License Plate Standard

VEHICLE AND LAW ENFORCEMENT STANDING COMMITTEES
LICENSE PLATE STANDARD WORKING GROUP
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License plates serve one common purpose: to identify motor vehicles. License plates are most effective when they are designed to optimize legibility to the human eye as well as for automated license plate readers (ALPRs). The ability for motor vehicle agency employees, police officers, and citizens to quickly and easily identify license plate numbers (consisting of alpha and/or numeric characters) is fundamental to accurate vehicle registration data creation, maintenance, and retrieval. The adoption of the administrative, design, and manufacturing recommendations contained in this standard is intended to streamline the license plate retrieval processes within motor vehicle agencies; support highway safety; and increase certain revenue collection, which is dependent on accurate license plate identification, such as toll collection, restricted lane access, and parking regulations. License plate recognition, by human eye and ALPR, is critical to serving these purposes.

In addition, license plates play a central role in preventing and solving crimes. Every day across North America, crimes are prevented or solved through the identification of a license plate. It is difficult to quantify the missed opportunities that occur to prevent or solve a crime because a license plate was misread by either the human eye or by ALPR, but testing has documented that misreads occur. Adoption of the license plate standard contained in this document will minimize the risk of such misreads.

This standard was developed to support a jurisdiction’s ability to produce license plates that enhance accurate plate identification while not limiting a jurisdiction’s flexibility for innovation and allowing for multiple plate designs. It is designed for full size license plates issued by jurisdictions; portions of it may not apply to smaller plates typically issued to motorcycles and other similar vehicles.

This document is broken into three main sections: Administrative, Design, and Manufacture. License plate design attributes addressed by this document include:

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<td>Background and Wallpaper</td>
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The above table can also be used as a “Summary Checklist” allowing jurisdictions to check on how they utilize the specifications mentioned throughout the standard. Completing the checklist will give jurisdictions an immediate view of their level of alignment with this standard.

In addition to this standard, there are additional design and manufacture recommendations jurisdictions are encouraged to adopt (see Appendix B).
Chapter One  Administrative

This section addresses administrative and policy aspects of license plates as well as elements of manufacture and design.

**Display**

License plates are displayed horizontally on the vehicle in the space designated by the vehicle manufacturer.

**Unique License Plate Numbers**

License plate numbers are unique to each vehicle within a jurisdiction and are not repeated unless first invalidated or purged from the jurisdiction’s vehicle registration database (e.g., plate number “ABC 123” should not be used on multiple plates regardless of the plate type).

**Items Applied to License Plates**

If decals are used to add a graphic to a license plate, such as a representation of veteran medals or other specialty plate graphics, the life expectancy of the decal is to be considered. If the decal becomes unreadable because of fading, damage, or degradation, the decal is replaced. Because decals may have a shorter life expectancy than license plates, information that is needed to identify the plate is not to be displayed on the decal. A decal replacement cycle is adopted by the jurisdiction that is consistent with the life expectancy of the material used to manufacture the decal. Jurisdictions have in place a law or administrative rule prohibiting the display of any decal, other object, or material applied to the surface of a license plate unless it is issued by the jurisdiction.

**Replacement Cycle**

A license plate replacement cycle is adopted. Because license plates commonly lose significant reflectivity within 10 years, a required rolling or full replacement cycle not to exceed 10 years is recommended. Jurisdictions also have a process to replace damaged plates as soon as practical.

**Auditing and Accountability**

Jurisdictions, contractors, and vendors follow established accountability and audit standards.

To minimize risk of theft, counterfeiting, and fraud, materials used in the production of license plates are carefully controlled and properly stored and are produced in a secure environment. Quality control methods are used to ensure accountability over the production, storage, issuance, and disposal of license plates as well as consistency from one batch to another.
Plate design has a significant impact on accurate plate identification. This section provides specifications intended to optimize readability by the human eye and ALPR and connection to the correct vehicle record. These specifications also provide flexibility for the innovation and allowing for multiple plate designs.

**Issuing Jurisdiction**

The name of the issuing jurisdiction is readable and appears in the top center location of the license plate. The full jurisdiction name is displayed to avoid confusion between jurisdictions with similar postal abbreviations.

Jurisdiction characters are no less than 0.75 inches and no more than 1 inch in height and width with 0.125 inches spacing and be at least 0.25 inches from the top edge of the plate.

**Character Sizing and Placement**

Characters are at least 2.5 inches in height, proportionally wide, and spaced no less than 0.25 inches apart. Character stroke weight (thickness of lines) are between 0.2 and 0.4 inches. Characters are positioned on the plate no less than 1.25 inches away from the top and bottom edges of the license plate.

**Fonts**

The font and spacing present each alphanumeric as a distinct and identifiable character. Standardized fonts and font sizes that clearly distinguish characters are used. For example, similar characters such as A and R, 8 and B, or O and Q are easily distinguishable from each other.

**Stacked Characters**

If stacked characters are used, they are part of the official plate number. When one character appears above the other, the top character is entered first, immediately followed by the bottom character, in sequence, with the other characters on the plate.

Each individual stacked character is displayed vertically, not staggered or slanted, and is 45% the size of the regular plate characters with 10% vertical spacing between each character to ensure readability. No more than two characters are to be stacked, and plates do not have more than one set of stacked characters.

**Plate Type Indicator**

Plate type identifiers such as COMMERCIAL, APPORTIONED, TRAILER, DEALER, and so on are placed on the bottom of the plate between the bolt holes and do not interfere with the identification of the characters.

**Messaging**

When a name, phrase, motto, slogan, or other approved message is used, it is placed at the bottom of the license plate. The text is placed at least 0.25 inches below the license plate numbers.

**Special Characters**

When used, non-alphanumeric characters such as ampersands, hashtags, and so on found on a standard keyboard are considered part of the license plate number, entered into the vehicle registration database, and are to be accurately displayed on the license plate.
If symbols appear on the license plate that are not found on a standard keyboard, such as hearts or diamonds, they are not considered part of the license plate number sequence nor is any representation of the symbol entered into the vehicle registration database.

**Graphic Placement**

For license plates that contain a graphic, the graphic will either be on the right or left side of the license plate number. All graphics should be restricted to an area that will not interfere with meeting the size requirements of the license plate number. Graphics can stretch from the edge of the license plate to within 0.25 inches from the closest character of the license plate number and to the top and bottom of the plate.

**Spaces and Dashes**

If license plates include spaces or dashes, those spaces or dashes are not assigned a value. Dashes are treated the same as spaces (“ABC123,” “ABC 123,” and “ABC-123” are the same plate number).

**Background and Wallpaper**

When used, a background or wallpaper does not interfere with the ability to read the license plate number by the human eye and ALPR.

**Graphics**

Graphics on license plates do not distort or interfere with the readability of the characters or with any other identifying information on the plate.

If text is included within the graphic, a translucent ink or other technique is used to prevent it from being read by ALPR.
This section provides key specifications in the manufacturing process necessary to produce license plates in a consistent manner that optimizes the readability, security, appearance, and performance of the license plate. This includes flat and embossed plates.

**License Plate Dimensions and Bolt Holes**

License plate dimensions and bolt holes for passenger vehicles, trucks, and trailers comply with the Society of Automotive Engineers (SAE)–Motor Vehicle License Plates Standard J686 (revised July 2012).

**Printing Process**

The printing process for license plates allow for high contrast recognition for infrared (IR) and visible light illumination in daylight and nighttime conditions. The dye, ink, paint, or film used for the license plate number is opaque in both visible and IR spectrums, allowing for better and more accurate character capture.

**Retro-reflectivity**

License plates contain a retro-reflective surface, and the license plate number is readable in both daylight and nighttime from distances of at least 75 feet. This provides illumination without distortion when viewed under headlights.

License plates contain a retro-reflective surface consistent with International Organization for Standardization ISO 7591, clause 3.

**Security Features**

Security feature(s) are used. The specific security feature(s) chosen can be at the discretion of the issuing jurisdiction, but the chosen feature is difficult to duplicate, an integral part of the license plate, and does not interfere with license plate character legibility by the human eye and ALPR. Jurisdictions have at least one level 1* security feature.

*Note: Level 1 is a reference used to first-line inspection (examination without tools or aids that involves easily identifiable visual or tactile features for rapid inspection at the point of usage).
## Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Automated license plate reader (ALPR)</td>
<td>License plate recognition technology used by law enforcement, toll authorities, and so on. These devices use infrared illumination to capture license plate images and transform the image of the plate into alphanumeric characters to compare against license plate databases.</td>
</tr>
<tr>
<td>Background or wallpaper</td>
<td>A color, scene, or design element behind the license plate number.</td>
</tr>
<tr>
<td>Character</td>
<td>The single alphanumeric unit that, by itself or in combination with others, makes up the license plate number.</td>
</tr>
<tr>
<td>Graphic</td>
<td>A design element, such as a logo or other representation, that appears on a license plate.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>The issuing state, district, province, or territory.</td>
</tr>
<tr>
<td>License plate number</td>
<td>The official alphanumeric character or combination of characters as they appear on the vehicle registration that is assigned to a vehicle and is embossed or printed on a license plate.</td>
</tr>
<tr>
<td>Opaque or opacity</td>
<td>An ink, pigment, or film that prevents transmission of the light from license plate’s reflective material.</td>
</tr>
<tr>
<td>Printing process</td>
<td>The application of dye, ink, paint, or film applied to the plate or embossed characters on the plate.</td>
</tr>
<tr>
<td>Retro-reflective</td>
<td>A surface that reflects light back to its source with a minimum scattering of light.</td>
</tr>
<tr>
<td>Security features</td>
<td>Holographic designs, markings, and so on intended to identify authentic license plates and deter counterfeiting.</td>
</tr>
<tr>
<td>Vehicle registration database</td>
<td>An electronic repository of information identifying vehicles currently or previously registered in that jurisdiction.</td>
</tr>
</tbody>
</table>
Appendix B  AAMVA Improving ALPR Effectiveness through Uniform License Plate Design and Manufacture Best Practices Guide

(October 30, 2012)

The following link will navigate readers to the AAMVA Best Practices and Model Legislation website page, where the complete “Best Practices for Improving Automated License Plate Reader Effectiveness through Uniform License Plate Design and Manufacture Best Practices Guide” (October 30, 2012) can be found. Specifically, “Section 6” and “Appendix B” of this document contain additional recommendations to this standard for jurisdiction consideration.

www.aamva.org/best-practices-and-model-legislation
Appendix C  Working Group Roster

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