



## National Standard of Canada Standards Proposal

**Proposed Standard Title:**

Testing and proving grounds for autonomous vehicles

**Proposed Scope:**

This proposed standard aims to provide minimum requirements for establishing, operating and maintaining and decommissioning testing and proving grounds for autonomous vehicles.

**Strategic Need:**

*Identify the strategic need of key stakeholders and confirmation expressing the need.*

*This includes consideration for:*

- a. The strategic need of key stakeholder (e.g. legislator, industry, government, consumers);*
- b. The type of standard (international, regional, domestic standards and harmonization need);*
- c. Addressing up-to-date vs outdated standard to ensure latest innovative/technology/safety features available for businesses;*
- d. If the standard is intended to support national/regional/international certification programs;*
- e. If there is stakeholder intention to transition to different standard;*
- f. The type of maintenance (periodic, continuous, stabilized, best before date); and*
- g. The use of "CAN" descriptor.*

Automated and connected vehicles have the potential to greatly improve road safety and increase mobility, while also offering new economic opportunities and environmental benefits to Canadians.

As noted in Canada's Safety Framework for Automated and Connected Vehicles (AV/CV), the automotive and transportation sectors are in a period of significant transformation. New trends and technologies, including vehicles with automated and connected features, are emerging at a rapid pace. It is anticipated that more advanced AV/CV technologies will be available in the near future. Active on-road trials are taking place or are planned in various jurisdictions in Canada. Although predictions vary regarding when highly automated and connected vehicles will be deployed, it is clear they are on the horizon. This underlines the importance of creating flexible policy tools and guidance documents in short order, including standards to ensure that AV/CVs are tested and deployed in the safest way possible.

Considerable standards development work is underway for autonomous vehicles; however, there are growing calls to develop standards for testing and proving grounds for autonomous vehicles to: (i) facilitate comparability and replicability of tests across facilities, geographies and physical/virtual boundaries; and (ii) encourage data sharing and collaborative learning. Canadian stakeholders, including federal regulators, have expressed support for the development of such standards and guidelines.

This proposed National Standard of Canada aims to specifies minimum requirements for:

- Layout and design



- Civil engineering and construction
- Safety measurement and monitoring
- Communication and connectivity
- Security, privacy and surveillance
- Access control and user/vehicle management
- Vehicle servicing and maintenance management
- Customer service and partnership management
- Collaboration and data sharing

Other points which may be included:

- Insurance considerations; and
- CAPEX financing; and ongoing accounting and financial management

This proposed National Standards of Canada will:

- support future certification programs developed at national, regional and international levels;
- provide an international benchmark;
- be maintained on a periodic basis as determined by the technical committee responsible for developing the standard; and
- use the CAN descriptor.

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| <b>Need for Availability in Both of Canada’s Official Languages:</b> | Yes |
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**Geographical Representation Considerations:**

*Identify the Canadian geographical representation appropriate to the subject area covered by the standard.*

*Geographic representation may consider factors such as:*

- Industry (e.g. petroleum in petroleum producing provinces);*
- Reference in regulation (if a regulation exists in a province); or*
- Commodity characteristics and social impact (e.g. heating oil for northern climates).*

All sectors of the Canadian economy.

**Trade:**

*Identify how the standard meets the needs of the marketplace and contributes to advancing trade in the broadest possible geographical and economic contexts.*

*For example:*

- Facilitate Canadian innovation to lead internationally;*
- Support the objectives of “One standard, one test, accepted everywhere”;*
- Support the objectives of “First to Market”;* or
- Foster international/ regional/ national alignment of requirements.*

This proposed National Standard of Canada is intended to act as a catalyst to promote harmonization and Canadian leadership of proving ground certification programs in North American and throughout the world. A bi-national standard between Canada and the United States of America with SAE and IEEC will be explored to foster regional alignment of requirements.



**Relevant existing documents at the international, regional and national level:**

SAE J3016, Levels of Driving Automation

IEEE P2846, Formal Model for Safety Considerations in Automated Vehicle Decision Making

ANSI/UL 4600, Standard for Safety for the Evaluation of Autonomous Products

ISO/PAS 21448:2019, Road vehicles — Safety of the intended functionality

ISO 26262 Series, Road vehicles – Functional safety

DIN-SAE Spec 91381, Terms and Definitions Related to Testing of Automated Vehicle Technologies.

NHTSA, Framework for Automated Driving System Testable Cases and Scenarios, 2018

USDOT AV 4.0, Ensuring American Leadership in Automated Vehicle Technologies: Automated Vehicles 4.0, 2019-02