

# Specialty Plate Design Guide

Avery Dennison Reflective Products / Matan Spring3 Thermal Transfer Printer (JR Wald)

## DIGITAL LICENSE PLATE DESIGN SPECIFICATIONS

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This guide should be used as a reference for the design of digitally printed license plates. Digital printing process could be Thermal Transfer or Inkjet printing. Following the parameters set forth below will provide for an aesthetically pleasing and visually effective license plate design.

Digital printing is commonly used for the production of short-run specialty license plates where a unique logo or design element is incorporated to promote a group or school. This printing methodology is a cost effective way to generate low volume license plates and is appropriate for producing flat and embossed finished plates. It is also appropriate for long-run flat license plate production where the alphanumeric characters are printed on pre-printed graphic sheeting.

### Reflective Sheeting for License Plates

Digital license plates are printed on reflective sheeting that has reflective encapsulated glass beads embedded into the composition of the sheeting. The sheeting has an adhesive layer on the back and is applied to aluminum or other substrate much like a giant sticker. The surface coat of this sheeting is made up of a compound that is receptive to thermal transfer ribbon or other type inks. Once affixed to the substrate, the unprinted areas of the sheeting provide for the reflective nature of the license plate. Applying an inordinate amount of printed area to the sheeting may adversely affect the reflectivity and may be in violation of reflectivity standards for license plates. Please check with your appropriate jurisdiction for any applicable laws.

### Registration

John R Wald Company Inc. uses Matan Spring printers that are self-registering. Pre-printed tick marks are not required in order to register the images during the printing process. If a pre-printed tick mark is desired, the Spring printer has the capability of registering off of these marks.

### Coverage

The smooth surface of Avery Dennison L-3050 Reflective Sheeting for License Plates provides for an unmatched printed image. Most images are printed at 400x400 dpi resolution and 60 lpi for optimum coverage and printability, but some images can be printed at up to 90 lpi. Graduated halftones are especially better at the lower 50 lpi. The designer, in certain instances, may need to adjust the separation angles, the separation technique and/or dot shape to optimize printing of the design. Thin lines less than 1/32<sup>nd</sup> of an inch may break up or print unevenly.

### Colorants

The colorants used for digital license plate printing are resin ribbons manufactured to be UV fade resistant. These ribbons produce colors that are transparent in order to meet reflectivity standards. The digital license plate printing process is able to use the Pantone® color match system where the design software program has the ability to provide color separations into Cyan, Magenta, Yellow and Black (CMYK). In that the Pantone Color Match System is a guide for generating color, certain adjustments to the color may need to be made in order to more closely match the desired color. . Certain spot color ribbons are available to be used instead of the CMYK color mix, which may provide a richer or more robust color. John R Wald Company Inc. printers have the capabilities to use anywhere from 1 to 6 different ribbons per design.

### Halftones and Tints

The standard reproducible tint range is a 10-15% highlight dot and 85% shadow dot. These apply individually to each process-color plate (Cyan 15-85%, Magenta 10-85%, Yellow 10-85%, and Black 10-85%). Above 85%, tints will start going solid, completely so before 90%. As tints go below the minimum highlight dot they will start to drop out, completely so by the time a 5% overshoot is reached. This reproducible tint range of 10-15% to 85% is based on outputting artwork at 400x400 resolution with 60-line halftone screen. While it is not mandatory to make sure artwork is within this range, it is strongly encouraged that it is.

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## DESIGN PARAMETERS

Keep the following parameters in mind before starting any license plate design. Best practices dictate that: Graphics on license plates should not distort or interfere with the readability of the alphanumeric characters or with any other identifying information on the plate by either human eye or machine readable technology such as Automated License Plate Readers (ALPR). (AAMVA ALPR Best Practices Guide, July 2012)

### Size

The finished plate size for digital license plates is a nominal 12 W x 6 H inch in dimension. Designs for use in the United States, Canada and Mexico typically fit into an 11.44 W x 5.44 H inch rectangle with radius corners sized to match the debossed flange rim in the blanking press. This creates a nominal .25 inch white unprinted border around the circumference of the license plate. **This is not, however, necessary considering the printer can print full bleed to cover the entire plate width and height.** Bolt holes are .3125 inches in diameter and each are spaced (to bolt hole center) +/- 3.5 inches horizontal and +/- 2.375 inches vertical from the center of the plate. Check with the local regulatory agency for specific plate geometry and design requirements (i.e. size and location of the alphanumeric, sticker pockets, etc.). See Figure 1 for a graphic representation of these parameters.

### Fonts

Digital printing opens the opportunity to potentially choose a wide variety of standard fonts with varying sizes and characteristics. There are two applications for fonts within a license plate. The first is fonts used inside the graphic design itself. These fonts should not be so bold and should not stand out to the point where they can be misinterpreted by human or machine readers as part of the unique plate number itself. The second application of fonts is the alphanumeric plate number which is printed on the plate, in a flat plate situation, which identifies the registered driver/owner and vehicle. Extreme caution and control should be exercised relative to these fonts. With the increased deployment of ALPR systems, it is critical that plate message font size, boldness, spacing, and distinction between similar characters such as “B” and “8” be given serious consideration. ALPR systems read accuracy is dependent on standard font design, positioning on the plate and serial sequence rules. It is strongly suggested that strict business rules be applied to minimize the number of fonts, adopt ALPR friendly font design and standardize the size and positioning of characters on the plate. **It is recommended that all fonts which are part of the graphic be converted to outlines.**

### Graphic Placement and Legibility

Since size and spacing of the alphanumeric may vary, check with the local regulatory agency for exact specifications. Avoid heavy coverage of colorant in the alphanumeric areas. Heavy coverage in these areas reduces legibility for law enforcement and Automated License Plate Reader Systems (ALPR's). Design elements (text and logos) dark in color, should be spaced at least 1/4<sup>th</sup> of an inch away from the alphanumeric.

### Bitmap Files

Process-color bitmap files must be placed within a vector art template. Graphics and lettering may be created partially or entirely in Adobe Photoshop or other similar applications if desired, but such artwork needs to then be imported, positioned, and cropped on our template as it is intended to print. Do not embed bitmap files within the design. Placed bitmap files should be 300dpi or higher at actual output size. For non-photographic images that should have clean/hard edges, 600dpi is strongly recommended. Low-resolution images, such as those intended originally for use on websites at 72dpi, or other similar images is not recommended. Place bitmap images as linked files instead, and send them as separate companion files along with the .ai or eps. layout. All common placed bitmap files are sufficient – JPG, GIF, PNG, TIF, BMP, PSD, etc.

### Vector Files - PREFERRED

Vector artwork must be drawn cleanly enough to color-separate and trap properly. Vector paths must be executed professionally enough that they do not complicate color separation or trapping. This means properly closed paths, without stray points or other litter in the form of unnecessary or left-over non-printing paths, and so forth.

Try to keep critical vector art details to at least 1-point in thickness. This applies to both printed areas and to any small unprinted interstices between inked areas. Details slightly smaller will often print decently, say 0.75-point, but smaller than that usually risks dropouts in the case of inked areas, or else filling in of negative space. Industrial-resin printing cannot resolve details as fine as commercial offset printing. Keep this in mind when repurposing artwork originally designed for printing on paper or any artwork that is highly detailed. Do not use compression software of any kind for vector files.

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## Trapping

Because of the transparent properties of the thermal transfer ribbons, trapping between colors and halftones is not recommended.

## COMPUTER / SOFTWARE CAPABILITIES

We recommend Adobe Illustrator and Adobe Photoshop on PC computers and CorelDraw on PC computers. Other commonly available commercial design software may be acceptable.

## File Compatibility

John R Wald Company Inc. uses Adobe Photoshop, Adobe Illustrator, and CorelDraw on PC for all design work. All Adobe Illustrator, Adobe Photoshop, CorelDraw, and Adobe Acrobat files are accepted. Adobe Illustrator files should be saved or exported in either the .ai or .eps formats. Adobe Photoshop files should be saved or exported in the .psd format. CorelDraw files should be saved or exported in the .cdr format. Adobe Acrobat files should be saved or exported in the .pdf format. As was stated earlier, all embedded elements with Photoshop files should be linked and sent as a separate file.

Do not use compression software of any kind for vector files.

## ELECTRONIC DESIGN

The following guidelines are for customers sending electronic files.

All license plate designs are completed in vector form (Adobe Illustrator or CorelDraw), with placed photographs if any. John R Wald Company Inc. prefers that customers send original photographs and/or traditional illustrations for scanning and converting to spot color. John R Wald Company Inc. will accept Adobe PhotoShop files or tiff files of scanned or created material. Photoshop files must have the layers exposed and not flattened. Acceptable disk formats are listed below. Files can also be uploaded via FTP site. Please contact the John R Wald Company Inc. for instructions.

Customers sending in pictures for scanning should keep in mind that photographs and/or illustrations from previously printed materials such as books, magazines, and brochures will not scan well due to halftone dot patterns. Scanning such material may constitute a copyright violation for which the customer, not John R Wald Company Inc., will be held liable.

Please include a hardcopy or detailed layout for each design. This can be color, black and white laser prints, or drawn layouts. Include color call outs, identify the fonts used and specify halftone values. This avoids any confusion concerning the design and its elements.

## ELECTRONIC DISK FORMATS

Compact Disk (CD)  
Digital Video Disc (DVD)  
Flash Drive  
FTP Upload

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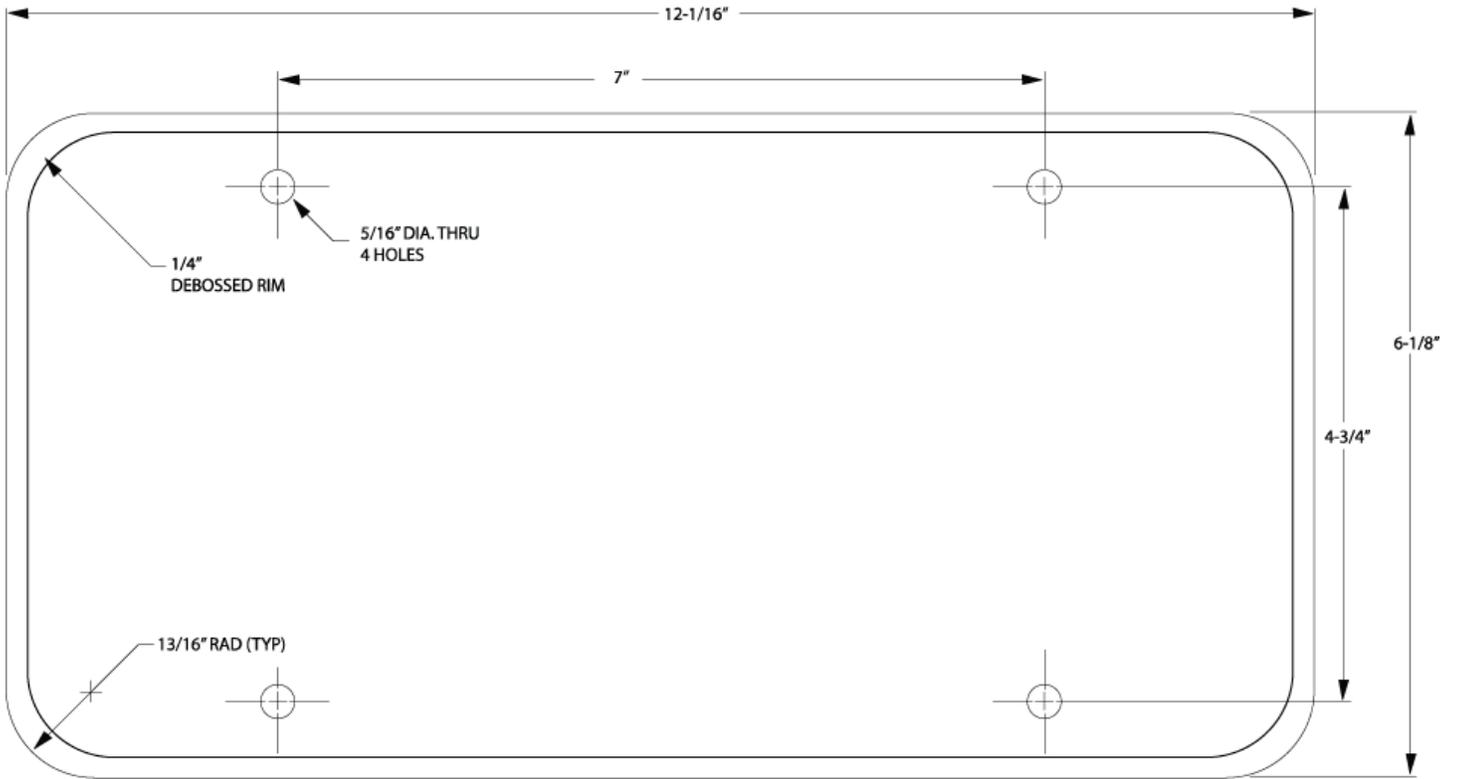


Figure 1 – Digital License Plate layout