**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section 10 – Coupling Devices

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Hitch Assembly, Structure and Attaching Components *Note:* This applies to all types of hitching systems and coupling devices. Some rust and corrosion on the outer surface of exposed metal parts is normal. When an excessive amount of rust or corrosion is present and has visibly reduced the thickness of the material, structural deterioration is possible. *Additional Inspection Procedure(s):* Inspect using suitable tools.	**Truck|✓| Trailer|✓| Bus|✓|**
a) hitch assembly, receiver, drawbar or draw beam, slider, supporting structure and attachment to vehicle chassis	a) part is bent, broken or cracked weld is broken or cracked welded or repaired in a way that does not meet *OEM standard* fastener is ineffective, *loose* or *missing* any part of hitch assembly is worn beyond *manufacturer* specifications, abnormally deteriorated or perforated by corrosion hinged drawbar bushing is worn beyond *manufacturer* specifications air leak, or *level 2 leak* from hydraulic components on any slider system any slider system has a *missing* or ineffective stop
	Hazardous Condition(s) (when in use) **i. any crack, break or damage in the stress or loading area of the coupling device or structure** **ii. any component is *damaged* or worn to the degree that it is no longer effective** **iii. welded or repaired in a way that does not meet *OEM standard* and an imminent failure appears likely** **iv. air leak, or *level 2 leak* from hydraulic components on any slider system** **v. any slider system has a *missing* or ineffective stop**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
2. Secondary Attachment (Safety Chain or Cable)	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition	a) bent, broken, cracked, *missing*, *abnormally worn*, or worn beyond *manufacturer* specifications any part is ineffective, *insecure*, *loose*, or *missing* improper length
	Hazardous Condition(s) (when in use) ***i.*** **any component is broken, cracked, or *missing*** **ii. bent, *damaged*, improperly repaired, *loose*, or worn to the degree that it is no longer effective** **iii. improper type or inadequate capacity**
3. Pintle Hook, Pin Hitch, or Coupler Hitch	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition and operation *Additional Inspection Procedure(s):* Test the operation of the pintle hook and latch.	a) cracked, or fails to close or latch normally
b) mounting	b) fastener or any structural part is cracked, ineffective, *loose* or *missing* a fastener is less than SAE grade 8 or ISO class 10.9
c) cast or forged part	c) cracked, or has been repaired by welding material is worn more to beyond the OEM allowable wear specifications from original dimension
d) air chamber cushion (no-slack or snubber) *Additional Inspection Procedure(s):* Apply air pressure to air chamber and inspect according to hitch *manufacturer* service instructions and specifications.	d) *damaged* or leaking air chamber leak at air line or fitting pressure protection valve is not installed in air supply to prevent depletion of air from the brake system
e) lunette (or drawbar eye) on trailer	e) cracked, or is worn to beyond the OEM allowable wear specifications from original dimension
	Hazardous Condition(s) (when in use) **i. wear on hitch or lunette (eye) exceeds 10 mm** ***ii.*** **any component is broken, cracked, or *missing*** **iii. bent, *damaged*, improperly repaired, *loose*, or worn to the degree that it is no longer effective** **iv. improper type or inadequate capacity** **v. missing or ineffective fastener** **vi. insecure latch**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
4. Ball Type Hitch	**Truck|✓| Trailer|✓| Bus|✓|**
a) ball, neck and stem	a) bent, cracked or *loose* ball is worn more than 3.0 mm from original dimension welded, or repaired in a way that does not meet *OEM standard* 3.0 mm = 0.12 in.
b) ball deck area	b) part is bent, broken or cracked weld is broken or cracked welded or repaired in a way that does not meet *OEM standard*
c) ball coupler	c) bent, cracked or *loose* abnormally deteriorated or perforated by corrosion
d) latch *Additional Inspection Procedure(s):* Test the operation of the latch.	d) bent, broken or cracked *inoperative* or fails to adjust properly weld is broken or cracked
	Hazardous Condition(s) (when in use) **i. wear on ball exceeds 3.0 mm** ***ii.* any component is broken, cracked, or *missing*** **iii. bent, *damaged*, improperly repaired, *loose*, or worn to the degree that it is no longer effective** **iv. improper type or inadequate capacity** **v. missing or ineffective fastener** **vi. insecure latch**
5. Roll-Coupling Hitch	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition	a) part is bent, broken or cracked weld is broken or cracked welded or repaired in a way that does not meet *OEM standard* fastener is ineffective, *loose* or *missing* any fastener is smaller than specified by the *manufacturer* or less than SAE grade 8 or ISO class 10.9 any load bearing structural part of the hitch assembly is deteriorated or perforated by corrosion

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) operation *Additional Inspection Procedure(s):* Test the operation of the coupling and controls according to the ***manufacturer*** service instructions.	b) fails to operate in the intended manner
	Hazardous Condition(s) (when in use) **i. fails to operate in the intended manner** ***ii.*** **any component is broken, cracked, or *missing*** ***iii.*** **bent, *damaged*, improperly repaired, or *loose*** **iv. improper type or inadequate capacity** **v. missing or ineffective fastener**
6. Automated Coupling Device	**Truck|✓| Trailer|✓| Bus|✓|**
a) condition *Additional Inspection Procedure(s):* Test the operation of the coupler according to the ***manufacturer*** service instructions.	*a) inoperative* • welded or repaired in a way that does not meet manufacturer standard
	Hazardous Condition(s) (when in use) **i. fails to operate in the intended manner** ***ii.*** **any component is broken, cracked, or *missing*** **iii. bent, *damaged*, improperly repaired, *loose*, or worn to the degree that it is no longer effective** **iv. improper type or inadequate capacity** **v. *missing* or ineffective fastener**
7. Fifth Wheel Coupler	**Truck|✓| Trailer|✓|** Bus| |
a) upper coupler (pick up plate) on trailer *Additional Inspection Procedure(s):* Check the condition and flatness of the upper coupler plate using a tool specifically intended for that purpose or an equivalent measuring device.	a) cracked, ***loose***, warped or worn so that the area in contact with the lower fifth wheel is less than 75% of the surface of the lower coupler bent upward or downward more than specified by ***manufacturer*** lubricant is contaminated with an abrasive material upper coupler's attachment or a structural member is corroded, ***damaged*** or in a condition that the plate or king pin is weakened mounting bolt or rivet is broken, corroded, ***loose*** or ***missing*** (also refer to Section 8, Body, item 6. Frame, Rails & Mounts) bulge is present in attaching and mating surface due to corrosion rivet is dimpled due to corrosion rivet area bulged due to corrosion

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) kingpin on trailer (or on towing vehicle) *Additional Inspection Procedure(s):* Check the wear and condition of the kingpin using a gauge specifically intended for that purpose or an equivalent measuring device. *Note:* In some jurisdictions remanufacturing of kingpins is permitted when the remanufacturing is done using a process certified by a professional engineer. In such a case the kingpin must be permanently marked to identify the remanufacturer and marked to indicate the date the process was completed.	b) bent, broken, cracked, deformed or ***loose*** worn more than 3.0 mm repaired by welding length is incorrect to properly fit into fifth wheel jaws *Note:* A fifth wheel intended for use with a material installed on the lower coupler, instead of applying grease, requires a longer king pin length. A king pin intended for use with a material installed on the lower coupler, instead of applying grease, does not properly couple with a standard fifth wheel.
c) lower coupler (fifth wheel) top plate	c) any part is broken, cracked, ***damaged***, distorted, ***missing*** or welded, or repaired in a way that does not meet ***manufacturer*** standard surface is worn beyond ***manufacturer*** specified limit wear in pivot pin is beyond ***manufacturer*** specified limit lubricant is abnormally contaminated, (e.g. sand, gravel) not properly lubricated (unless equipped with ***manufacturer-supplied*** no-lube top plate coupling surface)
d) latching mechanism *Additional Inspection Procedure(s):* Test the operation of the latch, and wear in the fifth wheel assembly, using a test device specifically designed for that purpose or a suitable equivalent.	d) broken, cracked or ***inoperative*** stiffness or seizing of the latch mechanism is felt free-play, slack or wear is beyond manufacturer specified limit improperly adjusted modified or improperly repaired release handle is bent, modified or has anything attached to it
e) lower coupler pivot ('fifth wheel saddle') *Additional Inspection Procedure(s):* Check for wear in the fifth wheel pivot area according to ***manufacturer*** service instructions.	e) wear exceeds ***manufacturer*** specification

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) slider assembly and locking mechanism	f) any part is bent, broken, cracked, *damaged* or *inoperative* fore/aft movement of fifth wheel in slider exceeds *manufacturer* specification fails to lock securely slider stop is *missing* or *insecure*
g) air-operated control or feature	g) does not *operate as intended* by the *manufacturer* Note: do not reject if air cylinder rendered inoperative by airline removal
h) upper and lower coupler attachment to frame	h) any part is broken, cracked, *damaged*, distorted, *missing*, or welded or repaired in a way that does not meet *manufacturer* standard any fastener is cracked, ineffective, *loose* or *missing* fasteners used to attach coupler assembly to frame do not meet the minimum requirements shown in the table below:

Minimum Number of Bolts per Side Based on Type & Size* of Bolt

Minimum trailer GVWR	ASTM A325 Type 1,2&3 (metric 5.8)		SAE J429 Grade 5 (metric 8.8)		SAE J429 Grade 8 (metric 10.9)	
	1/2'' (12mm)	5/8'' (16mm) or larger	1/2'' (12mm)	5/8'' (16mm) or larger	1/2'' (12mm)	5/8'' (16mm) or larger
67,999 lb (30,845 kg) or less	6	4	6	4	5	4
68,000 – 84,999 lbs (30,846 – 38,556 kg)	8	5	8	5	7	5
85,000 – 105,000 lbs (38,557 – 47,628 kg)	10	6	10	6	8	5

*Bolt size refers to the outside diameters of the thread.

- 1/2 inch bolts have 3/4 inch heads and nuts
- 5/8 inch bolts have 15/16 inch heads and nuts
- 12 mm bolts have 19 mm heads and nuts
- 16 mm bolts have 24 mm inch heads and nuts

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	Hazardous Condition(s) (when in use) **i. adjustable fifth wheel has 25% or more of the locking pins *missing*** **ii. any observable movement between the fifth wheel, or upper coupler, mounting components and/or the frame** **iii. more than 9 mm fore/aft movement of the fifth wheel in its sliding track** **iv. any sliding fifth wheel locking mechanism does not remain in the locked position** **v. any crack, break or damage in the stress or loading area of the coupling device** ***vi.* slider stop is *insecure* or *missing*** **vii. more than 25 percent of latching fasteners on either side of slider are ineffective** **viii. pivot bracket pin *missing* or not secured** **ix. any parent metal cracked** **x. any repair weld cracking, well defined (especially open) cracks in stress or load-bearing areas, cracks through 20% or more original welds or parent metal** **xi. operating handle not in closed or locked position** **xii. more than 20 percent of mounting fasteners on either side *missing* or ineffective** **xiii. locking mechanism parts broken, *missing*, or deformed to the extent that the kingpin is not securely held** ***xiv.* kingpin is bent, broken, cracked, deformed or *loose*** **xv. any trailer with a bolted upper coupler, which has fewer effective bolts than shown in table above**
8. Oscillating Fifth Wheel Coupler *Note:* Inspect fifth wheel coupler parts as described above in item 6, and inspect additional oscillating items as listed below. Inspect all frame and structural elements as described above in item 1.	**Truck|✓|** **Trailer|✓|** Bus| |
	Hazardous Condition(s) (when in use) refer to hazardous conditions in item # 7 above.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) oscillating components and structure *Additional Inspection Procedure(s):* Check for wear and defects according to *manufacturer* service instructions.	a) cracked, *damaged*, defective or *inoperative* wear exceeds *manufacturer* specification
9 Ball-Bearing Type Turntable on Trailer a) condition *Additional Inspection Procedure(s):* Check for wear and defects according to *manufacturer* service instructions.	Truck| | **Trailer|✓|** Bus| | a) bolt *loose* or *missing* cracks in weld or parent metal wear exceeds *manufacturer* specification
	Hazardous Condition(s) **i. top flange has less than 6 effective bolts** **ii. bottom flange has less than 6 effective bolts** **iii. twenty percent or more of original welds (or repaired original welds), or parent metal cracked** **iv. upper flange half touching lower flange half** **v. cracked flanges**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

Appendix A

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Liquefied Petroleum Gas (LPG or Propane) Fuel System	**Truck|✓| Trailer|✓| Bus|✓|**
Note: For additional compliance information, please see Canadian Gas Association Code.	**Hazardous Condition** **Any cause for rejection of a Liquefied Petroleum Gas (LPG or Propane) system will also mean an automatic "Hazardous Condition" for that vehicle. The cause for rejection must be corrected and the vehicle "passed" before it may be operated on the highway.**
a) regulatory authority decal	a) decal is not displayed an incorrect decal is affixed to vehicle information on decal is not readable
b) pressure vessel (tank) location and mounting	b) pressure vessel (tank) is *insecure* or *loose,* or welds are broken welding has been done anywhere on a pressure vessel (tank) except on saddle plates or brackets correct mounting bolts not used correct reinforcing plates are not used under mounting nuts pressure vessel (tank) is located above the vehicle or projects beyond vehicle side, ahead of front axle or behind rear bumper any part of exhaust system is closer than 200 mm to any part of the fuel system and is not protected by shields a heat shield is closer than 25 mm from a fuel system component
c) pressure vessel (tank) ground clearance *Note:* Includes any attached fitting.	c) distance to ground from bottom of pressure vessel (tank) is less than minimum ground clearance shown below **pressure vessel (tank) located between axles** wheelbase of 3220 mm or less: minimum ground clearance = 180 mm wheelbase over 3220 mm: minimum ground clearance = 230 mm **pressure vessel (tank) located behind rear axle** minimum ground clearance = 200 mm Any portion of the tank protrudes past the plane formed by the bottom of the rear most tires and the lowest most rearward part of the vehicle.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) pressure vessel (tank) information plate and data	d) name plate is ***missing***, or illegible, or data is not shown on plate
e) pressure vessel (tank) located within the body shell of the vehicle	e) stop fill valve, remote fill, or gauging line not fitted
f) pressure vessel (tank) filler cap	f) protective filler cap not secured to filler valve or vehicle
g) pressure vessel (tank) check valve	g) double check valve on the remote fill is ***missing***, or valve is not an approved type
h) pressure vessel (tank) interconnection	h) individual pressure vessels (tanks) are not protected by soft seat back-check valves
i) pressure vessel (tank) remote filler box	i) not adequately sealed to prevent vapour migration into vehicle interior (trunk etc.)
j) main shut-off valve	j) valve is not readily accessible (cannot be reached)
k) damage protection	k) tank valves and their connections are not mounted securely tank valves and their connections are not protected from damage due to stationary objects, or objects from the road
l) corrosion protection	l) protective coating or material is ***damaged***, or is ***missing*** from externally mounted pressure vessel (tank) or attachment
m) fitting, hose, piping and tubing *Note:* Only the following types of piping and tubing are permitted for use in LPG fuel systems. Piping – must be black or galvanized steel w/ steel fittings (schedule 40 vapour and schedule 80 liquid) Tubing – must meet SAE J527, may be steel or copper with steel or brass fittings Minimum tubing wall thickness: ¼ in. tubing = 0.71 mm ½ in. tubing = 0.76 mm	m) improper tubing or piping is used hose assembly is not CGA approved and labelled supply line is not secure, or any anchor or support is damaged or missing any joint is not flared or compression type specifically designed for LPG use a bushing other than steel or brass is used piping and tubing is not protected against corrosion tubing or hose in trunk area is not protected against luggage piping between fuel pump and gasoline solenoid valve is non-metallic material

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
n) system leakage *Additional Inspection Procedure(s):* Check for leaks using a leak detector.	n) any system leak is detected
o) hydrostatic relief valve	o) incorrectly installed or ***missing*** outlet is not piped downward to outside of any enclosed space pipeaway is not secured to valve, or if installed after May 1, 1985, is aluminum or non-metallic material, or is a range connector type
p) propane supply lock off valve	p) does not operate as originally intended
q) excess flow valve	q) incorrectly installed or ***missing***
r) vaporizer	r) is not mounted securely on engine, chassis, fender apron or firewall
s) vehicle chassis and under-body	s) a structural member has been altered during installation of the system in any manner that does not meet ***industry standard*** or ***OEM standard***
t) pressure vessel sub-frame	t) any modification has been made to pressure vessel (tank) carrier, or sub-frame, in a manner not approved by pressure vessel ***manufacturer***
u) air/fuel ratio feedback control system *Note:* Applies to a vehicle originally equipped with air/fuel ratio control, converted to operate on LPG on or after October 1993, as indicated on the regulatory authority decal. *Additional Inspection Procedure(s):* Connect the positive lead of a digital voltmeter to the O_2 sensor signal wire. Connect the meter negative lead to battery ground. Start the engine and run at 2,500 RPM allowing 30 seconds to warm up the O_2 sensor, voltage should vary rapidly between 0.3 and 0.7 volts. Each time the voltage reading crosses 0.45 volts is defined as one cross-count. On dual fuel applications this test must be performed when operating on both fuels.	u) The number of cross-counts observed during a ten-second period is less than 6

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
2. Compressed Natural Gas (CNG) Fuel System	**Truck|✓| Trailer|✓| Bus|✓|**
Note: For additional compliance information, see Canadian Gas Association Code.	**Hazardous Condition** **Any cause for rejection of a Compressed Natural Gas system will also mean an automatic "Hazardous Condition" for that vehicle. The cause for rejection must be corrected and the vehicle "passed" before it may be operated on the highway.**
a) regulatory authority decal	a) decal is not displayed an incorrect decal is affixed to vehicle information on decal is not readable
b) pressure vessel (tank) location and mounting	b) pressure vessel (tank) is *insecure* or *loose,* or welds are broken welding has been done anywhere on a pressure vessel except on saddle plates or brackets correct mounting bolts not used (10 mm (3/8 in.) for over 100L tank capacity) correct reinforcing plates are not used under mounting nuts pressure vessel (tank) is located above the vehicle or projects beyond vehicle side, ahead of front axle or behind rear bumper any part of exhaust system is closer than 200 mm from any part of the fuel system and is not protected by shields a heat shield is closer than 25 mm from a fuel tank
c) pressure vessel (tank) ground clearance *Note:* Includes any attached fitting.	c) distance to ground from bottom of pressure vessel (tank) is less than minimum ground clearance shown below **pressure vessel (tank) located between axles** wheelbase of 3220 mm or less: minimum ground clearance = 180 mm wheelbase over 3220 mm: minimum ground clearance = 230 mm **pressure vessel (tank) located behind rear axle** distance from rear axle to pressure vessel (tank) is 1140 mm or less: minimum ground clearance = 200 mm distance from rear axle to pressure vessel (tank) is more than 1140 mm: minimum ground clearance = 0.18 x distance

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) pressure vessel (tank) information plate and data	d) name plate is ***missing***, or illegible, or data is not shown on plate
e) pressure vessel (tank) located within the body shell of the vehicle	e) tank fittings not in a gas-tight enclosure vented to the outside of the vehicle body shell
f) relieving device	f) pressure vessel does not have a burst disc installed burst disc is incorrectly installed, or not the correct value burst disc is not vented outside the body shell
g) damage protection	g) piping or tubing is not of corrosion resistant material piping or tubing is not protected from exterior corrosion line is not positioned for reasonable protection or not shielded grommet is ***missing*** or ***damaged***
h) corrosion protection	h) piping or tubing is not made of corrosion-resistant material or is not protected from exterior location
i) pressure gauge	i) no gauge is installed lines to gauge are within the passenger compartment
j) fitting, hose, piping and tubing Only the following types of piping and tubing are permitted for use in LPG fuel systems. Piping – must be black or galvanized steel w/ steel fittings (schedule 40 vapour and schedule 80 liquid) Tubing – must meet SAE J527, may be steel or copper with steel or brass fittings Minimum tubing wall thickness: ¼ in. tubing = 0.71 mm ½ in. tubing = 0.76 mm	j) piping upstream of a first-stage regulator is not rated at 4 times working pressure, or piping downstream of first-stage regulator not rated at 5 times the working pressure piping, tubing and hose fail to make adequate allowance for vibration; is not protected against damage or breakage due to strain or wear a fitting not an approved type a joint is inaccessible improper hose, tubing or piping is used

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
k) system leakage *Additional Inspection Procedure(s):* Check for leaks using a leak detector.	k) any system leak is detected
l) pressure regulator	l) regulator not securely mounted not protected as required
m) gasoline lock-off	m) where located downstream of the engine fuel pump, connection of gasoline fuel line to the inlet side of lock-off valve, or any other upstream connections, not made with flare-type fittings or other approved fittings slip-on clamped type hose connection is used
n) vehicle chassis and under-body	n) a structural member has been altered during installation of the system in any manner that does not substantially meet or exceed ***OEM*** strength requirements
o) pressure vessel sub-frame	o) any modification has been made to pressure vessel (tank) carrier, or sub-frame, in a manner not approved by pressure vessel ***manufacturer***
p) air/fuel ratio feedback control system *Additional Inspection Procedure(s):* Connect the positive lead of a digital voltmeter to the O_2 sensor signal wire. Connect the meter negative lead to battery ground. Start the engine and run at 2,500 RPM allowing 30 seconds to warm up the O_2 sensor, voltage should vary rapidly between 0.3 and 0.7 volts. Each time the voltage reading crosses 0.45 volts is defined as one cross-count. On dual fuel applications this test must be performed when operating on both fuels.	p) the number of cross-counts observed during a ten-second period is less than 6
3. Liquefied Natural Gas (LNG) Fuel System	**Truck|✓| Trailer|✓| Bus|✓|**
Note: For additional compliance information, see Society of Automotive Engineers (SAE) Standard J2343 titled "Recommended Practice for LNG Medium and Heavy Duty Powered Vehicles", and the National Fire Protection Association (NFPA) Standard 52 "Vehicular Gaseous Fuel Systems Code"	**Hazardous Condition** **Any cause for rejection of a Liquefied Natural Gas (LNG) system will also mean an automatic "Hazardous Condition" for that vehicle. The cause for rejection must be corrected and the vehicle "passed" before it may be operated on the highway.**

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) regulatory authority decal	a) decal is not visible or information on decal is not readable incorrect decal is affixed to the vehicle or fuel is not correctly identified
b) supply/container marking *Note:* As required by National Fire Protection Association (NFPA) 52.	b) ***missing***, not visible directly or by use of mirror no indication of set-to-discharge pressure no indication of working pressure of fuel supply remote filling inlets not visibly marked with the lowest working pressure of any fuel supply container in system
c) methane gas detection system *Additional Inspection Procedure(s):* Test the system in accordance with the ***manufacturer*** service instructions.	c) disconnected, ***inoperative*** or ***missing*** sensor is not located in engine, driver, and passenger compartment alarm is not visual and audible to the driver before entering the drivers compartment and while seated in the normal driving position system does not function continuously at all times
d) LNG container (all types) *Note:* No LNG container shall be repaired unless authorized by a certified inspector. The replacement of valves, fittings and accessories with compliant parts intended for the same purpose is not considered a repair.	d) not oriented and mounted as specified by the ***manufacturer*** not located in a protected location as designed by the vehicle ***manufacturer*** or as determined by a qualified professional engineer any portion of the container or container valves in communication with the liquid or vapour are not located behind the rear frame cross member any part of the container is welded *Note:* Only saddle plates, brackets or non- pressure components that were provided and installed by the ***manufacturer*** may be field welded.
e) roof-mounted LNG container *Note:* This condition applies to a roof-mounted LNG container in addition to those listed above for all types of containers.	e) vehicle was not manufactured or originally designed to have roof mounted containers *Note:* After-market modification of a vehicle to accept roof-mounted containers is not permitted.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) LNG container on a bus or motor coach *Note:* These conditions apply in addition to those listed above for all types of containers.	f) located in or above the passenger compartment container is installed so that gas from fuelling or gauging operation or from a relief valve can be released inside a driver, passenger or luggage compartment
g) service valve emergency access port *Note:* Emergency access ports are used only on certain buses and are intended for access to the service valve in an emergency situation.	g) not located on vehicle sidewall not hinged and latched is locked
h) vent line and outlet *Note:* All safety devices that may discharge to atmosphere must be vented to the outside of the vehicle.	h) any safety device does not vent to the outside of the vehicle vent line is made of aluminum or copper discharge line port size is not equal or greater than the main automatic or manual shut off valve line installed inside a compartment does not extend to the outside not located as far as practicable from the engine exhaust outlet does not direct escaping gas upward within 45 degrees escaping gas impinges fuel supply directed into wheel well directed at engine air intake inlets direction of escaping gas may cause a hazard to other road users not at least 1.5 times the maximum allowable working pressure (MAWP) of the container they are connected to. (When discharged into a manifold or line of increased diameter, the pressure requirement of that manifold or line must be calculated by a professional engineer to determine compliance.) fuel exiting the vaporizer has not been completely converted to a gaseous state at a temperature suitable for introduction to the remainder of the fuel system as Compressed Natural Gas (CNG) any vent line from the LNG fuel system is combined with CNG vent line on a bus the vent line from the safety relief valve is not located at the rear of the vehicle, directed upward and extended to the top of the vehicle roof

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
i) manual shut-off valve *Note:* Valves, valve packing, gaskets and seats must be specifically designed for LNG service. If a manual shut-off valve cannot be readily installed due to the compact design of the LNG fuel container, an automatic shut-off valve meeting section j) automatic shut-off valve can be used providing it is located downstream in the CNG portion of the fuel system. *Note:* Decals and stencils are acceptable means of marking.	i) not installed in the outlet of the manifold not suitable for the maximum allowable pressure of the container leakage occurs at less than 1.5 times (MAWP) not marked with "MANUAL SHUT-OFF VALVE" not clearly marked with working pressure
j) automatic shut-off valve *Note:* Decals and stencils are acceptable means of marking.	j) not installed in the outlet of the manifold does not shut off when the engine is stopped or ignition switch is in the off or at accessory positions low engine oil pressure is not sensed does not shut off when engine vacuum is not present not suitable for the maximum allowable pressure of the container leakage occurs at less than 1.5 times (MAWP) not marked with "AUTOMATIC SHUT-OFF VALVE" not clearly marked with working pressure
k) pressure relief valve *Note:* Any device used for leak testing of a LNG fuel system must have an accuracy of +/- 2% of the MAWP of the system.	k) leaks at pressure below highest relief valve pressure setting
l) automatic fuel supply shut-off valve	l) not adjacent to the manual shut-off valve not protected as required not activated by the absence of engine rotation or oil pressure

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
m) pressure gauge	m) is not readily visible by the driver when the engine enclosure is removed or when standing on either side of the vehicle is not located outside driver or passenger compartment is not equipped with a limiting orifice is not equipped with a shatter-proof dial lens is not equipped with a body relief
n) pressure regulator	n) not securely mounted not protected as required to prevent malfunction from low ambient air temperatures (- 40 degrees)
o) supply line *Note:* A damaged line must be replaced.	o) sagging or not supported at least every 610 mm ***damaged*** or repaired
p) pipe, tubing, hose and fitting *Note:* All materials and assemblies must be designed for the widest pressure and temperature ranges to which they may be subjected with a pressure safety factor of at least four.	p) aluminum or copper is used between the container and first-stage regulator pressure safety factor of material is not at least four
q) piping installation	q) installed without adequate allowance for vibration installed without adequate protection against damage or breakage due to strain or wear
r) pipe thread sealant *Note:* Suitable thread sealant is required on all male pipe threads prior to assembly upon initial installation and for component repair or replacement.	r) sealant used is not impervious to the action of fuel sealant is not applied to male pipe threads prior to assembly
s) pipe and thread condition	s) threading burrs or scaling are present pipe or fitting ends are not reamed
t) gaseous fuel cut-off for dual fuel system *Note:* Used in applications where a small amount of diesel fuel is injected into the cylinder of the engine during pre 'ignition'.	t) no means is provided to prevent the flow of gaseous fuel to the carburetor or injector fuel rail when diesel fuel is used in pre 'ignition' when ignition switch is in the off or accessory position, or from the carburetor when engine vacuum is not present

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
u) bypass relief device *Note:* A standalone bypass relief device is required when a vehicle is not equipped with a fuel pump containing a bypass relief device by the *OEM* or *manufacturer*.	u) does not function in accordance with *OEM* design is not located between the fuel pump and automatic shut off valve in the liquid fuel line to carburetor is not located between the fuel pump and automatic shut off valve in injector fuel rail on a vehicle with dual fuel system
v) vehicle fuelling connection	v) does not have an approved fuelling connection for each pressure-based fuel system is not protected from moving parts, lift-able cab enclosure, engine cover, hinge or direct side impact
w) fuel-carrying component (excluding service valves, tubing and fittings)	**w) is not labeled or stamped to show all of the following:** • *manufacturer's* name or symbol • model designation • maximum allowable working pressure • design temperature range • direction of flow of fuel • capacity or electrical rating as applicable • scheduled replacement date if applicable
x) road clearance	x) lowest part of any component in the system, including protective guards, is below the lowest edge of the wheel rim
y) fuel system protection	**y) any system component is not protected from:** • any moving part in engine compartment • lift-able cab enclosure • engine cover, hinge or support device • direct side impact

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

STANDARD 12

CVSA ON-ROAD INSPECTIONS

A standard which contains the Commercial Vehicle Safety Alliance on-road inspection criteria. Copyright CVSA, Please contact the Commercial Vehicle Safety Alliance for a copy.

STANDARD 13

TRIP INSPECTION

NSC DAILY VEHICLE TRIP INSPECTION

GOALS OF THE STANDARD

The daily vehicle trip inspection standard is intended to ensure early identification of vehicle problems and defects, and to prevent the operation of vehicles with conditions that are likely to cause or contribute to a collision or vehicle breakdown.

INTRODUCTION

Daily vehicle trip inspection is a continuous process designed to protect drivers and alert carriers to mechanical problems. The general objective of daily vehicle trip inspections is to promote an improved level of safety and compliance in commercial vehicles operating on the highway.

APPLICATION

All motor carriers and drivers operating commercial vehicles as defined in the NSC.

Some jurisdictions may exempt certain types of vehicles from the requirements of this standard. To determine whether any specific vehicle is exempted, please contact the appropriate jurisdiction in which travel is intended.

DEFINITIONS

For the purpose of this standard, the following definitions apply:

Commercial Vehicle: *(As defined in NSC)* A truck, tractor or trailer or combination thereof exceeding a registered gross vehicle weight of 4 500 kg, or a bus designed, constructed and used for the transportation of passengers with a designated seating capacity of more than 10, including the driver, but excluding the operation for personal use.

Inspector: *(As defined in NSC)* A person duly authorized to enforce federal or provincial statutes related to the Code.

Motor Carrier: *(As defined in NSC)* A person who owns, leases or is responsible for the operation of a commercial vehicle for the purpose of transporting passengers or goods.

Motor Coach: means a bus of 'monocoque' design, manufactured to provide intercity, suburban, commuter or charter service and equipped with under-floor baggage storage.

NSC Standard 13: Trip Inspections

Part 1 – General Requirements

(1) Vehicles to be inspected

No motor carrier shall permit a person and no person shall drive or operate a commercial vehicle on a highway unless the vehicle is inspected as required.

(2) Carrier to issue inspection schedules

Motor carriers shall provide the applicable schedule(s) of inspection items in a written or an equivalent electronic format and all vehicles shall be inspected in accordance with the schedule(s)[1].

(3) Driver to carry and surrender schedules

Drivers of a commercial vehicle shall have in their possession the applicable schedule(s) of inspection items and shall provide the schedules on demand of an inspector. (Schedule 4 need not be carried.)

(4) Required inspections (when operated)

(a) Trucks, tractors and trailers shall be inspected in accordance with Schedule 1 every 24 hours.

(b) Buses and any attached trailer[2] shall be inspected in accordance with Schedule 2 every 24 hours, or alternatively in the case of motor coaches equipped with air brakes, air ride suspension and automatic brake adjusters, in accordance with Schedule 3 every 24 hours and at least every 30 days or 12,000 km (whichever comes first) in accordance with:
   i. Schedule 4, or
   ii. an equivalent maintenance program approved by the jurisdiction that complies with Schedule 4 requirements.

(5) Report to be completed

(a) A person conducting an inspection in accordance with Schedule 1 or 2 or 3 shall prepare a report in a written or an equivalent electronic format that contains the following information:
   i. licence plate or unit number(s) of the vehicle(s);
   ii. motor carrier's name;
   iii. date and time of inspection;
   iv. city, town, village or highway location where the inspection was performed;
   v. a statement signed by the person conducting the inspection and by the person driving the vehicle (if different than the person inspecting the vehicle) that the vehicle(s) identified on the report has(have) been inspected in accordance with applicable requirements;
   vi. the legible printed name of the person conducting the inspection; and
   vii. odometer reading (if equipped).

(b) A person conducting an inspection in accordance with subsection 4 (b) i or ii shall prepare a report in a written or an equivalent electronic format that contains the following information:
   i. licence plate, VIN or unit number(s) of the vehicle(s);
   ii. motor carrier's name;
   iii. date(s) of inspection;
   iv. location(s) where the inspection was performed;
   v. a statement that the vehicle(s) identified on the report has(have) been inspected in accordance with applicable Schedule 4 requirements;
   vi. the legible printed name of the person(s) conducting the inspection;
   vii. the signature of the person(s) conducting the inspection;
   viii. odometer reading(s).

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[1] Schedules must contain at a minimum all inspection items listed, with the exception of items not present on the vehicle being operated. Schedule format and layout may vary.

[2] A trailer towed by a bus shall always be inspected in accordance with Schedule 2.

(6) Report to be carried
No motor carrier shall permit a person and no person shall drive a commercial vehicle on a highway unless that person is in possession of the required inspection report(s).

(7) Driver to provide report
A driver of a commercial vehicle shall provide a paper or equivalent electronic copy[3] of the required inspection report(s) on demand of an inspector.

(8) When no defects are detected
When no defects are detected during an inspection, the person conducting the inspection shall record that fact on the inspection report(s).

(9) When defects are detected
A person conducting an inspection in accordance with Schedules 1, 2 or 3 shall record on the inspection report any defects detected during the inspection and shall report such defects to the motor carrier or a person appointed by the motor carrier prior to the next required inspection.

(10) Information to be recorded re: Schedule 4 inspections
A person conducting an inspection in accordance with Schedule 4 shall record brake adjustment measurements, all defects detected during the inspection, and the nature of all repairs carried out.

(11) Driver to monitor vehicle while driving
While driving and/or otherwise being in charge of a commercial vehicle, the driver shall monitor its condition in accordance with the schedule of inspection items, and when defects are detected, the driver shall record the defects on the inspection report and report the defects to the motor carrier prior to the next required inspection.

(12) Major defects to be reported immediately
When major defects are detected or disclosed to the driver while driving or otherwise being in charge of a vehicle, they shall be recorded on the inspection report and reported to the motor carrier immediately.

(13) Vehicle not to be operated with major defect
No motor carrier shall permit a person and no person shall drive a commercial vehicle on a highway when a major defect is present on the vehicle.

(14) Carrier to ensure defects are corrected
Motor carriers shall ensure that all previously reported vehicle defects are corrected before the next required inspection or within a timeframe specified by the jurisdiction of travel.

(15) Report to be given to carrier
Drivers shall forward the original of each inspection report to the motor carrier who is responsible for the commercial vehicle within 20 calendar days of the completion of the report.

(16) Carrier records
Carriers shall retain the original copy of each vehicle inspection report and certification of repairs for at least 6 months from the date the report was prepared.

(17) Schedule 4 inspections to be conducted by qualified person
Schedule 4 inspections shall be conducted while the vehicle is positioned over a pit or raised in a manner that provides adequate access to all of the applicable components by a person who holds the technician certification or qualification required in the jurisdiction (may not have to be certified mechanic; please check with jurisdiction).

[3] The requirement for equivalent electronic copies should be the same as the Hours of Service requirements.

Part 2 – Schedules

Schedule 1 – Truck, Tractor & Trailer

Application:
This schedule applies to trucks, tractors and trailers or combinations thereof exceeding a registered gross vehicle weight of 4500 kg.

1. Air Brake System	
Defect(s)	***Major Defect(s)***
• Audible air leak. • Slow air pressure build-up rate.	• Pushrod stroke of any brake exceeds the adjustment limit. • Air loss rate exceeds prescribed limit. • Inoperative towing vehicle (tractor) protection system. • Low air warning system fails or system is activated. • Inoperative service, parking or emergency brake.
2. Cab	
Defect(s)	***Major Defect(s)***
• Occupant compartment door fails to open.	• Any cab or sleeper door fails to close securely.
3. Cargo Securement	
Defect(s)	***Major Defect(s)***
• Insecure or improper load covering (e.g. wrong type or flapping in the wind).	• Insecure cargo. • Absence, failure, malfunction or deterioration of required cargo securement device or load covering.
4. Coupling Devices	
Defect(s)	***Major Defect(s)***
• Coupler or mounting has loose or missing fastener.	• Coupler is insecure or movement exceeds prescribed limit. • Coupling or locking mechanism is damaged or fails to lock. • Defective, incorrect or missing safety chain/cable.
5. Dangerous Goods	
	Major Defect(s)
	• Dangerous goods requirements not met.
6. Driver Controls	
Defect(s)	
• Accelerator pedal, clutch, gauges, audible and visual indicators or instruments fail to function properly.	
7. Driver Seat	
Defect(s)	***Major Defect(s)***
• Seat is damaged or fails to remain in set position.	• Seatbelt or tether belt is insecure, missing or malfunctions.
8. Electric Brake System	
Defect(s)	***Major Defect(s)***
• Loose or insecure wiring or electrical connection.	• Inoperative breakaway device. • Inoperative brake.

9. Emergency Equipment & Safety Devices	
Defect(s) • Emergency equipment is missing, damaged or defective.	
10. Exhaust System	
Defect(s) • Exhaust leak.	***Major Defect(s)*** • Leak that causes exhaust gas to enter the occupant compartment.
11. Frame and Cargo Body	
Defect(s) • Damaged frame or cargo body.	***Major Defect(s)*** • Visibly shifted, cracked, collapsing or sagging frame member(s).
12. Fuel System	
Defect(s) • Missing fuel tank cap.	***Major Defect(s)*** • Insecure fuel tank. • Dripping fuel leak.
13. General	
	Major Defect(s) • Serious damage or deterioration that is noticeable and may affect the vehicle's safe operation.
14. Glass and Mirrors	
Defect(s) • Required mirror or window glass fails to provide the required view to the driver as a result of being cracked, broken, damaged, missing or maladjusted. • Required mirror or glass has broken or damaged attachments onto vehicle body.	
15. Heater/Defroster	
Defect(s) • Control or system failure.	***Major Defect(s)*** • Defroster fails to provide unobstructed view through the windshield.
16. Horn	
Defect(s) • Vehicle has no operative horn.	
17. Hydraulic Brake System	
Defect(s) • Brake fluid level is below indicated minimum level.	***Major Defect(s)*** • Parking brake is inoperative • Brake boost or power assist is inoperative. • Brake fluid leak. • Brake pedal fade or insufficient brake pedal reserve. • Activated (other than ABS) warning device. • Brake fluid reservoir is less than ¼ full.

18. Lamps and Reflectors	
Defect(s)	***Major Defect(s)***
• Required lamp does not function as intended. • Required reflector is missing or partially missing.	*When lamps are required:* • Failure of both low-beam headlamps. • Failure of both rearmost tail lamps. *At all times:* • Failure of a rearmost turn-indicator lamp. • Failure of both rearmost brake lamps.
19. Steering	
Defect(s)	***Major Defect(s)***
• Steering wheel lash (free-play) is greater than normal.	• Steering wheel is insecure, or does not respond normally. • Steering wheel lash (free-play) exceeds required limit.
20. Suspension System	
Defect(s)	***Major Defect(s)***
• Air leak in air suspension system. • Broken spring leaf. • Suspension fastener is loose, missing or broken.	• Damaged[1] or deflated air bag. • Cracked or broken main spring leaf or more than one broken spring leaf in any spring assembly. • Part of spring leaf or suspension is missing, shifted out of place or in contact with another vehicle component. • Loose U-bolt. [1] patched, cut, bruised, cracked to braid, mounted insecurely.
21. Tires	
Defect(s)	***Major Defect(s)***
• Damaged tread or sidewall of tire. • Tire leaking (if leak can be felt or heard, tire is to be treated as flat).	• Flat tire. • Tire tread depth is less than wear limit. • Tire is in contact with another tire or any vehicle component other than mud-flap. • Tire is marked "Not for highway use". • Tire has exposed cords in the tread or outer side wall area.
22. Wheels, Hubs and Fasteners	
Defect(s)	***Major Defect(s)***
• Hub oil below minimum level. (When fitted with sight glass.) • Leaking wheel seal.	• Wheel has loose, missing or ineffective fastener. • Damaged, cracked or broken wheel, rim or attaching part. • Evidence of imminent wheel, hub or bearing failure.
23. Windshield Wiper/Washer	
Defect(s)	***Major Defect(s)***
• Control or system malfunction. • Wiper blade damaged, missing or fails to adequately clear driver's field of vision.	*When necessary for prevailing weather condition.* • Wiper or washer fails to adequately clear driver's field of vision in area swept by driver's side wiper.

Schedule 2 – Bus

Application:
This schedule applies to buses designed, constructed and used for the transportation of passengers with a designated seating capacity of more than 10, including the driver, but excluding the operation for personal use, and also applies to any trailer towed by a bus.

1. Accessibility Devices	
Defect(s) *Accessibility device may not be used if:* • Alarm fails to operate. • Equipment malfunctions. • Interlock system malfunctions.	***Major Defect(s)*** • Vehicle fails to return to normal level after "kneeling." • Extendable lift, ramp or other passenger-loading device fails to retract.
2. Air Brake System	
Defect(s) • Audible air leak. • Slow air pressure build-up rate.	***Major Defect(s)*** • Pushrod stroke of any brake exceeds the adjustment limit. • Air loss rate exceeds prescribed limit. • Inoperative towing vehicle (tractor) protection system. • Low air warning system fails or system is activated. • Inoperative service, parking or emergency brake.
3. Cargo Securement	
Defect(s) • Insecure or improper load covering (e.g. wrong type or flapping in the wind).	***Major Defect(s)*** • Insecure cargo. • Absence, failure, malfunction or deterioration of required cargo securement device or load covering.
4. Coupling Devices	
Defect(s) • Coupler or mounting has loose or missing fastener.	***Major Defect(s)*** • Coupler is insecure or movement exceeds prescribed limit. • Coupling or locking mechanism is damaged or fails to lock. • Defective, incorrect or missing safety chain/cable.
5. Dangerous Goods	
	Major Defect(s) • Dangerous goods requirements not met.
6. Doors and Emergency Exits	
Defect(s) • Door, window or hatch fails to open or close securely. • Alarm inoperative.	***Major Defect(s)*** *(Passengers may not be carried[1].)* • Required emergency exit fails to function as intended. [1] vehicle may be moved when no passenger carried.
7. Driver Controls	
Defect(s) • Accelerator pedal, clutch, gauges, audible and visual indicators or instruments fail to function properly.	***Major Defect(s)*** *(Passengers may not be carried[2].)* • Accelerator sticking and engine fails to return to idle. [2] vehicle may be moved when no passenger carried.

8. Driver Seat	
Defect(s)	***Major Defect(s)***
• Seat is damaged or fails to remain in set position.	• Seatbelt or tether belt is insecure, missing or malfunctions.
9. Electric Brake System	
Defect(s)	***Major Defect(s)***
• Loose or insecure wiring or electrical connection.	• Inoperative breakaway device. • Inoperative brake.
10. Emergency Equipment & Safety Devices	
Defect(s)	
• Emergency equipment is missing, damaged or defective.	
11. Exhaust System	
Defect(s)	***Major Defect(s)***
• Exhaust leak.	• Leak that causes exhaust gas to enter the occupant compartment.
12. Exterior Body and Frame	
Defect(s)	***Major Defect(s)***
• Insecure or missing body parts. • Insecure or missing compartment door. • Damaged frame or body.	• Visibly shifted, cracked, collapsing or sagging frame member(s).
13. Fuel System	
	Major Defect(s) • Missing fuel tank cap[1]. • Insecure fuel tank. • Dripping fuel leak. [1] vehicle may be moved when no passenger carried.
14. General	
	Major Defect(s) • Serious damage or deterioration that is noticeable and may affect the vehicle's safe operation.
15. Glass and Mirrors	
Defect(s) • Required mirror or window glass fails to provide the required view to the driver as a result of being cracked, broken, damaged, missing or maladjusted. • Required mirror or glass has broken or damaged attachments onto vehicle body.	***Major Defect(s)*** *(Passengers may not be carried.[2])* Driver's view of the road is obstructed in the area swept by the windshield wipers. [2] vehicle may be moved when no passenger carried.
16. Heater/Defroster	
Defect(s)	***Major Defect(s)***
• Control or system failure.	• Defroster fails to provide unobstructed view through the windshield.

17. Horn	
Defect(s) • Vehicle has no operative horn.	
18. Hydraulic Brake System	
Defect(s) • Brake fluid level is below indicated minimum level.	***Major Defect(s)*** • Parking brake is inoperative. • Brake boost or power assist is inoperative. • Brake fluid leak. • Brake pedal fade or insufficient brake pedal reserve. • Activated (other than ABS) warning device. • Brake fluid reservoir is less than ¼ full.
19. Lamps and Reflectors	
Defect(s) • Required lamp does not function as intended. • Required reflector is missing or partially missing. • Passenger safety or access lamp does not function.	***Major Defect(s)*** *When lamps are required:* • Failure of both low-beam headlamps. • Failure of both rearmost tail lamps. *At all times:* • Failure of a rearmost turn-indicator lamp. • Failure of both rearmost brake lamps.
20. Passenger Compartment	
Defect(s) • Stanchion padding is damaged. • Damaged steps or floor. • Insecure or damaged overhead luggage rack or compartment. • Malfunction or absence of required passenger or mobility device restraints. • Passenger seat is insecure.	***Major Defect(s)*** *When affected position is occupied:* • Malfunction or absence of required passenger or mobility device restraints. • Passenger seat is insecure.
21. Steering	
Defect(s) • Steering wheel lash (free-play) is greater than normal.	***Major Defect(s)*** • Steering wheel is insecure, or does not respond normally. • Steering wheel lash (free-play) exceeds required limit.
22. Suspension System	
Defect(s) • Air leak in air suspension system. • Broken spring leaf. • Suspension fastener is loose, missing or broken.	***Major Defect(s)*** • Damaged[1] or deflated air bag. • Cracked or broken main spring leaf or more than one broken spring leaf in any spring assembly. • Part of spring leaf or suspension is missing, shifted out of place or in contact with another vehicle component. • Loose U-bolt. [1] patched, cut, bruised, cracked to braid, mounted insecurely.

23. Tires	
Defect(s)	***Major Defect(s)***
• Damaged tread or sidewall of tire. • Tire leaking (if leak can be felt or heard, tire is to be treated as flat).	• Flat tire. • Tire tread depth is less than wear limit. • Tire is in contact with another tire or any vehicle component other than mud-flap. • Tire is marked "Not for highway use". • Tire has exposed cords in the tread or outer side wall area.
24. Wheels, Hubs and Fasteners	
Defect(s)	***Major Defect(s)***
• Hub oil below minimum level. (When fitted with sight glass.) • Leaking wheel seal.	• Wheel has loose, missing or ineffective fastener. • Damaged, cracked or broken wheel, rim or attaching part. • Evidence of imminent wheel, hub or bearing failure.
25. Windshield Wiper/Washer	
Defect(s)	***Major Defect(s)***
• Control or system malfunction. • Wiper blade damaged, missing or fails to adequately clear driver's field of vision.	*When necessary for prevailing weather condition.* • Wiper or washer fails to adequately clear driver's field of vision in area swept by driver's side wiper.

Schedule 3 – Motor Coach (Daily)

Application:
This schedule applies only to a Motor Coach equipped with air ride suspension, air brakes and automatic brake adjusters. Any trailer towed by a Motor Coach must be inspected in accordance with Schedule 2.

1. Accessibility Devices	
Defect(s) *Accessibility device may not be used if:* • Alarm fails to operate. • Equipment malfunctions. • Interlock system malfunctions.	***Major Defect(s)*** • Vehicle fails to return to normal level after "kneeling." • Extendable lift, ramp or other passenger-loading device fails to retract.
2. Air Brake System	
Defect(s) • Audible air leak. • Slow air pressure build-up rate.	***Major Defect(s)*** • There is any indication of a brake adjustment problem. • Air loss rate exceeds prescribed limit. • Inoperative towing vehicle (tractor) protection system. • Low air warning system fails or system is activated. • Inoperative service, parking or emergency brake.
3. Coupling Devices	
Defect(s) • Coupler or mounting has loose or missing fastener.	***Major Defect(s)*** • Coupler is insecure or movement exceeds prescribed limit. • Coupling or locking mechanism is damaged or fails to lock. • Defective, incorrect or missing safety chain/cable.
4. Dangerous Goods	
	Major Defect(s) • Dangerous goods requirements not met.
5. Doors and Emergency Exits	
Defect(s) • Door, window or hatch fails to open or close securely. • Alarm inoperative.	***Major Defect*(s)** *(Passengers may not be carried.[1])* • Required emergency exit fails to function as intended. [1] vehicle may be moved when no passenger carried.
6. Driver Controls	
Defect(s) • Accelerator pedal, clutch, gauges, audible and visual indicators or instruments fail to function properly.	***Major Defect(s)*** *(Passengers may not be carried.[2])* • Accelerator sticking and engine fails to return to idle. [2] vehicle may be moved when no passenger carried.
7. Driver Seat	
Defect(s) • Seat is damaged or fails to remain in set position.	***Major Defect(s)*** • Seatbelt or tether belt is insecure, missing or malfunctions.
8. Emergency Equipment & Safety Devices	
Defect(s) • Emergency equipment is missing, damaged or defective.	

9. Exhaust System	
Defect(s) • Exhaust leak.	***Major Defect(s)*** • Leak that causes exhaust gas to enter the occupant compartment.
10. Exterior Body	
Defect(s) • Insecure or missing body parts. • Insecure or missing compartment door.	
11. Fuel System	
	Major Defect(s) • Missing fuel tank cap[1]. • Insecure fuel tank. • Dripping fuel leak. [1] vehicle may be moved when no passenger carried.
12. General	
	Major Defect(s) • Serious damage or deterioration that is noticeable and may affect the vehicle's safe operation.
13. Glass and Mirrors	
Defect(s) • Required mirror or window glass fails to provide the required view to the driver as a result of being cracked, broken, damaged, missing or maladjusted. • Required mirror or glass has broken or damaged attachments onto vehicle body.	***Major Defect(s)*** *(Passengers may not be carried.[2])* • Driver's view of the road is obstructed in the area swept by the windshield wipers. [2] vehicle may be moved when no passenger carried.
14. Heater/Defroster	
Defect(s) • Control or system failure.	***Major Defect(s)*** • Defroster fails to provide unobstructed view through the windshield.
15. Horn	
Defect(s) • Vehicle has no operative horn.	
16. Lamps and Reflectors	
Defect(s) • Required lamp does not function as intended. • Required reflector is missing or partially missing. • Passenger safety or access lamp does not function.	***Major Defect(s)*** *When lamps are required:* • Failure of both low-beam headlamps. • Failure of both rearmost tail lamps. *At all times:* • Failure of a rearmost turn-indicator lamp. • Failure of both rearmost brake lamps.

17. Passenger Compartment	
Defect(s) • Stanchion padding is damaged. • Damaged steps or floor. • Insecure or damaged overhead luggage rack or compartment. • Malfunction or absence of required passenger or mobility device restraints. • Passenger seat is insecure.	***Major Defect(s)*** *When affected position is occupied:* • Malfunction or absence of required passenger or mobility device restraints. • Passenger seat is insecure.
18. Steering	
Defect(s) • Steering wheel lash (free-play) is greater than normal.	***Major Defect(s)*** • Steering wheel is insecure, or does not respond normally. • Steering wheel lash (free-play) exceeds required limit.
19. Suspension System	
Defect(s) • Air leak in air suspension system.	***Major Defect(s)*** • Damaged[1] or deflated air bag. [1]patched, cut, bruised, cracked to braid, mounted insecurely.
20. Tires	
Defect(s) • Damaged tread or sidewall of tire. • Tire leaking (if leak can be felt or heard, tire is to be treated as flat).	***Major Defect(s)*** • Flat tire. • Tire tread depth is less than wear limit. • Tire is in contact with another tire or any vehicle component other than mud-flap. • Tire is marked "Not for highway use". • Tire has exposed cords in the tread or outer side wall.
21. Wheels, Hubs and Fasteners	
Defect(s) • Hub oil below minimum level. (When fitted with sight glass.) • Leaking wheel seal.	***Major Defect(s)*** • Wheel has loose, missing or ineffective fastener. • Damaged, cracked or broken wheel, rim or attaching part. • Evidence of imminent wheel, hub or bearing failure.
22 Windshield Wiper/Washer	
Defect(s) • Control or system malfunction. • Wiper blade damaged, missing or fails to adequately clear driver's field of vision.	***Major Defect(s)*** *When necessary for prevailing weather condition.* • Wiper or washer fails to adequately clear driver's field of vision in area swept by driver's side wiper.

Schedule 4 – Motor Coach (30 days or 12,000 km)

Application:
This schedule applies only to a Motor Coach equipped with air ride suspension, air brakes and automatic brake adjusters.

Note:
- *All conditions listed below are major defects and must be repaired before the vehicle is driven.*
- *Schedule 4 inspections must be conducted while the vehicle is positioned over a pit or raised in a manner that provides adequate access to all applicable components by a person who holds the appropriate technician certification or qualification.*

1. Air Brake System
Major Defect(s) • Audible air leak. • Brake pushrod stroke is at or beyond the adjustment limit. • Clearance between disc brake pads and rotor exceeds manufacturer's specified limit. • Wedge brake shoe movement exceeds manufacturer's specified limit. • Excessive discharge of fluids from air reservoir. • Air compressor, mounts or attachments damaged or defective. • Compressor drive-belt loose or damaged. • Air line or fitting damaged or insecure. • Air tank defective, damaged or insecure. • Air tank drain or moisture ejector device inoperable. • Brake chamber, brake linkage or other brake component is defective, damaged or insecure. • ~~DD3 brake chamber fails to hold vehicle in place during tug test, when all air reservoirs are drained~~. • Spring brake is broken or malfunctions. • Inoperative service, parking or emergency brake.
2. Exhaust system
Major Defect(s) • Exhaust leak. • Exhaust system component insecure, damaged or perforated.
3. Frame and/or Underbody
Major Defect(s) • Any frame member or fastener is damaged, cracked or insecure. • Any component mount is damaged or insecure.
4. Fuel system
Major Defect(s) • Fuel leak. • Insecure fuel tanks, fuel tank mounts or guards. • Fuel line or fitting damaged or insecure.
5. Steering
Major Defect(s) • Steering linkage is damaged or insecure. • Power steering fluid is leaking, contaminated or low. • Power steering component damaged or insecure.

6. Suspension System

Major Defect(s)

- Air leak or malfunction of air suspension system or component.
- Damage or deterioration of any suspension component including:
  - spring, and air bag;
  - axle or frame attaching component;
  - axle supporting or aligning component;
  - suspension or component fastener;
  - shock absorber or attachments.

7. Tires

Major Defect(s)

- Tire inflation less than required.
- Tire treads worn to wear limits.
- Damage to tread or sidewall of tire.
- Retread or rebuilt tire is used on front axle.

8. Wheels and fasteners

Major Defect(s)

- Loose, missing, damaged or ineffective wheel fastener.
- Damaged wheel or wheel component.

STANDARD 14

SAFETY RATING

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INTRODUCTION

Responsibility for motor carrier safety resides, first and foremost, with motor carrier management.

The Safety Rating Standard establishes the motor carrier safety rating framework by which each jurisdiction shall assess the safety performance of motor carriers.

Each jurisdiction shall adopt and adhere to Section A, Definitions; Section B, Motor Carrier Safety Rating System Objectives, Principle and Scope; and Section C, Motor Carrier Safety Rating Process. Jurisdictions will have some flexibility in applying the foregoing, subject to maintaining operational consistence.

A. DEFINITIONS

The following definitions apply in this Standard:

"base jurisdiction" (*administration d'origine*) means the province or territory where the commercial vehicle is base-plated.

"commercial vehicle" (*véhicule commercial*) means:

(a) A truck, tractor or trailer, or combination thereof exceeding a registered gross vehicle weight of 4,500 kg; or

(b) a bus that is designed, constructed and used for the transportation of passengers and that has a designated seating capacity of more than 10 persons, including the driver, if it is operated for purposes other than personal use.

"conviction" (*condamnation*) means a finding by a court that the driver of a commercial vehicle or the motor carrier is guilty of a violation of a law or regulation relating to the operation of commercial vehicles.

"driver" (*conducteur*) means a person who drives a commercial vehicle and, in respect of a motor carrier, a person employed or otherwise engaged by a motor carrier to drive a commercial vehicle.

"facility audit" (*vérification en entreprise*) means an audit which is carried out in accordance with Standard #15, Facility Audit Standard.

"fleet size" (*taille du parc d'un transporteur*) means the number of commercial vehicles, excluding trailers, under the motor carrier's responsibility.

"motor carrier" (*transporteur*) means a person or body who owns, leases or is responsible for a commercial vehicle for the purpose of transporting passengers or goods.

"provincial authority" (*authorité provinciale*) means a person or body that has, under the law of a province, authority to control or regulate motor carrier undertakings that operate exclusively in that province.

"reportable accident" (*accident à la déclaration obligatoire*) means any accident involving a commercial vehicle that results in an injury or death to a person, or a property damage accident that either appears to be $1,000 or more or where any of the vehicles involved is required to be towed away from the scene (at the discretion of the jurisdiction, with the ultimate goal of moving to the tow-away criteria).

"safety rating" (*cote de sécurité*) means an evaluation, developed in accordance with this Standard, of a motor carrier's safety performance.

APPLICATION OF THE STANDARD

2. This Standard applies to provincial authorities that issue safety fitness certificates to motor carriers operating commercial vehicles.

B. MOTOR CARRIER SAFETY RATING SYSTEM

1. Objectives

The objectives of the motor carrier safety rating system are:

- To improve the safety of commercial vehicle operations.
- To encourage the economic competitiveness of safe Canadian motor carriers.
- To encourage motor carrier safety education and continuous improvement.

2. Basic Principles

The basic principles of the motor carrier safety system are:

1. Compatibility
    - across all jurisdictions in Canada and within North America;
2. Effectiveness
    - by systematically examining and classifying the relative performance of motor carriers based on objective data;
3. Efficiency
    - by achieving maximum effectiveness at the lowest practical cost;

4. Equity

   - independent of motor carrier characteristics;

5. Flexibility

   - to accommodate a degree of differentiation and adjustment without compromising system integrity.

6. Consistency

   - whereby motor carriers receive similar ratings for comparable performance in each jurisdiction.

3. Scope and Rating Responsibility

The motor carrier safety rating system shall apply equally to all motor carriers: extra and intra-provincial; private and for-hire. The base jurisdiction shall be responsible for assigning a motor carrier safety rating to every motor carrier with one or more commercial vehicles base-plated in that jurisdiction.

C. MOTOR CARRIER SAFETY RATING PROCESS

1. Unique Motor Carrier Number

The provincial authority must issue a unique National Safety Code number to each motor carrier that operates commercial vehicles based-plated in the base jurisdiction.

2. Motor Carrier Profile System

The provincial authority of the base jurisdiction must include the following information in the motor carrier profile for each motor carrier that operates commercial vehicles based-plated in that jurisdiction:

(a) all reportable accidents;

(b) the results of Level 1 through 5 commercial vehicle inspections, including out of service declarations, conducted in accordance with the standards established by the Commercial Vehicle Safety Alliance, as amended from time to time;

(c) convictions against the motor carrier and its drivers resulting from violations of applicable highway safety laws and regulations and the Criminal Code provisions relating to the operation of vehicles;

(d) hours-of-service convictions against the motor carrier and its drivers;

(e) commercial vehicle maintenance convictions against the motor carrier and its drivers;

(f) commercial vehicle load security convictions against the motor carrier and its drivers;

(g) motor carrier convictions against the motor carrier and its drivers under the federal *Transportation of Dangerous Goods Act* and Regulations and other similar provincial or territorial legislation regulating these substances;

(h) commercial vehicle weight and dimension convictions against the motor carrier and its drivers;

(i) results of motor carrier facility audits;

(j) administrative sanctions assessed by a provincial authority for violations of safety laws; and

(k) information respecting paragraphs (a) to (j) received from another province or territory, from the United States or Mexico, or from a state of the United States or Mexico.

For the purposes of the motor carrier profile, the information set out in paragraphs (a) to (k) pertaining to a driver of a commercial vehicle is to be assigned to the profile of that motor carrier.

For the purposes of the motor carrier profile, any reportable accident, result of on-road inspections or conviction involving commercial vehicles that a motor carrier leases, rents or is responsible for, is to be assigned to that motor carrier.

Every provincial authority must forward, as soon as practicable, the information set out in paragraphs (a) to (k) about a motor carrier, its drivers and commercial vehicles to the provincial authority or the foreign government where the commercial vehicle is base-plated.

3. Determination of Safety Ratings

A safety rating is determined in the following manner:

(a) use the information in the motor carrier profile;

(b) assign a value to each of the data listed in the motor carrier profile taking into account its severity and potential safety impact, in accordance with the National Safety Code Standard #7, Carrier Profile

(i) for the 24-month period preceding the determination, or

(ii) in the case of a motor carrier whose motor carrier profile was established less than 24 months prior to the determination, for the period since its establishment;

(c) normalize the weighted data using the motor carrier's fleet size to reflect the motor carrier's exposure to risk; and

(d) assign a safety rating to the motor carrier in accordance with the safety rating categories set out in section 5 of Part C of this Standard.

4. Applying for a safety fitness certificate

Each motor carrier that applies for a safety fitness certificate must submit to the provincial authority of the base jurisdiction the following documents and information:

1. proof of insurance;

2. the undertaking's articles of incorporation or the registration document for a partnership or proprietorship or driver licence numbers of all principals; and

3. a declaration that contains the following statements and information:

   (a) a certification that the information contained in the application is true;

   (b) an acceptance of responsibilities relating to the operation of commercial vehicles imposed by law on the motor carrier.

   (c) all the National Safety Code numbers that have been issued to the motor carrier;

   (d) a certification that neither the motor carrier nor its partners, corporate officers or beneficial owners have previously had a safety fitness certificate or any other permit to operate a commercial vehicle revoked in Canada, the United States or Mexico; or

   (e) the details of any revocation of a safety fitness certificate or any other permit to operate a commercial vehicle, if applicable; and

   (f) an acknowledgment that failure to specify the information in paragraphs (d) and (e) or submitting false or misleading information as part of the application process may result in the revocation of a safety fitness certificate issued pursuant to the application.

4. fees as determined by a provincial authority, if applicable.

In addition:

1. When applying for a safety fitness certificate after transferring its operations from one province, territory or foreign state to another province or territory, a motor carrier must include a current motor carrier profile from the province or territory

it is leaving or a record of motor carrier safety performance from the foreign state it is leaving.

2. When applying for a new safety fitness certificate after a safety fitness certificate has been revoked, a motor carrier must include,

(a) its previous motor carrier profile;

(b) any additional information that the provincial authority determines is necessary to assess its safety performance and determine a safety rating.

5. Safety Rating Categories

Satisfactory

This rating is assigned to a motor carrier that

(a) has a motor carrier profile that demonstrates safe operation and compliance with applicable highway safety laws and regulations relating to motor carriers and the National Safety Code standards; and

(b) has passed a facility audit.

Satisfactory Unaudited

This rating is assigned to a motor carrier that

(a) has a motor carrier profile that demonstrates safe operation and compliance with applicable highway safety laws and regulations relating to motor carriers and the National Safety Code standards, but that has not been the subject of a facility audit; or

(b) applies for the first time for safety fitness certificate and submits an application that contains the information and documents set out in section 4 of this Part.

Conditional

This rating is assigned to a motor carrier that

(a) has a motor carrier profile that demonstrates deficiencies in

(ii) safe operation

(ii) compliance with applicable highway safety laws and regulations relating to motor carriers and the National Safety Code standards or

(iii) the results of a facility audit; or

(b) is re-applying for a safety fitness certificate after its safety fitness certificate had been revoked by a provincial authority.

Unsatisfactory

This rating is assigned to a motor carrier that

(a) has a motor carrier profile that demonstrates deficiencies in

(i) safe operation

(ii) compliance with applicable highway safety laws and regulations relating to motor carriers and the National Safety Code standards

(iii) the results of a facility audit; or

(b) had been assigned a "conditional" safety rating but

(i) had been notified by the provincial authority that its safety performance and compliance with applicable highway safety laws and regulations relating to motor carriers and the National Safety Code standards, had to improve within a pre-determined period, and

(ii) did not make the specified improvements within that pre-determined period; or

(c) does not have the required insurance coverage.

STANDARD 15

FACILITY AUDIT

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1. INTRODUCTION

The purpose of the National Safety Code (NSC) Facility Audit is to monitor carriers for compliance with all applicable highway safety regulations including but not limited to those covered by the National Safety Code for Motor Carriers. An audit consists of a detailed examination of certain records which are required to be maintained by bus and truck carriers, interviewing personnel who are responsible for safety management, conducting on- and off-highway Commercial Vehicle Safety Alliance (CVSA) inspections on commercial vehicles and recording the audit findings.

The Facility Audit serves as a means of evaluating a carrier's safety/compliance performance with respect to the identification of violations and the use of consistent and acceptable sampling guidelines as provided under Appendix B. In addition the audit results can be used in conjunction with a carrier profile to establish a carrier safety rating (NSC Standard 14, Carrier Safety Rating). To that end, the audit must be both quantifiable, uniformly delivered within each jurisdiction and compatible with other jurisdictions.

All drivers and vehicles over which the carrier exercises control including company drivers and vehicles, owner operators, leased vehicles and drivers acquired through driver services are subject to audit. (See Section 4a, Audit Process: Sample Size Selection)

The decision as to whether Facility Audits are done by appointment or on an unannounced basis should be left to the auditor or audit team. Either method may be selected, depending upon the specific circumstances prevailing at the time or in a particular situation.

2. DEFINITIONS

Within the context of this standard, the following definitions apply:

"authority to operate commercial vehicles" (*permis d'exploiter des véhicules commerciaux*) means the form or forms of licensing required to operate commercial vehicles in the jurisdiction where vehicles under a carrier's responsibility are registered and where the NSC audits are carried out.

"daily commercial trip inspection reports" (*rapports quotidiens de ronde de sécurité de véhicule commercial*) means the report which includes pre-trip and/or post trip commercial vehicle inspections.

"facility audit" (*vérification en entreprise*) means a quantifiable, performance based audit designed to review a carrier's compliance, the results of which are used to establish a safety rating.

"facility auditor" (*vérificateur d'entreprise*) means a person authorized to conduct a motor carrier facility audit and includes both a government employed and a third party auditor.

"third party audit" (*vérification externe*) means a facility audit undertaken by a third party auditor on behalf of the government.

"third party auditor" (*vérificateur externe*) means a person authorized to conduct a motor carrier facility audit, who is not a government employee.

"third party agent" (*représentant externe*) means an individual or organization that is authorized on behalf of the government to administer the scheduling and delivery of third party audits through the deployment of third party auditors.

"time marker" (*carnet de bord*) means a written record used to establish the time and location of a driver and/or commercial motor vehicle on a highway for the purposes of ensuring compliance with various Acts, regulations and inspections. Such a record might include reference to the time, date, plate and unit number (power unit and/or trailer), location and any other relevant details.

"safety rating" (*cote de sécurité*) means an evaluation developed pursuant to NSC Standard 14 of a motor carrier's safety performance.

3. POLICY

Every jurisdiction will have in place legislation or regulations [1] setting out at least the following requirements:

(a) Record Keeping Requirements

(i) Every carrier shall maintain records of the driver licensing qualifications of each person who operates commercial vehicles on its behalf, the hours of service worked by each driver and supporting documents; convictions for traffic offences or criminal driving offences incurred by such drivers, traffic accidents, and training records.

The carrier shall obtain a current driver profile from the appropriate government agency and shall review same prior to hiring the driver.

(ii) Every carrier shall maintain, for each of its commercial vehicles, records of vehicle maintenance and inspection procedures carried out in accordance with the commercial vehicle maintenance standards; records as required in NSC Standard #'s 11, 12, and 13; and Notices of Defect received from vehicle manufacturers and proof that such defects have been corrected.

(iii) Every carrier shall set out a written program which provides for continuous and regular inspection, maintenance and repair of commercial vehicles.

[1] Except for hours of service requirements, a jurisdiction may use means other than legislation or regulations to ensure that carriers meet the requirements set forth in Section 3.a (i).

(b) **Preservation of Records**

The records required to be maintained by carriers in accordance with subsection a) shall be preserved in such a manner as to be accessible for inspection and audit purposes subject to the prescribed retention period as set out by regulation.

(c) **Location of Records**

The records required to be maintained and preserved under subsections a) and b) shall be kept, or made available, at the carrier's main place of business in the jurisdiction where the carrier's commercial vehicles are base plated or at such other location as may be accepted by the jurisdictional agency responsible for NSC Audits.

(d) **Inspection of Records**

(i) The records required to be maintained and preserved under subsections a) and b) shall be made available for inspection by duly authorized inspectors during normal business hours at the location prescribed in subsection c).

(ii) No person shall alter, deface or otherwise falsify any of the records required to be maintained and preserved in accordance with subsections a) and b).

(iii) No person shall obstruct a duly authorized inspector from entering the carrier's premises for the purpose of inspecting the carrier's records and vehicles and no person shall obstruct a duly authorized inspector from carrying out such inspections.

(e) **Sanctions**

(i) Where a carrier fails to maintain the required records; fails to produce such records for inspection; alters, defaces or otherwise falsifies such records; or obstructs the inspection of records, sanctions may be prescribed in legislation or regulations which may consist of probation, suspension or cancellation of authority to operate commercial vehicles, or fines in such amounts as are consistent with the severity of the offence.

(ii) Where an audit of a carrier's records reveals that the carrier has failed to comply with the requirements of relevant regulations, sanctions shall be prescribed in legislation or regulations which may consist of amending the carrier's Safety Rating as to its fitness to operate commercial vehicles, probation, suspension or cancellation of authority to operate commercial vehicles, or fines in such amounts as are consistent with the severity of such non-compliance.

(f) **Exemptions**

Jurisdictions may, for reasons of practicability exempt certain classes of carriers from the applicability of this standard in whole or in part.

4. AUDIT PROCESS

(a) **Sample Size Selection**

In establishing a vehicle sample size the auditor will:

(i) record the total number of power units and trailers under the operator's control (including owned vehicles, leased vehicles and owner/operators);

(ii) consult Appendix B to determine the appropriate vehicle sample size; the sample should be proportionate to the mix of power units and trailers in the fleet.

In establishing a driver sample size, the auditor will:

(i) determine the number of drivers over which the carrier exercises control, through discussion with the carrier prior to conducting the audit (including company drivers, owner/operators and drivers acquired through driver services);

(ii) consult Appendix B to determine the appropriate driver sample size;

Selected driver and vehicle records to be audited through a random process.

(b) **Audit Selection**

Each jurisdiction will, at a minimum, conduct facility audits in accordance with this standard on carriers, under the following conditions:

(i) where a carrier's accident, detention, and conviction record or when combined, equates to a "Conditional " safety rating as defined in NSC Standard 14: Safety Rating;

(ii) where a carrier's accident record surpasses a pre-determined threshold beyond their jurisdiction's industry average;

(iii) where a carrier is involved in a serious highway safety related incident, such as: severe collision, criminal driving offences, vehicle impoundments, or wheel separation (at the discretion of each jurisdiction);

(iv) where a carrier requests a facility audit to secure a "Satisfactory" safety rating (these facility audits may be provided by an authorized 3rd party provider and paid for by the carrier);

(v) upon request from another jurisdiction to perform a facility audit on their behalf, for reasons which conform to the intent of this standard, and;

(vi) by each jurisdiction on a predetermined number of motor carriers who have received limited exposure to enforcement efforts.

(c) **Audit Procedures**

The standard practice to be followed in preparing for, and carrying out a Facility Audit is set out in Appendix A.

(d) **Audit Summary Reports**

The standard practice to be followed in the preparation of audit summary reports and the procedures to be followed by the NSC Administration in acting upon the audit results are as set out in Appendix A: Standard Practice.

5. THIRD PARTY AUDITS

The scarcity of government resources, coupled with a maturing motor carrier industry, encourages alternative approaches to undertaking facility audits. Each jurisdiction shall adhere to this section should it choose to implement the concept of third party audits.

(a) **Responsibilities**

A third party auditor shall undertake and adhere to the requirements of the National Safety Code and any other pertinent jurisdictional requirements; shall gather and assess information by inspecting records and equipment and by conducting interviews; and shall produce a report to be submitted to the motor carrier and to the carrier’s base plate jurisdiction.

(b) **Accreditation, Decreditation and Training**

A third party auditor must be accredited by each jurisdiction in which he works in. Accreditation will be granted after the candidate has successfully completed appropriate training, which at a minimum shall adhere to nationally accepted motor carrier facility auditor selection and certification criteria as outlined in Appendix C. The accrediting jurisdiction shall have the authority to revoke accreditation, for cause.

Facility auditors, including those that have had their accreditation revoked or which has expired shall provide such information to reciprocating jurisdictions upon request.

Each jurisdiction shall maintain a list of its third party agents and third party facility auditors including those that have had their accreditation revoked or expired and shall provide such information to reciprocating jurisdictions upon request.

(c) **Appeals**

Each jurisdiction conducting third party audits shall establish an appropriate appeal mechanism for third party auditors who have had their accreditation revoked.

(d) **Verification of Audit Results**

Third party audit results shall be subject to assessment by a jurisdiction for the purpose of verifying carrier and/or auditor performance and audit results.

(e) **Conflict of Interest**

It is important that a third party agent and/or facility auditor not only be free of conflict of interest, but also be seen to be free of any appearance of conflict of interest.

For the purpose of selecting third party agents, third party auditors and government employed facility auditors, only those persons or organizations that have no material interest in the outcome of a facility audit shall be considered to be free of conflict of interest.

Each jurisdiction shall require its third party agents, third party auditors and government employed facility auditors to declare any conflict of interest involving the conduct of any facility audit.

(f) **Agreement of Confidentiality**

Each third party agent and third party auditor shall be required, by each jurisdiction for which he or she is accredited, to sign an agreement of confidentiality.

APPENDIX A

STANDARD PRACTICE

1. **Audit Preparation**

(a) Upon identifying a carrier for a Facility Audit, review the carrier's audit file (if any) for the most recent audit conducted. This provides the auditor with a record of the types of records maintained by the carrier for each aspect of the carrier's operation to be audited, and the types of source documents used to maintain those records. The audit file should contain the name(s) of the person(s) to be contacted to initiate the audit and a copy of the Carrier Profile. Make a list of each type of record and source document to be audited and the contact person(s) name(s). In the absence of a previous audit, select a carrier based on the audit selection criteria set out in Subsection 4b or any other criteria established by the jurisdiction.

(b) Upon selection of a carrier, confirm that the carrier is not exempt or dormant by way of inspecting the jurisdiction's Vehicle Registration Database for plate validations and Registered Gross Weight on the carrier's vehicles.

(c) Arrange for or conduct the required number of CVSA inspections in advance of the scheduled audit date. Where necessary, CVSA inspections can be conducted on the carrier's premises (level 5) provided records available establish that the vehicle was recently on the highway or is presently available for dispatch. Proper planning of audits is essential in order to gather sufficient numbers of time markers and may require additional resources and lead time.

(d) Gather as many time markers as possible on the carrier well in advance of the audit. Time markers may include CVSA Inspection Reports, violation-tickets and time marker observation records. Proper planning of audits is key to gathering sufficient numbers of time markers and may require additional resources and lead time.

(e) Upon gathering the time markers the following process may be employed:

(i) Search appropriate databases for the carrier's place of business, names of corporate officer(s), and/or contact person(s), outstanding fines, fleet size, driver name(s) and convictions, vehicle(s) registered gross weight, vehicle plate number(s) and other relevant vehicle data.

(ii) Contact by telephone and in writing, the corporate officer(s) or contact person(s) to:

- confirm the location of the records and obtain a complete list of the records to be viewed;

- arrange a date and time; and

- request a complete list of drivers' licence numbers (including part-time drivers) and check their status on the jurisdiction's driver system for inappropriate licence class (or not licensed), multiple licences, or suspended licence. Be prepared to check these names against those captured on the time markers and Carrier Profile to ensure the list is accurate and complete.

2. **Records not produced**

(a) If, on arriving at the carrier's place of business, the records are not available, the inspector may report the matter to the head of the agency responsible for issuing authority to operate commercial vehicles. The report will outline the arrangements which had been made by the auditor and the carrier's failure to provide the required records. The agency may then contact the carrier, advising that it must appear at a hearing.

(b) Upon reaching a decision, the agency responsible for issuing authority to operate commercial vehicles will notify the carrier, stating any condition the carrier must meet.

(c) Arrange for the Carrier Profile to be updated to show the carrier's status.

3. **Elements for Inspection**

(a) Personnel/Payroll records should contain the following information for each person employed as a driver of commercial vehicles:

(i) driver's name, date of birth and driver licence number;

(ii) current licence class and status (active, probationary, conditional, suspended, etc.);

(iii) current driver abstract issued within the last 12 months;

(iv) other driving qualifications as applicable (air brake endorsement, transportation of dangerous goods certificate, extended combinations endorsement);

(v) all traffic offences and criminal driving offences for which the driver was convicted during the past 2 years;

(vi) all reportable accidents involving NSC vehicles, in which the driver was involved during the past 2 years;

(b) A record of each driver's hours of service during each trip driven. Source documents will consist of driver logs maintained by each driver or copies of the printouts produced by electronic recording devices. The records shall be maintained in a systematic manner.

(c) Vehicle Maintenance Records should contain the following information for each commercial vehicle operated by the carrier.

(i) Trip inspection reports filed for each trip made by the commercial vehicle, and evidence that repairs were made with respect to safety defects noted on such reports. Source documentation with respect to the latter would consist of dated work orders describing the repairs done, either "in-house" or at outside truck repair shops. The system used to maintain these records should be set up in such a way that each commercial vehicle under the carrier's control has a specific file.

(ii) Vehicle Inspection records for each commercial vehicle, showing that each has been safety inspected in accordance with and at such intervals as are prescribed in regulations pursuant to the Commercial Vehicle Maintenance Standards; and that repairs were made with respect to safety defects detected at the time of such inspections. Source documentation with respect to such records would consist of:

- Dated vehicle inspection reports signed by the fleet maintenance manager in the case of a certified shop, or the person authorized to conduct such inspection where the inspection is carried out by an appointed motor vehicle inspection facility;

- Dated work orders describing the repairs done, either "in-house" or at an outside truck repair shop.

There should be evidence of a recall system which will remind the person in charge of vehicle maintenance when safety inspections and other preventative maintenance inspections are due to be carried out for each commercial vehicle in the carrier's fleet, in accordance with frequencies prescribed in regulation pursuant to NSC Vehicle Maintenance Standards.

(d) Staff Training Development Records should contain the following information:

(i) The names of all persons who are responsible for training/certifying drivers in procedures to be followed in the transportation of dangerous goods and their qualifications to conduct such training/certification. This requirement applies only to carriers that transport dangerous goods as defined in *Transportation of Dangerous Goods Regulations* and that conduct their own "in-house" TDG training/certification programs.

(ii) Where companies are certified to train and test drivers for professional classes of driver licenses, records should indicate the names of all persons who are responsible for training/testing and their qualifications to conduct training/testing.

(e) Records of all accidents reported in accordance with jurisdictional accident reporting requirements.

(f) Records of compliance with highway safety laws and regulations (traffic convictions, criminal convictions, highway vehicle inspection failure notices, government sanctions).

4. **Audit Categories/Procedures**

(a) **Driver Licence Qualification**

Consult the driver licence data base for the proper class, condition and/or status of licence and where a driver selected for review is from a jurisdiction other than the base plated jurisdiction, confirm that a valid driver licence can be produced. Verify that valid Dangerous Goods Training Certificates have been issued as necessary.

A Driver Licence Qualification violation occurs when:

(i) a driver can be placed on a highway in a commercial motor vehicle without the required driver licence or evidence of training in the transportation of dangerous goods (when required).

(b) **Hours of Work**

Review, for a one calendar month period, any available records such as observation reports, payroll records, driver trip reports, bridge tolls, dispatch records, invoices, bills of lading, CVSA Inspection Reports, fuel receipts and accommodation receipts to verify the accuracy of the information reported on the daily log or other time records and compliance with the hour of work rules.

A Falsification or Missing Log/Time Record violation occurs when:

(i) it can be proven that the logs, time records or supporting documents are inaccurate or missing;

(ii) fuel stops and CVSA inspections are not noted;

(iii) CVSA inspections are not recorded as on-duty, not driving;

(iv) unexplained gaps appear in the odometer reading as indicated on the logs; or

(v) a log or time record cannot be produced when required.

A Data Item (Form & Manner) violation occurs when:

(i) any one prescribed item is missing or incomplete as indicated on the log or time record; or

(ii) the driver fluctuates between using the odometer and hubdometer reading to record the total distance driven, without a written explanation on the log.

(c) **CVSA Inspection**

Level I and 5 CVSA inspections may be used from any jurisdiction provided only the most recent inspections are selected to meet the sample size in Appendix B, Column 2 and any inspection so selected must be conducted within 12 months of the audit date. For the purposes of a Level 5 CVSA inspection, the auditor must be able to place the vehicle on a highway recently or prove the vehicle is ready for dispatch before an out-of-service defect is counted as a violation.

A CVSA violation occurs when:

(i) one or more CVSA out-of-service defects are detected.

(d) **Preventative Maintenance**

Using the CVSA inspection report, if available, for a supporting document, establish whether any defects detected on the vehicle(s) should have been detected and corrected through preventative maintenance.

A Preventative Maintenance violation occurs when:

(i) the CVSA inspection report reveals defects which should have been detected and corrected by the carrier prior to dispatch;

(ii) the carrier fails to establish a preventative maintenance program;

(iii) the carrier fails to comply with the carrier's own maintenance intervals; or

(iv) proper maintenance records cannot be found for defects detected during a CVSA inspection.

(e) **Pre/Post Trip Inspections**

Using the CVSA inspection, if available, for a supporting document, establish whether any defects detected on the vehicle(s) should have been detected by the driver as part of a pre or post trip inspection.

A Pre/Post Trip Inspection violation occurs when:

(i) a vehicle is placed on a highway with one or more defects which should have been detected during a prescribed Daily Commercial Vehicle Trip Inspection.

(f) **PMVI**

Using the CVSA inspection report, if available, for a supporting document, establish whether a vehicle(s) was operated on a highway without a valid inspection sticker(s) or other evidence of compliance in the 12 month period immediately preceding the audit date.

A PMVI violation occurs when:

(i) a vehicle is placed on a highway without a valid inspection sticker or other evidence of compliance within the twelve month period immediately preceding the audit date.

5. **Insurance**

Where a carrier has no public liability insurance or is inadequately insured and it is evident that the carrier cannot immediately arrange for such coverage:

(a) an audit report indicating as such will be submitted to the head of the agency responsible for NSC Audit for sanctioning; and

(b) the jurisdiction will direct appropriate remedial action to effect compliance.

6. **Audit Summary Report**

An audit summary report must be prepared for each audit and distributed in accordance with the following procedures.

The report is to include the following elements:

(a) name of carrier being audited;

(b) NSC number or equivalent;

(c) date and location of audit;

(d) number of drivers related to the operation being audited;

(e) number of commercial vehicles related to the operation being audited;

(f) description of the nature of the discrepancies noted for each element of the audit; and

(g) an audit score based on the degree to which the carrier is in compliance.

APPENDIX B

FACILITY AUDIT SAMPLE GUIDELINES		
Number (Drivers/Vehicles)	Column I Minimum Sample Size (Drivers/Vehicles)	Column 2 Minimum Sample Size (CVSA)
1	1	1
2 to 5	All	2
6 to 9	6	2
10 to 12	8	3
13 to 15	9	3
16 to 18	10	3
19 to 22	11	3
23 to 26	12	5
27 to 32	13	5
33 to 40	14	5
41 to 50	15	5
51 to 64	16	5
65 to 85	17	5
86 to 121	18	8
122 to 192	19	13
193 to 413	20	20
414 to 500	21	21
+501	25	25

Jurisdictions will have some flexibility in applying Appendix B.

The sample sizes indicated in column 1 are the minimum sample sizes which a jurisdiction shall apply during the course of an audit.

In order to support the overall evaluation of a carrier's safety status, it is recommended that the number of CVSA inspections conducted in the previous 12 months corresponds to column 2.

APPENDIX C

THIRD PARTY AGENTS/AUDITORS SELECTION AND CERTIFICATION GUIDELINES

The purpose of this appendix is to assist jurisdictions in selecting and certifying third party agents and auditors to deliver facility audits as part of carrier safety rating processes. Each jurisdiction should ensure that third party agents and third party auditors satisfy minimum selection and qualification criteria and re-certification standards.

It is recognized that not all jurisdictions will find it necessary to select a third party agent to administer the process.

PREREQUISITE GUIDELINES

Third Party Agent:

(a) minimum of 5 years management/corporate experience
(b) familiarity with auditing principles
(c) experience in supervising/monitoring/assigning staff
(d) must be bondable
(e) must provide disclosure re: civil judgements
(f) officers/principals subject to criminal record check
(g) no undischarged bankruptcies
(h) must meet conflict of interest guidelines
(i) must satisfy reference checks

Third Party Auditor:

(a) minimum of grade 12 education or equivalent
(b) at least 2 years of transportation related experience, enforcement or auditing experience
(c) must be bondable
(d) subject to criminal record check
(e) must meet conflict of interest guidelines
(f) satisfactory reference checks
(g) demonstration of appropriate aptitude and interpersonal skills

CERTIFICATION REQUIREMENTS:

Third Party Agent:

Individual(s) charged with the task of training, performance monitoring and/or quality control of facility audits will be required to attend training and certify in the same manner as third party auditors.

Third Party Auditor:

Candidates will be required to achieve a passing grade in each of 3 modules:

Module I - Knowledge of National Safety Code and Applicable Legislation

(a) including driver qualification, trip inspection, vehicle maintenance, dangerous goods and hours of work. This module will also address inter-jurisdictional differences in National Safety Code related legislation and practical application to extra-provincial carrier operations.

Module 2 - Commercial Vehicle Inspections

(a) trained to utilize data from level 1 and level 5 CVSA International inspections in establishing an appropriate safety rating.

Module 3 - Facility Audit Training

(a) audit procedures and principles, file processing and auditor code of ethics and decorum.

CCMTA | CCATM
Canadian Council of Motor Transport Administrators
Conseil canadien des administrateurs en transport motorisé

National Safety Code

Standard 16: Commercial Truck Driver Entry Level Training (Class 1)

January 2021
ISBN: 978-1-927993-65-1

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FOREWORD

The purpose of this standard is to ensure that applicants possess the basic knowledge and driving skills to safely operate a commercial vehicle that requires a Class 1 driver's licence to operate on Canadian roads. While some of the elements relate to work environments, it is not intended to focus on training and knowledge related to employment environments. Additional training and learning is expected to be provided on the job, related to employment specific to business operations and the types of vehicles, cargo and driving undertaken as part of the business. While knowledge and performance testing are seen as essential elements of a common transportation and licensing policy, training is an important component in developing the knowledge and skills necessary to contribute to improving road safety and facilitating the free movement of persons across borders.

The Canadian model requires some level of constitutional independence, mutual recognition of programs and reciprocity. Given the importance of transport, possession of a Class 1 driver's licence, based on a harmonized approach to entry level training, promotes free movement of people and more efficient movement of goods. Knowledge and performance testing are two elements of the driver licensing system that contribute to the achievement of these goals.

This standard reflects Canadian jurisdictions' continuing commitment to public safety while allowing the maximum driving privilege possible.

BACKGROUND

Principles

The concept of "principle" generally describes rules, norms, or values that guide or describe desirable behaviours for an individual or group.[1] Principles are statements intended to guide the ways things are done by individuals and organizations, what is done and why.

A number of principles have been articulated throughout the National Safety Code (NSC) as well as the national road safety strategy. The principles below apply to NSC 16:

- Contributes to a safe systems approach to road safety.
- Standards are developed through an inclusive and consultative process.
- The need for ongoing evaluation of the program model to ensure integrity and validity of the curriculum and standard elements.

These principles are to be broadly construed when applying the standards and policies within a jurisdiction; providing direction and flexibility in how road safety goals can be achieved.

Structure of the Standard

NSC standard 16 contains four parts:

- Part A: Course Delivery Standard
- Part B: Curriculum Standard
- Part C: Curriculum Framework
- Part D: Air Brakes[2]

Use of the Standard

It is expected that all Canadian jurisdictions will adopt the NSC standards as a reference. While the NSC standards imply a minimum, there is no constraint on jurisdictions going beyond this specification.

[1] Merriam-Webster defines principle in a number of ways, the most relevant being "a fundamental doctrine or assumption", a "rule or code of conduct" (www.merriam-webster.com/dictionary/principle). The Cambridge Dictionary (http://dictionary.combridge.org/dictionary/english/principle) describes principles as fundamental norms, rules, or values that represent what is desirable and positive for a group, organization, or community. The online Oxford Dictionaries (www.oxforddictionaries.com/definition/english/principle) says a principle is a "rule or belief governing one's behaviour" while the MacMillan Dictionary defines principle as a basic belief, theory, or rule that has a major influence on the way in which something is done (http://www.macmillandictionary.com/dictionary/british/principle).

[2] The air brakes requirements are intended for delivery as part of or separate from an ELT program.

National Safety Code (NSC) Standards

The Canadian Council of Motor Transport Administrators (CCMTA) coordinates all matters dealing with the administration, regulation and control of motor vehicle transportation and highway safety. Membership includes representation from provincial and territorial governments as well as the federal government of Canada.

CCMTA supports its members' vision to have the safest and most efficient movement of people and goods by road in the world. CCMTA is the custodian of the National Safety Code, and provides collaborative leadership in the areas of Road Safety Research and Policies, Drivers and Vehicles and Compliance and Regulatory Affairs.

Vision

- To have the safest and most efficient movement of people and goods by road in the world.

Mission

- To provide collaborative leadership in addressing Canadian road safety priorities.

History

- The origins of the CCMTA can be traced back to 1940, when the four Western provinces met to consider issues of common interest relating to road transport. In the early fifties, the group was joined by Ontario and the Yukon Territory. The Canada-wide expansion of the organization took place in 1956, some two years after the enactment of the Motor Vehicle Transport Act by Parliament, in response to an already felt need for uniformity due to increasing movement and traffic.

- In 1975 a constitution was signed by representatives of all provinces and territories and a small permanent Secretariat was established. The federal government has participated as a full member of CCMTA since 1977. The organization was incorporated in 1987 under its present name and constitution. CCMTA commemorated its 75th anniversary in 2015.

CCMTA Members are elected from provincial, territorial and federal governments. CCMTA has a responsibility to be accountable to:

- the Council of Deputy Ministers and Ministers for:
    - providing advice and making recommendations on matters relating to transportation and highway safety
- the provinces, territories and the federal government for:
    - promoting a better understanding and cooperation in all matters related to transportation and highway safety among each other, as well as other organizations where a mutual interest exists.
- its stakeholders for:
    - maintaining an ongoing dialogue and consultation to ensure CCMTA is responsive and informative.

The relationship between individual Canadian jurisdictions' entry level training models and the CCMTA NSC standards

All Canadian provinces and territories have the authority to establish their own training for all drivers. However, it is recognized that there is a need for and benefit from having standards for Class 1 driver training as part of the National Safety Code (NSC); to improve the level of knowledge and skill of drivers of large, commercial vehicles, and to achieve uniformity among the provinces and territories.

PART A - COURSE DELIVERY STANDARD

Three Learning Environments

Training will occur in 3 learning environments:

- In-class - refers to an educational setting inclusive of classroom, digital and/or blended instruction facilitated by an instructor. If self-directed through a Learning Management System (LMS), as described below, the student requires access to assistance by individuals or parties approved by the jurisdiction.
- In-yard (around the vehicle) - refers to activities that occur around the vehicle when it is not moving (e.g. vehicle inspection).
- In-cab (behind the wheel) - refers to the student operating behind the wheel of the vehicle either off-road or on-road. This includes coupling/uncoupling, backing exercises, and driving along.

Each of these learning environments lends itself to different methods of instruction. Simulators can be used as a learning tool for in-class instruction but cannot be used to replace in-cab or in-yard hours.

Digital Delivery Methods

The following are acceptable methods for delivering the in-class portion of ELT digitally: Each ELT curriculum, whether digital or blended, may utilize the following digital delivery methods, provided the solution meets the jurisdiction's minimum learning standard:

- A Learning Management System (LMS) – a self-paced, self-directed course, which may include a virtual classroom component. The software manages the administration, documentation, tracking, grading, reporting, and delivery of educational training programs as opposed to a live instructor.

- A Virtual Classroom – A course that is delivered in real time by a live instructor using a video conferencing software/solution. Any video conferencing software/solution may be used for delivering ELT in a virtual classroom, provided the solution meets the requirements stated in the learning standard.

Note, jurisdictions must have the ability to verify that the student has participated in the digital delivery method.

Course Structure

This course structure and content will continually reinforce driving theory, skills practice and promotion of positive driving attitudes in all educational settings/environments (i.e. in-class, in-yard and in-cab) using a variety of instructional strategies and methods as reasonable within each setting/environment,

including:

a) Direct Instruction,
b) Indirect Instruction,
c) Interactive Instruction,
d) Experiential Instruction,
e) Independent Learning.

	Examples			
Instruction Strategy	**In-class**	**Digital**	**In-yard**	**In-cab**
Direct Instruction	Lecture with audience	"Demonstrate…"	Lecture with audience	Lecture with audience
Indirect Instruction	*"Look up in…"*	*"Solve this problem..."*	*"Go look at…"*	*"Follow Instructions…"*
Interactive Instruction	*"Compare…"*-	*"Post a response to…"*	*"See what occurs…"*-	*"Try out…"*-
Experiential Instruction	*"Assemble…"*-	*N/A*	*"Check for…"* -	*"See what…"*
Independent Learning	*"Internet search and complete…"*-	*"Watch this…"*	*"Compare and report…"*	*"Find another way…"*

For non-classroom (in-yard and in-cab) instruction requirements:

a) Where reasonable and prudent, sessions will be a maximum of 3 hours of instruction at one time, followed by a break.
b) Maximum 6 hours/day, in-cab instruction. A one-time in-cab extension up to 8 hours will be permitted to be used toward expressway/highway training, provided the student has achieved a point of skills/knowledge capability and stamina to complete 8 hours that includes expressway/highway driving.

Course structure and curriculum will:

a) present topics and materials in a logical sequence allowing for the development of knowledge and skills throughout the different stages of learning to ensure any prerequisites are met.
b) be designed to allow for easy updating, removal, and insertion of content as needed.
c) be adaptable to meet individual learning needs (e.g. age, ability, culture) and regional needs.

Maximum 8 hours/day of instruction. Daily instruction may be, for example:

a) 1 hour of in-cab following 7 hours of classroom
b) 4 hours in-class, 2 hours in-yard, 2 hours in-cab
c) 1 hour in-class, 2 hours in-yard, 5 hours in-cab

Adhere to the following classroom instruction requirements:

a) Approved instructors and learners must be present in the classroom during classroom instruction,
b) Maximum 8 hours/day of classroom instruction (excluding breaks).

Adhere to the following digital classroom instruction requirements:

a) Approved digital instructors must be available for facilitation or support and learners must be present during digital classroom instruction,
b) The maximum hours per day of instruction will be determined by each jurisdiction.

Facility Requirements

Facilities where training is to take place or remotely offered must meet all occupational health and safety requirements, other jurisdictional legislation, and local government by-laws.

Course Hours

For the purpose of determining the minimum hours required to meet the training requirements, the total hours represent 1:1 instruction between the student and instructor.

Observation time in the cab where one student is observing another student is not calculated in the overall time.

Instruction hours are calculated at 60 minutes. Break times are not included in the lesson time.

Assessments within a lesson to check for transfer and retention of knowledge are included in the time allotment (e.g. short tests or quizzes).

The course curriculum must include standardized assessments within the three environments (in-yard, in-class and in-cab), as approved by the jurisdiction.

The following **minimum** required instructional hours must be adhered to*:

	Classroom	In-Yard (Around the vehicle – vehicle not moving)	In-Cab (Behind the wheel, e.g. backing, coupling/uncoupling, driving along)	Total
Class 1	36.5	17	50	103.5**
Airbrakes	6.5	2	-	8.5**

= driver is BTW; e.g., backing, coupling/uncoupling, driving along

*Air brake instruction is mandatory for Class 1 licensing whether incorporated into the ELT curriculum or taken as a separate course/training. If trainers choose to deliver airbrake training within an ELT course, the hours for the course would be increased accordingly. If airbrake training is provided as part of ELT, a minimum of 8.5 hours will be added to the minimum of 103.5 ELT training hours.

** Jurisdictions may have slightly varying definitions resulting in minor differences in the hours in each category. However, the elements will be consistent with the overall national standard for entry level training.

Advanced Standing

Drivers must complete the full 103.5 hours for course recognition in fulfillment of Class 1 licensing requirements. Course work begun, but not completed, in another jurisdiction is non-transferable. Those

holding lower class licences will not be provided recognition with any advanced standing credit toward the completion of the mandatory 103.5 hours.

This Standard does not stipulate the minimum or maximum period of time in which an applicant for a Class 1 driver licence must complete the entirety of hours contained in a jurisdiction's entry level training program. To ensure retention of learning material and skill acquisition, the minimum 103.5 hours of training, must be completed within the required time frame as determined by each jurisdiction.

Student to Instructor Ratio

- In-class: a maximum of 15 students (excluding LMS) will be permitted.
- In-yard: 1 hour of in-yard time is required for 1:1 instruction, for up to 4 students. The instructor must be present and leading activities. With 4 students who are working alone or together, without instructor-led activities, the in-yard time is not credited to the overall time of 103.5 hours.
- All students must be given equitable time for hands-on training.
- In-cab: a maximum of 4 students will be permitted, providing the vehicle may accommodate this number of seated passengers. The behind-the-wheel (BTW) time allotment is only credited to the student who is sitting in the driver's seat and in control of the vehicle. Instruction time is calculated at 1:1. Example: If 1 hour of BTW time is required, with 3 students in the cab, the time increases to a 3 hour training session in order for each student to obtain a 1 hour credit through a rotation of seats; therefore, 1 hour of BTW and 2 hours of observation is recorded on a student's training record, however, observation time is not calculated toward completion of the mandatory in-cab (behind-the-wheel) training hours.

Instructor Qualifications

The following instructor qualifications must be met at the time of application and to maintain instructor status for teaching the mandatory entry level training course for commercial Class 1 truck drivers:

- Must have a valid Class 1 driver's licence.
- Must have at least three consecutive years documented experience with a Class 1 driver's licence immediately prior to application, demonstrated by an up to date driver's abstract that reflects the instructor's driving record at the time of application.
- Must maintain a satisfactory driving record and provide an abstract as required by the jurisdiction on a periodic basis.
- Must provide a satisfactory criminal record check on a regular basis as required by the jurisdiction.
- Must successfully complete instructor/digital instructor training/certification, including communication proficiency and standardized assessment(s) as recognized by each jurisdiction.
- Must successfully complete periodic training or re-certification, as required by the jurisdiction.

Vehicle Configuration

Training must be completed using a tractor trailer with the following configuration:

- Semi-trailer with a Gross Vehicle Weight Rating (GVWR) of a minimum of 4,600 kg.
- Full-air brake system on both tractor and trailer.
- Minimum tandem axle tractor and a tandem axle trailer.
- 5th wheel coupling device.

Single trailer with a minimum length of 45 feet and a minimum distance of 35 feet measured from the kingpin to the center of the rear bogie.

In-cab driving must include loaded and unloaded trailers as well as bobtailing. On-road training must include a minimum load component of 50% of payload, 25% to 75% of the time. A maximum of 25% of in-cab time is to be allocated for bobtailing.

A student may take training on a manual or automatic transmission vehicle. If a student trains and tests on an automatic vehicle, jurisdictions must restrict the driver to automatic vehicles, prohibiting the driving of commercial vehicles with a manual transmission.

PART B - CURRICULUM STANDARD

Purpose

This standard is a pre-licensing training program for Class 1 driver licensing applicants. It is not intended to address ongoing employment training which may require additional experience with vehicle types, loads, employer hiring practices and job requirements. The elements outlined in the standard are minimum requirements at a national level and individual Canadian jurisdictions may have additional or higher thresholds for some requirements.

Development Format

If the curriculum is not provided by the jurisdiction, the course provider is responsible to provide a curriculum for approval to the appropriate authority in the jurisdiction. Jurisdictional approval will help to ensure that drivers are being trained to the level of competency as defined in the curriculum framework. Jurisdictions will also develop an audit framework as part of an ongoing assessment of the standard's implementation, including learning outcomes for trainees.

The submission must include:

- A course overview,
- What equipment will be used,
- How long the course is,
- A typical course agenda given to the student, and
- How different instructional methods will be applied.

Lesson plans must be complete with:

- Measurable objectives,
- A time frame for the lesson, both overall and within the lesson,
- The environment where this lesson occurs (in-class – specifying digital delivery method, if applicable in-yard, in-cab),
- What equipment is required for the lesson,
- Support materials that are used in the lessons,
- Step-by-step instructions for the instructor/digital instructor, with the use of different instructional methods, and
- Assessments directly related to the lesson and appropriate to the objectives.

Instructional Methods

- Instructional methods that apply principles of adult education are to be incorporated into the course.
- Up to a maximum of 50% of the in-class time may be lecture or digital content delivery.
- A minimum of 50% of the in-class time must be interactive, experiential and application focused.

Support Materials

Support materials used within a lesson must be provided with the curriculum.

Copyright Statement

For any copyrighted materials used in a curriculum, a statement that permission is granted for their use in the curriculum is required.

PART C - CURRICULUM FRAMEWORK

Purpose

This part of the standard sets out a framework for the curriculum and the learning outcomes for training delivered to individuals aspiring to become a Class 1 driver. This framework is aligned with the National Occupational Standard for Commercial Vehicle Operators (truck drivers). The purpose of this curriculum framework is to provide consistent training within entry level Class 1 driver training programs. It is important to recognize that this curriculum framework addresses the first stage of entry level Class 1 training.

Air brake instruction is mandatory for Class 1 licensing whether incorporated into the ELT curriculum or taken as a separate course/training. If trainers choose to deliver airbrake training within an ELT course, the hours for the course would be increased accordingly. If airbrake training is provided as part of ELT, a minimum of 8.5 hours will be added to the minimum of 103.5 ELT training hours.

The following table lists the relevant competency blocks of the National Occupational Standard (NOS) for Commercial Vehicle Operators (truck drivers) that are addressed in each section of this curriculum framework. The (bracketed numbers) are the actual NOS sections for ease of cross-referencing.

National Occupational Standard (NOS) for Commercial Vehicle Operators Competency Blocks

Section	NOS Competency Blocks Address[3]

1. **Employment in the commercial vehicle industry**
    - Understand the workplace (1).
    - Relate and interact in the workplace (2).
    - Maintain health, wellness and relationships (3).
    - Understand basic regulatory requirements (4).
    - Communicate in the workplace (5).
2. **Vehicle components & systems**
    - Operate commercial vehicle systems and features (16).
3. **Basic driving techniques**
    - Prepare and start to drive (18).
    - Adhere to requirements that are specific to commercial vehicles (23).
    - Control vehicle motion and speed (19).
    - Control vehicle direction and position (20).
    - Turn tractor-trailers (28).
4. **Professional driving habits**
    - Maximize fuel efficiency (21).
    - Apply defensive driving techniques (22).

[3] *The numbers in brackets references the competency block within the NOS for Commercial Vehicle Operators.*

5. **Tractor-trailer off-road tasks and manoeuvres**
    - Couple trailers (26).
    - Uncouple trailers (27).
    - Back, dock and park tractor-trailers (29).
6. **Documents, paperwork & regulatory requirements**
    - Use workplace documents (6).
    - Complete numeracy tasks (7).
    - Operate computer and electronic devices (8).
    - Plan work, plan trips and solve problems (9).
7. **Vehicle inspection activities**
    - Support inspection and maintenance program (12).
    - Conduct daily vehicle inspections (12).
8. **Hours of service compliance**
    - Comply with hours of service regulations (13).
9. **Cargo securement & loss prevention**
    - Secure cargo for transport (15).
    - Prevent loss and maintain secure facilities (10).
10. **Handling emergencies**
    - Maintain situational awareness (17).
    - Handle emergency incidents (25).
11. **Air brakes**
    - Has a basic understanding of how a typical air brake systems function.
    - Uses an air brake system safely and to its maximum advantage.
    - Understands how an air brake system reacts to various failures.
    - Performs an effective pre-trip inspection that ensures proper air brake system operation before putting a vehicle into service.
    - Determines if the brakes are correctly adjusted.
    - Knows how to properly adjust manual slack adjusters.

LEGEND:

M	All competencies identified as M are mandatory for all curricula and are the core competencies used to reach the total of 103.5 training hours for the Commercial Truck Driver Entry Level Training Standard (Class 1).
R	Competencies identified with an **R** are recommended for inclusion in a curriculum. All R competencies are not included in the Commercial Truck Driver Entry Level Training Standard's 103.5 training hours.
Air Brake Systems	Air brake instruction/training is mandatory for Class 1 licensing. A jurisdiction may choose to include the mandatory air brake training component within their ELT training curriculum, or it may be developed as a standalone course. If airbrake training is provided as part of ELT, a minimum of 8.5 hours will be added to the minimum of 103.5 ELT training hours.

Content and Learning Outcomes

1. Employment in the commercial vehicle industry	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	**M**	**R**	**M**	**R**
1.1 - describe the requirements for employers and workers in a workplace to comply with government regulations and develop standards.	8	10	-	-
1.2 - effectively interact and speak with coworkers, supervisors, customers, suppliers, enforcement officials and the general public.	-	2	-	4
1.3 - explain the importance of being "fit for work", maintaining a healthy lifestyle and balancing personal and work life.	-	3	-	3
1.4 - explain the purpose, fundamental structure, and basic content of regulations that apply to commercial vehicle operations.	18	-	-	-

2. Vehicle components & systems	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	**M**	**R**	**M**	**R**
2.1 - operate commercial vehicle systems and controls.	9	2	12	1

3. Basic driving techniques	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	**M**	**R**	**M**	**R**
3.1 - prepare and start to drive a commercial vehicle.	2	1	12	1
3.2 - comply with operational regulations that apply to commercial vehicles.	10	1	6	1
3.3 - drive a commercial vehicle in a safe manner and perform basic driving manoeuvres.	-	-	3	-
3.4 - operate a commercial vehicle in a safe manner and perform the required manoeuvres for driving on urban, rural, commercial, and industrial roads.	-	-	2	-
3.5 - operate a commercial vehicle in a safe manner and perform the required manoeuvres for driving on highways.	-	--	2	-

4. Professional driving habits	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	M	R	M	R
4.1 - apply defensive driving techniques.	3	-	11	-
4.2 - apply fuel efficient driving techniques.	1	2	4	5

5. Tractor-trailer off-road tasks and manoeuvres	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	M	R	M	R
5.1 - perform backing and parking manoeuvres with a tractor-trailer.	-	-	3	1
5.2 - safely perform tractor-trailer coupling and uncoupling tasks.	-	-	2	-

6. Documents, paperwork & regulatory requirements	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	M	R	M	R
6.1 - administer written workplace documents and communicate effectively through written means.	1	3	1	3
6.2 - complete basic mathematical calculations required for commercial vehicle operation.	-	2	-	6
6.3 - use computers, electronic and communication devices common in commercial vehicle operations.	-	-	1	2
6.4 - plan ahead, anticipate problems, and begin to deal with an emergency situation.	7	2	7	2

7. Vehicle inspection activities	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	M	R	M	R
7.1 - inspect and maintain commercial vehicles.	3	-	5	1
7.2 - conduct required daily inspections and monitor a commercial vehicle's safe condition.	3	-	10	-
7.3 - inspect each component or system listed in provincial legislation.	-	-	21	2

8. Hours of service compliance	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	**M**	**R**	**M**	**R**
8.1 - comply with the requirements of the hours of service regulations.	24	2	9	-

9. Cargo securement & loss prevention	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	**M**	**R**	**M**	**R**
9.1 - comply with basic cargo securement requirements.	11	9	-	4
9.2 - prevent cargo loss claims, and follow required procedures to maintain secure facilities, prevent cargo loss and avoid damage.	-	1	-	3

10. Handling emergencies	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	**M**	**R**	**M**	**R**
10.1 - assess and adapt to changing conditions.	1	3	10	1
10.2 - handle minor emergency incidents in a professional manner.	1	4	1	-

11. Air Brakes	Learning Indicators		Performance Elements	
At the end of this training program the graduate will be able to:	**M**	**R**	**M**	**R**
11.1 – have the knowledge and ability to operate air brake equipped vehicles safely and in compliance with the applicable regulations.	10	-	4	-

ELT Hours Summary

Competence Category	Employment in the Commercial Vehicle Industry		1
In-Class	In-Yard	In-Cab	Total Hours
1	-	-	1
Competence Category	**Vehicle Components & Systems**		**2**
In-Class	In-Yard	In-Cab	Total Hours
3	2.5	-	5.5
Competence Category	**Basic Driving Techniques**		**3**
In- Class	In-Yard	In-Cab	Total Hours
8	2.5	32 on road	42.5
Competence Category	**Professional Driving Habits**		**4**
In-Class	In-Yard	In-Cab	Total Hours
5.5	-	-	5.5
Competence Category	**Tractor-Trailer Off-Road Tasks & Manoeuvres**		**5**
In-Class	In-Yard	In-Cab	Total Hours
2	3	18 off road	23
Competence Category	**Documents, Paperwork & Regulatory Requirements**		**6**
In-Class	In-Yard	In-Cab	Total Hours
4	-	-	4
Competence Category	**Vehicle Inspection Activities**		**7**
In-Class	In-Yard	In-Cab	Total Hours
4.5	8	-	12.5

Competence Category	Hours of Service Compliance		8
In-Class	In-Yard	In-Cab	Total Hours
5	-	-	5
Competence Category	**Cargo Securement & Loss Prevention**		**9**
In-Class	In-Yard	In-Cab	Total Hours
2	-	-	2
Competence Category	**Handling Emergencies**		**10**
In-Class	In-Yard	In-Cab	Total Hours
1.5	1	-	2.5

All Competence Categories			
In-Class Total	In-Yard Total	In-Cab Total	Total Hours
36.5	17	50	103.5

Competence Category	Air Brakes		11
In-Class	In-Yard	In-Cab	Total Hours
6.5	2	-	8.5

Note: Jurisdictions may have slightly varying definitions resulting is minor differences in the hours in each category. However, the elements will be consistent with the overall national standard for the entry level training.

Competence Category	1-EMPLOYMENT IN THE COMMERCIAL VEHICLE INDUSTRY	1

Learning Outcome	1.1	At the end of this training program the graduate will be able to describe the requirements for employers and workers to comply with government regulations and develop standards.

Learning Indicators	1.1.1	Explains that employers must comply with government regulations.	**M**
	1.1.2	Identifies employer standards that apply to occupational health and safety, employment, transportation, and business operations.	**R**
	1.1.3	Explains that workers must comply with driving-related government regulations and standards.	**M**
	1.1.4	Identifies that standards may apply to worker obligations, rights and responsibilities; employment; health and safety; labour agreements; etc.	**R**
	1.1.5	Explains that there are requirements for gaining and sustaining employment within the occupation.	**R**
	1.1.6	Identifies that employment requirements may include: security screening and background checks; regular appraisals and performance reviews; pre-employment, periodic, or post-incident drug and alcohol testing; etc.	**R**
	1.1.7	Identifies that higher class of driver licences will involve an initial and periodic physical assessment or fitness screening.	**M**
	1.1.8	Identifies some of the medical conditions that may prohibit a driver from holding specific types of commercial driver's licences.	**M**
	1.1.9	Explains that expectations of worker performance are usually defined through workplace practices, procedures and policies that may include corrective action processes, consequences for failing to adhere to requirements, and steps that can lead to dismissal.	**R**
	1.1.10	Explains that specific workplace practices, procedures and policies vary in scope and application, and may be written or unwritten.	**R**
	1.1.11	Explains that workers are sometimes expected to rely heavily on their personal knowledge of regulatory or compliance requirements.	**M**
	1.1.12	Explains the need to identify workplace hazards according to workplace practices, procedures and policies.	**R**

Learning Indicators	1.1.13	Identifies that hazards are communicated through methods such as Workplace Hazardous Materials Information System (WHMIS), and labels and Safety Data Sheets (SDS), used in the system known as the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) for Workplace Chemicals.	**R**
	1.1.14	Explains that some cargo is defined through regulations as "dangerous goods".	**M**
	1.1.15	Explains that dangerous goods can only be handled and transported by workers who have been specifically trained and certified.	**M**
	1.1.16	Identifies the types of symbols used to identify "dangerous goods".	**M**
	1.1.17	Explains the need for developing a clear understanding of workplace practices, procedures and policies.	**R**
	1.1.18	Explains the need to take steps to recognize and resolve situations in which a worker's understanding is unclear about instructions, expectations, procedures or policies.	**R**

Learning Outcome	**1.2**	**At the end of this training program the graduate will be able to effectively interact and speak with coworkers, supervisors, customers, suppliers, enforcement officials and the general public.**	
Learning Indicators	1.2.1	Explains that interactions involving spoken words include specific words as well as the accompanying tone of voice, context, gestures and body language.	**R**
	1.2.2	Describes gestures and body language that convey messages without exchanging spoken words.	**R**
Performance Elements	1.2.3	Greets a person or group before interacting on any issue.	**R**
	1.2.4	Adheres to regulations that require employers and workers to provide a workplace in which everyone feels secure and free of unnecessary conflict.	**R**
	1.2.5	Practices sensitivity to cultural diversity and uses a gentle and careful approach when encountering any misunderstanding.	**R**
	1.2.6	Uses techniques for social, verbal and electronic interactions that positively impact the graduate's success.	**R**

Learning Outcome	**1.3**	**At the end of this training program the graduate will be able to explain the importance of being "fit for work", maintaining a healthy lifestyle and balancing personal and work life.**	
Learning Indicators	1.3.1	Explains that some types of driving require significant amounts of time away from home, and that this schedule can cause work-related and personal stress and can affect family relationships.	**R**
	1.3.2	Explains that lifestyle and dietary factors can influence fatigue, performance, physical fitness and agility.	**R**
	1.3.3	Describes occupational factors which can contribute to health- related challenges such as obstructive sleep apnea, back strain, injuries caused by slips, trips and falls, etc.	**R**
Performance Elements	1.3.4	Practices stretching and proper lifting methods to prevent workplace injuries.	**R**
	1.3.5	Practices personal hygiene habits that positively affect workplace relationships.	**R**
Learning Outcome	**1.4**	**At the end of this training program the graduate will be able to explain the purpose, fundamental structure, and basic content of regulations that apply to commercial vehicle operations.**	
Learning Indicators	1.4.1	Describes the National Safety Code model for Canadian jurisdictions to regulate the safe operation of commercial vehicles.	**M**
	1.4.2	Explains that legislation and regulations may affect operations within each jurisdiction, and that applicable rules can vary, even during the same workday, depending on where a driver is working.	**M**
	1.4.3	Explains that commercial vehicles are generally defined by weight and that individual Canadian jurisdictions can set unique weight thresholds.	**M**
	1.4.4	Explains that different classes of driver's licences apply to different types of vehicles and the required licence classes vary between Canadian jurisdictions.	**M**
	1.4.5	Explains that a driver's licence may require specific endorsements for certain types of commercial vehicles and operations.	**M**
	1.4.6	Explains that personal driving history can affect the status of a worker's commercial licence and ability to drive commercial vehicles.	**M**
	1.4.7	Explains that government agencies develop and retain records of driver incidents and infractions.	**M**

Learning Indicators	1.4.8	Explains that government agencies develop and retain records of commercial motor carrier incidents and infractions.	**M**
	1.4.9	Explains that medical condition and history affect the type of licence a driver can hold.	**M**
	1.4.10	Explains that regulations apply to the movement of vehicles on all public roads and highways.	**M**
	1.4.11	Explains that regulations apply to the mechanical condition of commercial vehicles.	**M**
	1.4.12	Explains that regulations apply to the allowable weights and dimensions of commercial vehicles.	**M**
	1.4.13	Explains that regulations apply to the securing of cargo transported by commercial vehicles.	**M**
	1.4.14	Explains that regulations apply to the air brake systems used on commercial vehicles.	**M**
	1.4.15	Explains that regulations apply to the daily inspection of commercial vehicles	**M**
	1.4.16	Explains that regulations apply to the transport of materials and products that are defined as “dangerous goods”.	**M**
	1.4.17	Explains that regulations apply to the hours a person is permitted to drive a commercial vehicle, be on duty, and be off duty.	**M**
	1.4.18	Explains that commercial vehicles may be restricted from operating on certain routes, or at particular times, due to their weight, licence, size or commodity being transported.	**M**

Summary of Hours

Competence Category	**Employment in the Commercial Vehicle Industry**		**1**
In-Class	In-Yard	In-Cab	Total Hours
1	**-**	**-**	**1**

Competence Category	2-VEHICLE COMPONENTS & SYSTEMS	2

Learning Outcome	2.1	At the end of this training program the graduate will be able to operate commercial vehicle systems and controls.	
Learning Indicators	2.1.1	Describes the general components and basic function of a typical commercial vehicle engine compartment.	**M**
	2.1.2	Describes the general layout and function of major body, frame and external vehicle components and systems.	**M**
	2.1.3	Explains the differences between single, tandem, tridem and other multi-axle configurations.	**M**
	2.1.4	Describes the basic types, features and function of tires and wheels.	**M**
	2.1.5	Describes the physical features and operation of common types of suspension systems.	**M**
	2.1.6	Describes the physical features and basic operation of drum and disc brake systems.	**M**
	2.1.7	Describes how steering control is lost when tires skid during heavy brake use or when braking with poor traction.	**M**
	2.1.8	Describes the way that Anti-lock Brake Systems (ABS) keep wheels from locking but may not shorten vehicle stopping distance.	**M**
	2.1.9	Describes how stability control systems operate and affect vehicle operation.	**M**
	2.1.10	Describes the physical features, indicators, warnings, and the basic operation of hydraulic brake systems.	**R**
	2.1.11	Describes the basic operation of portable or on-board cargo heating equipment.	**R**
Performance Elements	2.1.12	Locates and operates all typical primary and secondary controls, gauges and instruments.	**M**
	2.1.13	Reads the instrument panel indicators displaying important vehicle operating information, warnings and safety system status.	**M**
	2.1.14	Operates one or more typical manual transmission and clutch, automated manual transmission and/or automatic transmission.	**M**
	2.1.15	Locates fuel tanks and filler caps and apply proper fueling methods.	**M**

Performance Elements	2.1.16	Identifies important commercial vehicle service items and locates operating fluid check points.	**M**
	2.1.17	Identifies the correct operating fluids required for a vehicle and properly re-fills and maintains fluid levels.	**M**
	2.1.18	Operates a differential lock or inter-axle differential lock, if equipped.	**M**
	2.1.19	Operates engine brake or retarders and describe how and when to appropriately use these systems to control vehicle speed.	**M**
	2.1.20	Operates vehicle heating, defrosting and air-conditioning systems.	**M**
	2.1.21	Operates vehicle lamps and accessories.	**M**
	2.1.22	Operates windshield wiper and washer systems.	**M**
	2.1.23	Carries, secures, stores and uses, or operates required emergency equipment.	**M**
	2.1.24	Operates different types of trailer coupling devices.	**R**

Summary of Hours

Competence Category	**Vehicle Components & Systems**		**2**
In-Class	In-Yard	In-Cab	Total Hours
3	**2.5**	**-**	**5.5**

Competence Category

3-BASIC DRIVING TECHNIQUES

3

Learning Outcome	3.1	At the end of this training program the graduate will be able to prepare and start to drive a commercial vehicle.	
Learning Indicators	3.1.1	Explains the importance of being fully alert when driving and that judgment is not impaired in any way while driving.	**M**
	3.1.2	Describes ways to check and remove vehicle restraints and other loading dock devices.	**R**
	3.1.3	Explains the importance of proper start-up and/or warm-u procedures.	**M**
Performance Elements	3.1.4	Applies a method for confirming that they are fully alert, and their judgment is not impaired in any way before beginning to drive.	**M**
	3.1.5	Confirms every time before leaving the driver's seat; that the vehicle is secured by the vehicle's parking brake, wheel chocks or suitable blocks.	**M**
	3.1.6	Enters and exits the cab, or the vehicle cargo area, maintaining 3 point contact and recognize the risks of improperly climbing onto or jumping from equipment.	**M**
	3.1.7	Confirms all required vehicle and cargo documents are valid and correct.	**M**
	3.1.8	Locates required vehicle documents such as permit books, vehicle registration, insurance, bills of lading, etc.	**M**
	3.1.9	Confirms that cargo handling equipment and devices are returned to their proper place - when in a loading dock.	**R**
	3.1.10	Checks and/or adjusts air suspension settings and controls, axle spacing, and fifth wheel position, if equipped – when operating a tractor-trailer.	**M**
	3.1.11	Adjusts the driver's seat to the correct position before driving.	**M**
	3.1.12	Inspects, wears and properly adjusts seatbelts before driving.	**M**
	3.1.13	Sets up mirrors to minimize a vehicle's "blind spots".	**M**
	3.1.14	Scans all controls and instruments before driving.	**M**
	3.1.15	Monitors the engine, instrument panel and indicator lamps.	**M**
	3.1.16	Listens for normal vehicle sounds, while starting the vehicle's engine and avoid unnecessary idling.	**M**

Summary of Hours

Competence Category	Basic Driving Techniques		3
In-Class	In-Yard	In-Cab	Total Hours
1	**2.5**	**-**	**3.5**

Learning Outcome	3.2	At the end of this training program the graduate will be able to comply with operational regulations that apply to commercial vehicles.	
Learning Indicators	3.2.1	Explains the need to know the height of their vehicle before driving on any road.	**M**
	3.2.2	Explains the need to know the approximate empty and loaded weight of their vehicle before driving on any road.	**M**
	3.2.3	Explains how to comply with specific requirements for using toll routes and bridges.	**R**
	3.2.4	Explains that steep slopes require different driving techniques and location and proper use of truck emergency runaway lanes.	**M**
	3.2.5	Explains the times, days and/or weeks when commercial vehicle operations are restricted in certain urban areas and imposed through municipal bylaws.	**M**
	3.2.6	Explains standard highway height and weight limits and restrictions.	**M**
	3.2.7	Explains the need to carry the emergency equipment required for certain commercial vehicle operations.	**M**
	3.2.8	Explains how and when to properly set up emergency warning devices such as triangle reflectors.	**M**
	3.2.9	Explains the importance of immediately recognizing and responding to an unexpected situation in which their vehicle weight or height is greater than what is permitted to operate on a particular road or highway.	**M**
	3.2.10	Explains the importance of respecting local bylaws restricting vehicle loading and unloading activities, parking and idling.	**M**
	3.2.11	Identifies routes that prohibit commercial vehicles.	**M**

Performance Elements	3.2.12	Reads all road signage with particular messages that apply to commercial vehicles.	**M**
	3.2.13	Takes extra care when crossing railway tracks and, before crossing, determines the space available for vehicles.	**R**
	3.2.14	Shifts gears while crossing the railway tracks only when it is necessary.	**M**
	3.2.15	Enters vehicle inspection facilities, or pull off the roadway, when instructed by an officer or highway signage.	**M**
	3.2.16	Watches for potential hazards of unmarked overhead obstructions such as: canopies, roof overhangs and other building protrusions, signs, utility lines, tree limbs, doorway entries, etc.	**M**
	3.2.17	Watches for snow build-up, debris or road construction that can change vehicle height, weight or clearances.	**M**
	3.2.18	Identifies and reads all road signs indicating the weight capacity of roadways or bridges -- including seasonal weight restrictions.	**M**

Summary of Hours

Competence Category	**Basic Driving Techniques**		**3**
In-Class	In-Yard	In-Cab	Total Hours
2	**-**	1	**3**

Learning Outcome	**3.3**	**At the end of this training program the graduate will be able to operate a commercial vehicle in a safe manner and perform basic driving manoeuvres.**	
Performance Element	3.3.1	Drives a commercial vehicle in a safe manner along typical roads, highways and expressways.	**M**
Sub-tasks		Driving-along includes performing the following sub-tasks. The driver will: 1. Apply continual observation techniques and monitoring of road conditions. 2. Conduct regular traffic checks. 3. Monitor vehicle blind spots. 4. Drive courteously, manages unexpected situations, manages. distractions and drives within capabilities and experience. 5. Monitor vehicle behavior and operating conditions. 6. Recognize their responsibilities for sharing the road surface with pedestrians and other vehicles of various dimensions, speeds and purposes, and the consequences of failing to do so. 7. Manage speed and following distance to allow adequate time to observe, react, manoeuvre and perform safe braking and stopping if necessary. 8. Maintain proper road and lane position. 9. Observe road signage and pavement markings. 10. Integrate with traffic and show awareness of other road users. 11. Operate vehicle controls smoothly. 12. Maintain two-handed grip on the steering wheel as much as practicable. 13. Operate a manual transmission if applicable, selecting gears correctly and shifting smoothly.	

Performance Element	3.3.2 Drives a commercial vehicle through curves in a safe manner.	**M**
Sub-tasks	Driving through curves includes performing the following sub-tasks. The driver will: 1) Prepare for the curve as it becomes visible by completing the following steps: a) Conduct a visual assessment. b) Conduct a signage check. c) Conduct a pavement marking check. d) Conduct a traffic check. e) Adjust speed as required. 2) Travel through the curve by completing the following steps: a) Manage speed and following distance. b) Steer through the curve following a proper path, based on vehicle off- tracking and clearance requirements. c) Conduct a traffic check. d) Maintain two-handed grip on the steering wheel as much as practicable.	

Performance Element	3.3.3 Changes lanes in a commercial vehicle in a safe manner.	**M**
Sub-tasks	Lane changes include performing the following sub-tasks. The driver will: 1) Prepare for the lane change by completing the following steps: a) Conduct a traffic check. b) Conduct a pavement marking check. c) Manage speed and following distance. d) Activate turn signal correctly and on time. 2) Execute the lane change by completing the following steps: a) Steer vehicle into the correct position in the new lane. b) Manage speed and following distance to allow adequate time to observe, react and manoeuvre vehicle if necessary. c) Cancel turn signal within about 5 seconds after completion.	

Summary of Hours				
Competence Category	**Basic Driving Techniques**			**3**
In-Class		In-Yard	In-Cab	Total Hours
2		**-**	**16**	**18**

Learning Outcome	**3.4 At the end of this training program the graduate will be able to operate a commercial vehicle in a safe manner and perform the required manoeuvres for driving on urban, rural, commercial, and industrial roads.**
Performance Element	3.4.1 Crosses intersections in a commercial vehicle in an urban setting in a safe manner. **M**
Sub-tasks	Crossing an intersection includes performing the following sub-tasks. The driver will: 1) Prepare for crossing the intersection as it becomes visible by completing the following steps: a) Conduct a visual assessment. b) Conduct a signage check. c) Conduct a pavement marking check. d) Conduct a traffic control signals check. e) Conduct a traffic check. 2) Approach the boundary of the intersection while completing the following steps: a) Read and respond to signage. b) Read and respond to traffic control signals. c) Conduct a traffic check. d) Plan a crossing path. 3) Stop at an intersection when required by completing the following steps: a) Read and respond to signage. b) Read and respond to traffic control signals. c) Stop the vehicle in the correct location. d) Keep wheels in proper position and two hands on the wheel while stopped. e) Drive vehicle forward when necessary. 4) Proceed across the intersection after stopping, or when no stop is necessary, by completing the following steps: a) Conduct a traffic signal light check. b) Conduct a traffic check. c) Interpreting right of way obligations correctly. d) Steer the vehicle through the proper path. e) Manage speed and following distance.

Performance Element	3.4.2 Turns at intersections in a commercial vehicle in an urban setting in a safe manner.	**M**

Sub-tasks

Turning at intersections includes performing the following sub-tasks.

The driver will:

1) Select the correct lane for starting the turn.
2) Activate turn signal correctly and on time.
3) Conduct a continuous traffic check while turning.
4) Manage speed and following distance.
5) Interpret right-of-way obligations correctly.
6) Steer through the intersection following a proper path, based on vehicle off-tracking and clearance requirements.
7) Select the correct lane for travel after the turn.
8) Cancel turn signal after completion (never more than 5 seconds).

Summary of Hours

Competence Category	**Basic Driving Techniques**		**3**
In-Class	In-Yard	In-Cab	Total Hours
2	**-**	**1**	**3**

Learning Outcome	3.5 At the end of this training program the graduate will be able to operate a commercial vehicle in a safe manner and perform the required manoeuvres for driving on highways/expressways.	
Performance Element	3.5.1 Enters a highway/expressway in a commercial vehicle in a safe manner.	**M**
Sub-tasks	Entering a highway/expressway includes performing the following sub-tasks. The driver will: 1) Conduct a traffic check. 2) Manage vehicle speed according to conditions, posted advisories. 3) Conduct a pavement marking check and stay within markings. 4) Change lanes or merge as necessary on the ramp. 5) Negotiate the ramp at appropriate speed. 6) Manage following distance. 7) Activate turn signal correctly and on time. 8) Adjust vehicle speed within the acceleration ramp to facilitate merge into traffic. 9) Interpret right-of-way obligations correctly. 10) Merge onto highway/expressway maintaining suitable distance from other vehicles and adjusting speed as needed, responding to metered ramp entry systems where applicable. 11) Cancel turn signal after merge is complete (never keep signal on more than 5 seconds).	
Performance Element	3.5.2 Exits a highway/expressway in a commercial vehicle in a safe manner.	**M**
Sub-tasks	Exiting a highway/expressway includes performing the following sub-tasks. The driver will: 1) Conduct a traffic check. 2) Manage following distance. 3) Reduce speed as appropriate (neither too soon or too late). 4) Activate turn signal correctly and on time. 5) Conduct a pavement marking check and stay within markings. 6) Drive onto exit ramp as soon as space is available. 7) Decelerate as necessary within deceleration ramp. 8) Manage vehicle speed according to conditions and posted advisories. 9) Negotiate the ramp at appropriate speed and change lanes or merge as necessary. 10) Cancel turn signal after getting fully into exit lane.	

Summary of Hours

Competence Category	Basic Driving Techniques		3
In-Class	In-Yard	In-Cab	Total Hours
8	**2.5**	**32**	**42.5**

Competence Category	4-PROFESSIONAL DRIVING HABITS	4

Learning Outcome	**4.1**	**At the end of this training program the graduate will be able to apply defensive driving techniques.**	
Learning Indicators	4.1.1	Explains the importance of defensive driving habits.	**M**
	4.1.2	Explains their "duty of care" -- to proactively protect other road users from harm.	**M**
	4.1.3	Explains their responsibility to sharing the road surface with pedestrians and other vehicles of various dimensions, speeds and purposes, and the consequences of failing to do so and how the additional size and weight of their vehicle may be perceived by other road users.	**M**
Performance Elements	4.1.4	Observes and critiques personal driving techniques to identify ways to improve.	**M**
	4.1.5	Monitors the actions of other drivers, changing weather and changing road surfaces.	**M**
	4.1.6	Adjusts driving techniques to match the vehicle configuration, cargo weight, center of gravity, and driving experience.	**M**
	4.1.7	Recognizes and takes steps to avoid situations that might cause anger, hostility or danger.	**M**
	4.1.8	Is courteous, and yields to other motorists, cyclists, pedestrians and slow-moving vehicles.	**M**
	4.1.9	Scans mirrors, instruments and gauges regularly and systematically.	**M**
	4.1.10	Explains the visual cues and other signs of potentially hazardous traffic situations.	**M**
	4.1.11	Maintains an appropriate following distance in all driving conditions.	**M**
	4.1.12	Maintains attention and avoids sources of distraction while driving.	**M**
	4.1.13	Maintains vehicle speed that is appropriate for road and traffic conditions and adheres to regulations.	**M**
	4.1.14	Observes traffic patterns and other road users and selects a safe roadside location for stopping and/or parking, and resumes safely back into traffic.	**M**

Summary of Hours

Competence Category	Professional Driving Habits		4
In-Class	In-Yard	In-Cab	Total Hours
5	-	-	5

Learning Outcome 4.2		At the end of this training program the graduate will be able to apply fuel efficient driving habits.	
Learning Indicators	4.2.1	Explains the importance of fuel-efficient driving methods.	**M**
	4.2.2	Explains the use of auxiliary power units and “shore power”.	**R**
	4.2.3	Describes the use of different fuel types, vehicle technology, fuel additives, etc. to help reduce fuel consumption.	**R**
Performance Elements	4.2.4	Accelerates at a smooth and gradual rate.	**M**
	4.2.5	Anticipates when most changes in speed, gear selection and surrounding space will be necessary.	**M**
	4.2.6	Operates the engine and transmission close to the fuel-efficient rpm range whenever possible.	**R**
	4.2.7	Applies progressive shifting and selects the engine rpm and gear that are best for the vehicle speed and load, when driving a vehicle with manual transmission.	**R**
	4.2.8	Controls shift points by adjusting the throttle, when driving a vehicle with an automated manual transmission.	**R**
	4.2.9	Looks ahead continually, anticipates the need to change speed, and gradually changes speed.	**M**
	4.2.10	Uses cruise control whenever possible and appropriate for driving conditions.	**R**
	4.2.11	Idles a vehicle’s engine as little as possible.	**M**
	4.2.12	Sets up vehicle to minimize the gap between tractor and trailer.	**R**

Summary of Hours

Competence Category	Professional Driving Habits		4
In-Class	In-Yard	In-Cab	Total Hours
.5	-	-	.5

Competence Category	5-TRACTOR-TRAILER OFF-ROAD TASKS & MANOEUVRES	5

Learning Outcome 5.1	At the end of this training program the graduate will be able to perform backing and parking manoeuvres with a tractor-trailer.	
Performance Element	5.1.1 Performs straight-line backing manoeuvres with a tractor-trailer unit in a safe manner.	**M**
	Manoeuvre Space - straight-line backing manoeuvres will be in a space that is between 3.5 and 3.7 metres wide, and 30 metres long.	
Sub-tasks	Completion of straight-line backing manoeuvres includes performing the following sub-tasks. The driver will: 1) Check mirror set up. 2) Position the tractor-trailer for the backing manoeuvre. 3) Secure the vehicle and activate the warning flashers. 4) Exit the vehicle to examine the manoeuvre space and check vehicle position. 5) Re-enter the vehicle, open windows and silence audio devices. 6) Sound vehicle horn briefly. 7) Reverse into the space at idle speed. 8) Pull up the vehicle to align it during the manoeuvre. 9) Exit the tractor to examine space and vehicle alignment no more than once during the manoeuvre. 10) Complete the reverse movement while staying entirely within the manoeuvre space. 11) Stop tractor-trailer movement upon reaching the desired position (Stop the tractor trailer gently when backing up to a solid fixture). 12) Complete the backing manoeuvre within a timeline or number of attempts as specified by the jurisdiction.	

Performance Element	5.1.2 Performs offset backing manoeuvres with a tractor-trailer in a safe manner.	**M**

Manoeuvre Space - offset backing manoeuvres will be from a space that is between 3.5 and 3.7 metres wide, and at least as long as the tractor-trailer, into an adjacent space of the same dimensions. The pull-up space in front of the two spaces described must be at least one- and one-half times the length of the tractor-trailer. The manoeuvre will be learned from both sides

Sub-tasks

Completion of offset backing manoeuvres includes performing the following sub-tasks.

The driver will:

1) Check mirror set up.
2) Drive the tractor-trailer forward out of the starting position.
3) Align the tractor-trailer with the target space while driving forward into the pull up area.
4) Secure the vehicle and activate the warning flashers.
5) Exit the vehicle to examine the manoeuvre space from outside the vehicle and check vehicle position if necessary.
6) Re-enter the vehicle, open windows and silence audio devices.
7) Sound vehicle horn briefly.
8) Reverse into the space at idle speed.
9) Pull up the tractor-trailer to align it during the manoeuvre.
10) Exit the tractor to examine space and vehicle alignment no more than twice during the manoeuvre.
11) Complete the reverse movement while staying entirely within the manoeuvre space.
12) Stop tractor-trailer movement upon reaching the desired position.
13) Stop the tractor-trailer gently when backing up to a solid fixture.
14) Complete the backing manoeuvre within a timeline or number of attempts as specified by the jurisdiction.

Performance Element	5.1.3 Performs alley-dock backing manoeuvres with a tractor-trailer in a safe manner.	**M**

Manoeuvre Space - alley-dock backing manoeuvres will be into a space that is between 3.5 and 3.7 metres wide, and at least as long as 2/3 the length of the tractor-trailer, starting with the vehicle positioned perpendicular to the space and with the front of the tractor directly in front of it. The pull-up space in front of the backing target space must be no deeper than the length of the vehicle. The manoeuvre will be learned from both sides.

Sub-tasks

Completion of offset backing manoeuvres includes performing the following sub-tasks.

The driver will:

1) Check mirror set up.
2) Drive the tractor-trailer forward out of the starting position.
3) Align the tractor-trailer with the target space while driving forward into the pull up area.
4) Secure the vehicle and activate the warning flashers.
5) Exit the vehicle to examine the manoeuvre space from outside the vehicle and check vehicle position if necessary.
6) Re-enter the vehicle, open windows and silence audio devices.
7) Sound vehicle horn briefly.
8) Reverse into the space at idle speed.
9) Pull up the vehicle to align it during the manoeuvre.
10) Exit the vehicle to examine space and vehicle alignment no more than twice during the manoeuvre.
11) Complete the reverse movement while staying entirely within the manoeuvre space.
12) Stop vehicle movement upon reaching the desired position.
13) Stop the vehicle gently when backing up to a solid fixture.
14) Complete the backing manoeuvre within 10 minutes.

Performance Element	5.1.4 Performs parallel parking manoeuvres with a tractor-trailer in a safe manner.	**R**

Manoeuvre Space – parallel parking manoeuvres will be into a space that is between 3.5 and 3.7 metres wide, and at least as long as 1.5 times the length of the tractor-trailer. The manoeuvre will be learned from both sides.

Sub-tasks

Completion of offset backing manoeuvres includes performing the following sub-tasks.

The driver will:

1) Check mirror set up.
2) Drive the tractor-trailer forward out of the starting position.
3) Secure the vehicle and activate the warning flashers.
4) Exit the vehicle to examine the manoeuvre space from outside the vehicle and check vehicle position if necessary.
5) Re-enter the vehicle, open windows and silence audio devices.
6) Sound vehicle horn briefly.
7) Reverse into the space at idle speed.
8) Pull up the tractor-trailer to align it during the manoeuvre.
9) Exit the tractor-trailer to examine space and vehicle alignment no more than once during the manoeuvre.
10) Stop tractor-trailer movement upon reaching the desired position.
11) Complete the reverse movement while staying within 1 meter of the curb or curb markers.
12) Complete the parking manoeuvre within a time or number of attempts as specified by the jurisdiction.

Summary of Hours

Competence Category	**Tractor-Trailer Off-Road Tasks & Manoeuvres**		**5**
In-Class	In-Yard	In-Cab	Total Hours
1	**2**	**12**	**15**

Learning Outcome	**5.2**	**At the end of this training program the graduate will be able to safely perform tractor-trailer coupling and uncoupling tasks.**
Performance Element	5.2.1 Couples a tractor-trailer unit in a safe manner.	**M**
Sub-tasks	Completion of coupling tasks includes performing the following sub-tasks. The driver will: 1) <u>Start</u> the coupling task: a) Inspect lower couplers and connectors while outside the vehicle. b) Enter the vehicle and begin reversing slowly, approach the trailer with the tractor as straight in line as possible, overcome any challenges involving ground surface conditions. 2) Continue coupling with a tractor with <u>fixed suspension</u>: a) Align the tractor and trailer, reversing the vehicle until the fifth wheel is just ahead of trailer, touching the trailer or slightly under, but not against the kingpin. b) Exit the tractor and check the upper coupler and confirm that the kingpin is aligned (no more than 10 cm {4 in.} from the center of the fifth wheel lower coupler), adjust height if necessary so that contact of the upper coupler will be on the bottom half of the fifth wheel lower coupler. c) Re-enter the vehicle and continue reversing toward the trailer, monitor the trailer's position during coupling using the mirrors to confirm proper alignment. d) Reverse the tractor, gently but firmly engage the fifth wheel. e) Listen for and feel the fifth wheel latch into its locked position. 3) Continue coupling with a tractor having air suspension offering a <u>suspension drop</u> feature: a) Reverse the vehicle slowly toward the trailer until the fifth wheel just touches the trailer or is about to touch it. b) <u>Exit the tractor</u> and check vehicle heights. c) Re-enter the tractor and release (dump) the tractor air suspension, then reverse the tractor until the fifth wheel lower coupler is fully under the front of the trailer, but still ahead of the king pin. d) Restore the tractor air suspension to its normal height. e) Monitor the trailer's position during coupling using the mirrors to confirm proper alignment. f) Reverse the tractor, gently but firmly engaging the fifth wheel. g) Listen for and feel the fifth wheel latching into its locked position.	

Sub-tasks

4) Complete the coupling for all suspension types:

a) Attempt to move the tractor forward (perform a "tug test").

b) Exit the vehicle and visually confirm the fifth wheel is locked by checking the fifth wheel contact, the release handle position and the latch.

c) Connect the air and electrical lines properly and confirm normal operation.

d) Raise the trailer landing gear fully and stow the handle into its retainer. e) Re-enter the vehicle and supply air to the trailer with the trailer supply valve, monitor the air pressure gauges, and confirm air pressure gauges show normal pressure levels.

f) Drive forward slowly a short distance and apply either the trailer service brakes only, or the full-service brakes to test brake operation.

Performance Element

5.2.2 Uncouples a tractor-trailer in a safe manner. **M**

Completion of uncoupling tasks includes performing the following sub-tasks.

The driver will:

Sub-tasks

1) Start the uncoupling task:

a) Confirm the location is suitable and safe for uncoupling.

b) Park the trailer in the selected location and apply the trailer parking brakes.

c) Secure and exit the tractor.

d) Place any required wheel chocks and blocks or engage locks into position.

e) Place adequate support material under the landing gear, if necessary.

f) Operate trailer air suspension controls as required.

g) Lower the trailer landing gear until it is just above the ground, just touches the ground, but does not raise the trailer from the fifth wheel.

h) Leave the landing gear handle in low range and stow the handle.

i) Disconnect air and electrical connections and stow them.

j) Release the fifth wheel coupler lock.

2) For a tractor with fixed suspension

a) Re-enter the vehicle and drive forward slowly to release the fifth wheel, watch the trailer in the mirrors or out of the rear window, confirm the trailer is stable.

b) When the fifth wheel lower coupler is fully out from under the trailer, but the tractor is still under the front of the trailer, exit the tractor and check that the trailer is stable and secure.

c) Re-enter the vehicle and drive forward slowly until the tractor is clear of the trailer.

Sub-tasks

3) For a tractor with air suspension having suspension drop feature:

a) Re-enter the vehicle and drive forward slowly far enough to unlatch the fifth wheel coupler and stop.

b) Operate the control to drop the tractor suspension

c) Watch the trailer in the mirrors or out of the rear window, confirm the trailer is stable.

d) When the fifth wheel lower coupler is fully out from under the trailer, but the tractor is still under the front of the trailer, exit the tractor and check that the trailer is stable and secure.

e) Re-enter the vehicle and drive forward slowly until the tractor is clear of the trailer.

f) Raise the tractor suspension to the normal position.

	Summary of Hours		
Competence Category	**Tractor-Trailer Off-Road Tasks & Manoeuvres**		**5**
In-Class	In-Yard	In-Cab	Total Hours
1	**1**	**6 off road**	**8**

Competence Category	6-DOCUMENTS, PAPERWORK & REGULATORY REQUIREMENTS	6

Learning Outcome	**6.1**	**At the end of this training program the graduate will be able to administer written workplace documents, and communicate effectively through written means.**	
Learning Indicators	6.1.1	Identifies workplace forms that are needed to establish and sustain employment.	**R**
	6.1.2	Identifies and describe the meaning of messages and symbols on cargo packaging and cargo documents such as way-bills, packing lists, delivery documents, instructions, workplace hazard information, etc.	**R**
	6.1.3	Identifies and describes the basic purpose, importance and proper condition of required vehicle related documents.	**M**
	6.1.4	Explains the need to access written workplace information such as apply, procedure and policy documents related to cargo securement, job task analysis, hazard assessment, etc.	**R**
Performance Elements	6.1.5	Seeks clarification and assistance when they do not fully understand any written workplace documents.	**R**
	6.1.6	Composes and delivers basic written information and messages relating to driving activities.	**R**
	6.1.7	Accesses information and reference tables such as those related to vehicle weights and dimensions.	**M**
	6.1.8	Records some basic information onto cargo related documents such as way-bills.	**R**
Learning Outcome	**6.2**	**At the end of this training program the graduate will be able to complete basic mathematical calculations required for commercial vehicle operation.**	
Learning Indicators	6.2.1	Describes information needed for fuel tax reports.	**R**
	6.2.2	Converts simple imperial and metric measurements using tables, mathematical formulas, or conversion programs.	**R**

Performance Elements	6.2.3	Calculates route and trip distances.	**R**
	6.2.4	Estimates fuel consumption rates, and how far a vehicle can travel on a particular quantity of fuel.	**R**
	6.2.5	Determines allowable axle weights.	**R**
	6.2.6	Determines basic vehicle dimension and axle spacing requirements, and complete calculations to identify compliance with vehicle requirements such as “bridge formulas”, etc.	**R**
	6.2.7	Calculates trip durations to determine arrival times and plan departure times.	**R**
	6.2.8	Estimates and records cargo weight.	**R**
Learning Outcome	**6.3**	**At the end of this training program the graduate will be able to use computers, electronic and communication devices common in commercial vehicle operations.**	
Performance Elements	6.3.1	Uses a calculator or computer to complete some simple tasks.	**R**
	6.3.2	Operates a hand-held electronic or communication device for basic tasks and describes when and where such use is permitted.	**M**
	6.3.3	Completes basic data-entry, form-filling and online search tasks.	**R**
Learning Outcome	**6.4**	**At the end of this training program the graduate will be able to plan ahead, anticipate problems, and begin to deal with an emergency situation**	
Learning Indicators	6.4.1	Explains the risk of traveling to an unfamiliar location without first confirming facilities and preferred routes.	**M**
	6.4.2	Identifies some special requirements relating to a vehicle, load, routing or commodity.	**M**
	6.4.3	Identifies sources of reliable information about weather and road conditions.	**M**
	6.4.4	Describes the need to carry required emergency equipment on or inside the vehicle.	**M**
	6.4.5	Describes how and when to use emergency equipment carried on the vehicle. (such as a fire extinguisher, safety warnings (triangles, flares), spill kits, etc.	**M**
	6.4.6	Describes typical vehicle workplace risks and hazards.	**M**
	6.4.7	Explains the need to carry first aid supplies.	**R**
	6.4.8	Explains personal limitations in administering first aid.	**R**
	6.4.9	Explains the driver’s responsibility to deal with a build-up of snow/ice or mud on their vehicle(s).	**M**

Performance Elements	6.4.10	Accesses sources of maps and electronic route information.	**M**
	6.4.11	Accesses sources of information about commercial vehicle routes, road construction, road closures, height clearances, weight restrictions, permit requirements, etc.	**M**
	6.4.12	Prepares a route plan that considers vehicle size and weight.	**M**
	6.4.13	Demonstrates use of some basic hand tools.	**R**
	6.4.14	Properly wears or otherwise uses appropriate Personal Protective Equipment.	**M**
	6.4.15	Locates emergency contact information.	**M**
	6.4.16	Adjusts a vehicle's fifth wheel setting, axle position, or suspension system.	**M**
	6.4.17	Uses a safe method for operating cargo access doors.	**R**
	6.4.18	Applies safe driving technique when proceeding through construction zones and detours.	**M**

Summary of Hours

Competence Category	**Documents, Paperwork & Regulatory Requirements**		**6**
In-Class	In-Yard	In-Cab	Total Hours
4	**-**	**-**	**4**

Competence Category	7-VEHICLE INSPECTION ACTIVITIES	7

Learning Outcome	**7.1**	**At the end of this training program the graduate will be able to inspect and maintain commercial vehicles.**	
Learning Indicators	7.1.1	Explains the need for every workplace to establish a system, and keep a written or electronic record, for periodically inspecting and maintaining vehicles.	**M**
	7.1.2	Explains that every commercial vehicle must meet prescribed performance standards while operating on a highway.	**M**
	7.1.3	Explains the importance of enforcement and audit programs to ensure that inspection and maintenance is adequate.	**M**
Performance Elements	7.1.4	Inspect the condition of vehicles and operating components.	**M**
	7.1.5	Uses Personal Protective Equipment during maintenance and inspection activities.	**M**
	7.1.6	Confirms that every commercial vehicle being operated displays valid evidence that regulatory periodic inspections and workplace-specific inspections have been conducted.	**M**
	7.1.7	Inspects the level of operating fluids including fuel, engine oil, engine coolant, power steering oil, windshield washer, diesel exhaust fluid (DEF), etc. - and top up when necessary.	**M**
	7.1.8	Inspects basic vehicle components, such as drive belts, hoses, tires, switches etc.	**M**
	7.1.9	Completes minor vehicle repairs such as: repair minor electrical connection problem, replace lamp, gladhand seal or wiper blade, reset circuit breaker, etc.	**R**
Learning Outcome	**7.2**	**At the end of this training program the graduate will be able to conduct required daily inspections and monitor the vehicle's safe condition.**	
Learning Indicators	7.2.1	Explains their responsibility for the safe condition of each commercial vehicle they operate.	**M**
	7.2.2	Explains the jurisdictional regulations listing all minor and major defects that the driver is expected to identify.	**M**
	7.2.3	Explains that the jurisdictional regulations include the most common defects/unsafe conditions that a driver may encounter.	**M**

Performance Elements	7.2.4	Conducts daily inspections and identifies minor and major defects listed in relevant jurisdiction legislation.	**M**
	7.2.5	Identifies if a minor or major defect listed in jurisdictional legislation is present on their vehicle.	**M**
	7.2.6	Completes and signs written or electronic daily inspection reports that declare the vehicle's condition.	**M**
	7.2.7	Monitors vehicle condition on a continuous basis, according to the provincial legislation while driving or otherwise being responsible for the vehicle and updates the inspection report as required.	**M**
	7.2.8	Records on an inspection report every minor defect found during an inspection or while operating a vehicle, and report the minor defect according to workplace practices, procedures and policies.	**M**
	7.2.9	Records immediately on an inspection document and report every major defect found during an inspection, or while operating a vehicle and stops operating the vehicle.	**M**
	7.2.10	Maintains a vehicle's out-of-service status whenever a major defect is identified, until the condition is corrected.	**M**
	7.2.11	Conducts regular enroute and post-trip vehicle inspections	**M**
	7.2.12	Adheres to the regulations whenever accepting an inspection report from another worker.	**M**
	7.2.13	Carries a valid inspection report for each vehicle operated and a copy of the required jurisdictional legislation and produce these items when required by an enforcement officer.	**M**

Learning Outcome	**7.3**	**At the end of this training program the graduate will be able to inspect each component or system listed in jurisdictional regulation.**	
Performance Element	7.3.1	Inspects the **air brake system.**	**M**
Sub-tasks		Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defects: a) audible air leak. b) slow air pressure build-up rate. 2) The driver will inspect for the following <u>major</u> defects: a) pushrod stroke of any brake exceeds the adjustment limit. b) air loss rate exceeds the prescribed limit. c) inoperative towing vehicle (tractor) protection system. d) low air warning system fails, or system is activated. e) inoperative service, parking or emergency brake.	

Performance Element	7.3.2 Inspects the **cab**.	**M**
	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defect: a) occupant compartment door fails to open. 2) The driver will inspect for the following <u>major</u> defect: a) any cab or sleeper door fails to close securely.	
Performance Element	7.3.3 Inspects **cargo securement.**	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defect: a) insecure or improper load covering (e.g. wrong type or flapping in the wind). 2) The driver will inspect for the following <u>major</u> defects: a) insecure cargo. b) absence, failure, malfunction or deterioration of required cargo securement device or load covering	
Performance Element	7.3.4 Inspects **coupling devices.**	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defect: a) coupler or mounting has loose or missing fastener. 2) The driver will inspect for the following <u>major</u> defects: a) coupling or locking mechanism is damaged or fails to lock. b) defective, incorrect or missing safety chain/cable. c) coupler is insecure, or movement exceeds prescribed limit.	
Performance Element	7.3.4 Inspects **dangerous goods.**	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>major</u> defect: a) dangerous goods requirements not met.	

Performance Element	7.3.6 Inspects **driver controls.**	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defect: a) accelerator pedal, clutch, gauges, audible and visual indicators or instruments fail to function properly.	
Performance Element	7.3.7 Inspects **driver seat.**	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defects: a) seat is damaged or fails to remain in set position. 2) The driver will inspect for the following <u>major</u> defects: a) seatbelt or tether belt is insecure, missing or malfunctions.	
Performance Element	7.3.8 Inspects **electric brake system** if equipped.	**R**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defect: a) loose or insecure wiring or electrical connection. 2) The driver will inspect for the following <u>major</u> defects: a) inoperative breakaway device. b) inoperative brake	
Performance Element	7.3.9 Inspects **emergency equipment and safety devices.**	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defect: a) emergency equipment is missing, damaged or defective.	

Performance Element	7.3.10 Inspects **exhaust system**.	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following minor defect: a) exhaust leak. 2) The driver will inspect for the following major defect: a) leak that causes exhaust gas to enter the occupant compartment.	

Performance Element	7.3.11 Inspects **frame and cargo body.**	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following minor defect: a) damaged frame or cargo body. 2) The driver will inspect for the following major defect: a) visibly shifted, cracked, collapsing or sagging frame member(s).	

Performance Element	7.3.12 Inspects **fuel system.**	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following minor defect: a) missing fuel tank cap. 2) The driver will inspect for the following major defects: a) insecure fuel tank. b) dripping fuel leak.	

Performance Element	7.3.13 Inspects a vehicle's **general** condition.	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following major defect: a) serious damage or deterioration that is noticeable and may affect the vehicle's safe operation.	

Performance Element	7.3.14 Inspects **glass and mirrors**.	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defects: a) required mirror or window glass fails to provide the required view to the driver as a result of being cracked, broken, damaged, missing or maladjusted. b) required mirror or glass has broken or damaged attachments onto vehicle body.	

Performance Element	7.3.15 Inspects **heater/defroster**.	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defect: a) control or system failure. 2) The driver will inspect for the following <u>major</u> defect: a) defroster fails to provide unobstructed view through the windshield.	

Performance Element	7.3.16 Inspects **horn**.	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following <u>minor</u> defect: a) vehicle has no operative horn.	

Performance Element	7.3.17 Inspects **hydraulic brake system**.	**R**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following minor defect: a) brake fluid level is below indicated minimum level. 2) The driver will inspect for the following major defects: a) parking brake is inoperative. b) brake boost or power assist is not operative. c) brake fluid leak. d) brake pedal fade or insufficient pedal reserve. e) activated (other than ABS) warning device. f) brake fluid reservoir is less than ¼ full.	

Performance Element	7.3.18 Inspects **lamps and reflectors**.	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following minor defects: a) required lamp does not function as intended. b) required reflector is missing or partially missing. 2) The driver will inspect for the following major defects - that can only be present when use of lamps is required: a) failure of both low-beam headlamps. b) failure of both rearmost tail lamps. 3) The driver will inspect for the following major defects - that may be present at any time: a) failure of a rearmost turn-indicator lamp. b) failure of both rearmost brake lamps.	

Performance Element 7.3.19 Inspects **steering**. **M**

Sub-tasks

Completing inspection includes performing the following sub-tasks.

1) The driver will inspect for the following minor defect:
   a) steering wheel lash (free-play) is greater than normal.
2) The driver will inspect for the following major defects
   a) steering wheel is insecure, or does not respond normally.
   b) steering wheel lash (free-play) exceeds prescribed limit.

Performance Element 7.3.20 Inspects **suspension system**. **M**

Sub-tasks

Completing inspection includes performing the following sub-tasks.

1) The driver will inspect for the following minor defect:
   a) air leak in air suspension system.
   b) broken spring leaf.
   c) suspension fastener is loose, missing or broken.
2) The driver will inspect for the following major defects
   a) damaged or deflated air bag ['damaged' means - patched, cut, bruised, cracked to braid, mounted insecurely].
   b) cracked or broken main spring leaf or more than one broken spring leaf.
   c) part of spring leaf or suspension is missing, shifted out of place or in contact with another vehicle component.
   d) loose U-bolt.

Performance Element 7.3.21 Inspects **tires**. **M**

Sub-tasks

Completing inspection includes performing the following sub-tasks.

1) The driver will inspect for the following minor defects:
   a) damaged tread or sidewall of tire.
   b) tire leaking (if leak can be felt or heard, tire is to be treated as flat).
2) The driver will inspect for the following major defects
   a) flat tire.
   b) tire tread depth is less than wear limit.
   c) tire is in contact with another tire or any vehicle component other than mud-flap.
   d) tire is marked "Not for highway use".
   e) tire has exposed cords in the tread or outer side wall area.

Performance Element	7.3.22 Inspects **wheels, hubs and fasteners**.	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following minor defects: a) hub oil below minimum level (When fitted with sight glass) b) leaking wheel seal. 2) The driver will inspect for the following major defects: a) wheel has loose, missing or ineffective fastener. b) damaged, cracked or broken wheel, rim or attaching part. c) evidence of imminent wheel, hub or bearing failure.	

Performance Element	7.3.23 Inspects **windshield wiper/washer**.	**M**
Sub-tasks	Completing inspection includes performing the following sub-tasks. 1) The driver will inspect for the following minor defects: a) control or system malfunction. b) wiper blade damaged, missing or fails to adequately clear driver's field of vision. 2) The driver will inspect for the following major defects - that can only be present when use of wipers or washer is required: a) wiper or washer fails to adequately clear driver's field of vision in area swept by driver's side wiper.	

Summary of Hours

Competence Category	**Vehicle Inspection Activities**		**7**
In-Class	In-Yard	In-Cab	Total Hours
4.5	**8**	**-**	**12.5**

Competence Category	8-HOURS OF SERVICE COMPLIANCE	8

Learning Outcome	8.1	At the end of this training program the graduate will be able to comply with the requirements of the hours of service regulations.	
Learning Indicators	8.1.1	Explains that the hours of service regulations apply to operating most commercial vehicle.	**M**
	8.1.2	Explains that they are on-duty when driving, in care and control of a vehicle and performing other types of work.	**M**
	8.1.3	Explains that must comply with hours of service regulations (NSC 9: daily driving and on-duty time; mandatory off-duty time; Daily off-duty time; etc.)	**M**
	8.1.4	Explains that driving a commercial vehicle is prohibited after being on-duty for 14 hours in a day and work shift.	**M**
	8.1.5	Explains that driving a commercial vehicle is prohibited after accumulating 13 hours of driving in a day and work shift.	**M**
	8.1.6	Explains that driving a commercial vehicle is prohibited when 16 hours have elapsed since their work shift began.	**M**
	8.1.7	Identifies that a commercial vehicle may be operated for personal use, and for up to 75 km in a day when: the vehicle is empty and no trailer is being towed; no work of any sort is being done for a motor carrier; and the starting and ending odometer readings are recorded in the driver's daily log.	**M**
	8.1.8	Explains that a work shift begins when they return to on-duty, after being off-duty for at least 8 consecutive hours.	**M**
	8.1.9	Identifies they are still considered to be on the previous work shift when returning to on-duty after less than 8 hours off-duty, and they may be prohibited from driving if they exceed the 13, 14 and 16-hour rule.	**M**
	8.1.10	Explains that a 7-day cycle and allows a driver to be on-duty for 70 hours in a 7-day period.	**M**
	8.1.11	Identifies that a 14-day cycle and allows a driver to be on-duty for 120 hours in a 14-day period.	**M**

Learning Indicators	8.1.12	Explains that a reset can only take place after the required minimum number of consecutive hours off-duty, and this period is called a “reset“.	**M**
	8.1.13	Explains that resetting 7-day cycle requires at least 36 consecutive hours off duty.	**M**
	8.1.14	Identifies that resetting 14-day cycle requires at least 72 consecutive hours off duty.	**M**
	8.1.15	Identifies that up to 2 hours of the required minimum daily off- duty time can be deferred from one day to the next as long as the deferred time is added to the period of 8-consecutive hours of off-duty time on the following day.	**M**
	8.1.16	Identifies that when encountering specifically defined adverse driving conditions, driving up to 2 hours beyond the daily limit is permitted, when remaining within the 16-hour work shift rule.	**M**
	8.1.17	Identifies that, when adverse conditions cause a driver to be on-duty longer than is normally permitted, and this causes a drive to exceed the hours in their cycle, those cycle requirements must be met by the end of the following day.	**M**
	8.1.18	Identifies that on-duty, driving and off-duty requirements do not apply when encountering an emergency, under certain circumstances.	**M**
	8.1.19	Identifies that the “day” shown on a daily log is a 24-hour period which generally begins at midnight but can start at any time set by a motor carrier.	**M**
	8.1.20	Explains that the “home terminal” is the location at which the driver ordinarily reports for work and may include a temporary work site location designated by the motor carrier.	**M**
	8.1.21	Identifies reasons that driver’s daily logs may also need to be retained for tax purposes such as meal deductions, etc.	**R**
	8.1.22	Identifies that a driver may be exempt from the requirements to complete and carry a daily log when: they drive within a radius of 160 km from the location at which the driver starts the day and returns to the same location at the end of the day.	**M**
	8.1.23	Identifies that proper use of the sleeper berth allows the off-duty period to be split.	**M**
	8.1.24	Identifies that off-duty periods can be split into shorter periods in certain condition.	**M**
	8.1.25	Identifies that Canadian hours of service (HOS) requirements differ from those in the U.S.	**R**

Performance Elements	8.1.26	Calculates when they can begin to drive, and how many hours are available for driving each day.	**M**
	8.1.27	Stops driving when any one of the on-duty limits is reached.	**M**
	8.1.28	Stops driving a commercial vehicle after being on-duty for 14 hours in a day or work shift.	**M**
	8.1.29	Stops driving a commercial vehicle after accumulating 13 hours of driving in a day or work shift.	**M**
	8.1.30	Stops driving a commercial vehicle when 16 hours have elapse since their work shift began.	**M**
	8.1.31	Tracks their status within each day as defined on the daily log, and track the duty status within their work shift, which can start at any time of day.	**M**
	8.1.32	Maintains a complete, legible, and accurate driver's daily log (in a written or electronic format) that fully complies with the regulations	**M**
	8.1.33	Carries daily logs that apply to the preceding 14 days, whenever operating a commercial vehicle requiring the driver to carry a log.	**M**
	8.1.34	Retains daily logs as required by the regulations.	**M**

Summary of Hours

Competence Category	**Hours of Service Compliance**		**8**
In-Class	In-Yard	In-Cab	Total Hours
5	**-**	**-**	**5**

Competence Category	9-CARGO SECUREMENT & LOSS PREVENTION	9

Learning Outcome	**9.1**	**At the end of this training program the graduate will be able to comply with basic cargo securement requirements.**	
Learning Indicators	9.1.1	Explains that every commercial vehicle transporting cargo must have the cargo secured according to the regulations.	**M**
	9.1.2	Explains that the requirement to secure cargo includes any material, equipment or other loose article carried on the vehicle, including dunnage, blocking, tarps, tools, equipment, spare materials, etc.	**M**
	9.1.3	Explains that all cargo must be secured so that it cannot fall off the vehicle, or in any way be lost.	**M**
	9.1.4	Explains that articles of cargo must be secured to prevent forward, rearward and sideways movement, and in some cases must also be secured to prevent upward movement.	**M**
	9.1.5	Explains that all cargo must be secured so that it cannot shift in a way that can affect a vehicle's stability or manoeuvreability in a negative way.	**M**
	9.1.6	Explains that cargo must be loaded in such a way that it does not interfere with the driver's ability to drive the vehicle safely and does not block vehicle entry or exit.	**M**
	9.1.7	Explains that articles of cargo are generally secured against the vehicle's structure and by using devices such as tiedowns, blocking and bracing.	**M**
	9.1.8	Describes methods for rating the strength of devices used to secure cargo and recognize that most cargo requires a minimum number of tiedowns with particular working load limit ratings.	**R**
	9.1.9	Explains that cargo tiedowns are specifically designed and rated for particular use, and must have a means to be tightened, and must be used according to the manufacturer instructions.	**R**
	9.1.10	Explains that tiedown ratings are determined by manufacturers, are expressed as a "working load limit" (WLL) and marked on the tiedowns.	**R**
	9.1.11	Describes how the combined strength of individual tiedowns used together to restrain cargo is called the "aggregate working load limit".	**R**
	9.1.12	Explains how friction between cargo and vehicle surfaces, and friction between different articles of cargo that are in contact, helps to keep some types of cargo secure.	**R**
	9.1.13	Describes how the size, shape and weight of cargo generally dictates the required number, strength and placement of tiedowns.	**R**

Learning Indicators	9.1.14	Explains how the aggregate working load limit of tiedowns used to secure cargo must equal at least 50% of the cargo weight.	**R**
	9.1.15	Explains how cargo fully enclosed within a vehicle structure will not generally require tiedowns, but may require blocking, bracing or devices to increase friction between the vehicle and cargo.	**M**
	9.1.16	Explains how individual pieces of cargo are "unitized" into larger units of cargo.	**R**
	9.1.17	Explains that drivers are not required to inspect cargo if a vehicle has been sealed to prevent access and they have been instructed by their employer not to remove the seal.	**R**
	9.1.18	Explains that some cargo can be secured according to general regulatory requirements.	**M**
	9.1.19	Explains how certain commodities require specific securing methods, devices and equipment to comply with specific regulatory requirements.	**M**
	9.1.20	Identifies that specific securement methods are required for: logs, dressed lumber and similar building materials, metal coils, paper rolls, concrete pipe, inter-modal containers, automobiles, light trucks and vans, heavy vehicles equipment and machinery, flattened or crushed cars, roll-on/roll-off and hook-lift containers, boulders, etc	**M**

Performance Elements	9.1.21	Confirms that cargo securing methods or devices are the proper type, and are be properly used, strong enough, and in good condition.	**R**
	9.1.22	Inspects cargo and methods used to secure the cargo before driving, to confirm everything is properly secured to comply with regulations.	**R**
	9.1.23	Inspects cargo and related articles at specific intervals during the trip to ensure everything remains properly secured to comply with regulations.	**R**
	9.1.24	Conducts inspection of the condition and integrity of tiedown devices and adjusting tiedowns as necessary to keep cargo secure during transport.	**R**

Learning Outcome	**9.2**	**At the end of this training program the graduate will be able to prevent cargo loss claims, and follow required procedures to maintain secure facilities, prevent cargo loss and avoid damage.**	
Learning Indicators	9.2.1	Identifies that operation of cargo handling equipment must be performed in the proper manner, and only when a person is fully trained and authorized.	**R**
Performance Elements	9.2.2	Handles and loads cargo carefully and describe basic ways to confirm that all cargo is properly packaged, unitized, arranged and secured inside facilities and vehicles.	**R**
	9.2.3	Uses appropriate Personal Protective Equipment properly and recognize that such use may be required, inside or outside of every workplace, shipper facility and customer facility.	**R**
	9.2.4	Uses cargo seals, pin locks and similar vehicle security devices.	**R**

Summary of Hours

Competence Category	**Cargo Securement & Loss Prevention**		**9**
In-Class	In-Yard	In-Cab	Total Hours
2	**-**	**-**	**2**

Competence Category	10-HANDLING EMERGENCIES	10

Learning Outcome	10.1	At the end of this training program the graduate will be able to assess and adapt to changing conditions.	
Learning Indicators	10.1.1	Describes common workplace hazards and risks and how such hazards and risks can change.	**R**
	10.1.2	Explains the role and importance of workplace practices, procedures and policies which are used to manage hazards and risks.	**R**
	10.1.3	Locates and understand workplace practices, procedures and policies which are used to manage hazards and risks.	**R**
	10.1.4	Explains the visual cues and other signs of potentially hazardous traffic situations.	**M**
Performance Elements	10.1.5	Reviews and understands documented job task analyses and hazard assessments.	**R**
	10.1.6	Adapts to the presence of other motorists, pedestrians, cyclists and slow-moving vehicles which share the road with commercial vehicles.	**M**
	10.1.7	Watches for wildlife or livestock which can enter the space around a vehicle, particularly on routes known for collisions involving animals.	**M**
	10.1.8	Monitors and adheres to highway speed advisories.	**M**
	10.1.9	Maintains a high level of alertness while driving.	**M**
	10.1.10	Scans conditions around the vehicle by looking ahead and using mirrors regularly and systematically.	**M**
	10.1.11	Monitors vehicle conditions by scanning instruments and gauges regularly and systematically.	**M**
	10.1.12	Monitors the movement and actions of other motorists while passing or being passed.	**M**
	10.1.13	Diffuses any situation that could cause anger, hostility or danger	**M**
	10.1.14	Exits the vehicle whenever necessary to inspect clearances and identify potential obstructions.	**M**
	10.1.15	Secures a vehicle properly before exiting the cab or vacating the driver seat.	**M**

Learning Outcome	**10.2**	**At the end of this training program the graduate will be able to handle minor emergency incidents in a professional manner.**	
Learning Indicators	10.2.1	Describes the typical kinds of incidents that must be reported to employers, police and other reporting agencies.	**M**
	10.2.2	Explains the importance of following the specific requirements of workplace practices, procedures and policies regarding collisions, close calls, injuries or other similar incidents.	**R**
	10.2.3	Explains the importance of workplace practices, procedures and policies relating to obligations and limitations in administering first aid.	**R**
	10.2.4	Describes the importance of conducting themselves according to workplace practices, procedures and policies in any emergency situation when speaking to police, media, other motorists and the public.	**R**
	10.2.5	Describes the importance of following workplace practices, procedures and policies when engaging emergency support such as: towing and recovery service, vehicle repair, breakdown, tire repair, etc.	**R**
Performance Elements	10.2.6	Uses warning devices and other emergency equipment in compliance with regulations.	**M**

Summary of Hours

Competence Category	**Handling Emergencies**		**10**
In-Class	In-Yard	In-Cab	Total Hours
1.5	**1**	**-**	**2.5**

PART D - AIR BRAKES

Competence Category	11-AIR BRAKES	11

Learning Outcome	**11.1**	**At the end of this training program the graduate will have the knowledge and the ability to operate air brake equipped vehicles safely and in compliance with the applicable regulations**	
Learning Indicator	11.1.1	Describes basic operating principles	**M**
	11.1.2	Describes operation of supply sub-system	**M**
	11.1.3	Describes operation of service-brake sub-system	**M**
	11.1.4	Describes operation of spring (parking/emergency) brake sub-system	**M**
	11.1.5	Describes operation of trailer sub-system	**M**
	11.1.6	Describes effect of speed and weight on vehicle braking	**M**
	11.1.7	Describes effect of brake adjustment on vehicle braking ability	**M**
	11.1.8	Describes role and importance of safety regulations	**M**
	11.1.9	Describes potential driver safety hazards	**M**
	11.1.10	Describes correct response to brake system defects	**M**
Performance Elements	11.1.11	Identifies brake components	**M**
	11.1.12	Conducts brake system inspection	**M**
	11.1.13	Conducts brake system functional tests	**M**
	11.1.14	Identifies brake system and component defects	**M**

Summary of Hours

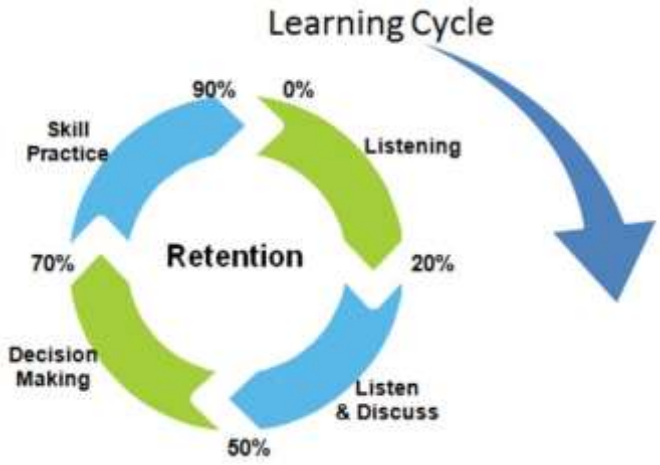
Competence Category	Air Brakes		11
In-Class	In-Yard	In-Cab	Total Hours
6.5	**2**	**-**	**8.5**

PART E - APPENDIX

Glossary of Terms

Assessment

Assessments confirm that the learner is acquiring the knowledge, skills and attitude required.



There are three types of progressive assessments:

Ipsative*:** Is an assessment for learning ***prior to beginning training to determine the ability and readiness to learn, with the expectation that other assessments follow for comparison.

Formative*:** Is an assessment ***as learning occurs to provide both student and instructor an indication of how well the learner is progressing. It provides relevant feedback to help the student improve.

Summative*:** Is an assessment of learning that provides a measurement of what the student ***has learned and is measured against the other assessments.

Acceptable assessment activities may be:

Knowledge: quizzes, case studies, problem solving, scenarios

Skill: demonstration, practical, hands on, problem solving

Attitude: demonstrated through discussion, action, display

Evaluation	Sometimes interchanged with assessment, however, it should be a process for evaluating the training program by students and instructors/digital instructors in order to facilitate improvement of the course.
Classroom Instruction	Classroom instruction is the environment where in-person ELT training is facilitated by an instructor through an approved training course provider
Class Size	Maximum number of students is 15:1 in-class , excluding LMS. Maximum of 4:1 in-yard or in-cab. Time must be adjusted when more than one student is in-cab.
Course Provider	An organization that has met all the requirements and is approved to be a training course provider.
Curriculum Framework	A document that provides a list of mandatory and recommended entry level driver competencies. Curricula development will use this framework.
Backing Dimensions	An area with minimum/maximum space allotment to complete backing exercises.
Blended Learning	Curriculum that combines in-person classroom and digital delivery of ELT.
Bobtailing	Bob-tailing is the driving of a tractor unit without a trailer.
Digital Classroom Instruction	Digital classroom instruction is any type of learning that is accompanied by technology.
Digital Instructor	An instructor who has met the jurisdictional requirements to teach and/or provide course content support digitally to students
Highway	Includes an expressway. A substitution is permitted to the highway component by using a highway with a speed limit of at least 80km/h., only if: • The course provider is not within 100kms of a highway/expressway, • Manoeuvres for lane changes and merging on and off the highway/expressway must continue to be included in the training and are to be simulated.
Facility	The classroom training facility must meet all jurisdictional occupational health and safety requirements. The classroom must be of appropriate size to accommodate the number of students; a table writing surface, lighting,

	washroom facilities, training equipment as required, presentation equipment as required etc.
In-Class	This is the environment inclusive of classroom, digital and/or blended instruction where training occurs which would be related to knowledge development. It is expected that the use of various delivery methods to address adult learning principles will be applied in this environment. The classroom must meet the minimum standards under "Facility".
In-Vehicle/In-Cab/ Behind the Wheel	This is the environment where 1:1 training occurs inside the vehicle and the vehicle is in motion. Backing, coupling/uncoupling are included in this description. A maximum of 4:1 ratio will be permitted if the vehicle configuration permits provided the time requirement is adjusted accordingly.
In-Yard/Around the Vehicle	This is the environment found in the yard and around a stationary vehicle. A maximum of 4:1 ratio will be permitted for training in this environment.
Instructional Methods	Instruction of students by qualified instructors/digital instructors will be delivered using various methods that are effective and appropriate for the content and leads to the success of the student. Methods using direct, indirect, experiential, interactive, and independent approaches are expected to be applied within a curriculum. ***Direct:*** Instructor/digital instructor led delivery. ***Indirect:*** Instruction received through activities. ***Experiential:*** Instruction that provides a direct linkage to the knowledge/skills that will be performed on the job. ***Interactive:*** Instruction that provides a continuous two-way transfer of information between the learner and instructor/digital instructor/other learners/ learning-assisted technology. ***Independent:*** Instruction received through self-discovery, or self-directed activity.
Instructional Time	The mandatory time requirement is based on 1:1 instruction between an instructor/digital instructor and student.
Learning Environment	There are three learning environments identified for curriculum development: in-class (inclusive of classroom, digital and/or blended instruction), in-yard (around the vehicle), in-cab (behind the wheel).

Learner-centered	The approach to training delivery must take into account the learner, their prior knowledge and experience, and their unique way of learning. The delivery method would capitalize on the learner's strengths and adjust for weaknesses.
Logical · Sequencing	The delivery of the learning content is to be presented to the student in a progression that requires taking what was previously learned and building upon it; similar to a stairway.
Manage Speed/ Following · Distance	Managing speed includes space management and following distance to allow adequate time to observe, react, manoeuvre the vehicle and stop if necessary.
Mandatory Competencies - M	All competencies identified as **M** are mandatory for all curricula and are the core competencies used to reach the total of 103.5 training hours for the Commercial Truck Driver Training Standard (Class 1).
Manual/Automatic Transmission	Manual transmission training is not mandatory but rather, training can be conducted using either automatic, manual or both depending on the vehicles provided by the course provider.
Night Driving	The inclusion of night driving is highly recommended and would encompass performance elements found in sections 3, 4, 7, 9, and 10. Night would be defined as any time when illumination is required.
Observation (In-yard)	An instructor may choose to demonstrate a skill while the student observes. This would be considered 1:1 instruction. Observing other students perform, without the instructor present, is not included in the time requirements.
Payload Training	A portion of the training with a load is mandatory; however, the type of load and appropriate weight would be determined by the course provider. 15,000kg GVW or 50% of the payload at least 25% of the time and to a maximum of 75%. is acceptable.
Recommended Competencies - R	Competencies identified with an **R** are recommended for inclusion in a curriculum by industry, however, due to the many types of training providers, while recommended, the provider will determine if it is appropriate for their business to include. All **R** competencies are above and beyond the core competencies and are not included in the 103.5 Commercial Truck Driver Entry Level Training Standard (Class 1) hours.
Traffic	This includes all other road users: vehicles, pedestrians, cyclists, motorcycles, and other vulnerable road users.

Traffic Check/Road Users	When referencing a traffic check, it implies a comprehensive 360° observation in order to interpret all traffic hazards and road conditions, assess risk and take appropriate action.