



Solicitation Information

RFI # 7465369

TITLE: Digital License Plate Production System

Submission Deadline: 6/21/13 at 2:00 p.m.

Questions concerning this solicitation must be received by the Division of Purchases at questions2@purchasing.ri.gov no later than 5/24/13 at 4:00 p.m. Questions should be submitted in a *Microsoft Word attachment*. Please reference RFI # 7465369 on all correspondence. Answers to all questions received, if any, will be posted on the Internet as an addendum to this solicitation. It is the responsibility of all interested parties to download this information.

SURETY REQUIRED: No

BOND REQUIRED: No

Offerors must register on-line at the State Purchasing Website at www.purchasing.ri.gov

THIS PAGE IS NOT A BIDDER CERTIFICATION FORM

The Rhode Island Department of Administration/Division of Purchases, on behalf of the Rhode Island Department of Revenue is soliciting responses from qualified entities to explore the implementation of a new digital license plate production system.

This is a Request for Information (RFI). No award will be made as a result of this solicitation. The Department of Revenue will review all information obtained pursuant to the RFI and determine whether to issue a Request for Proposals.

INSTRUCTIONS AND NOTIFICATIONS TO OFFERORS:

- Potential respondents are advised to review all sections of this Request carefully, and to follow instructions completely, as failure to make a complete submission as described elsewhere herein may result in rejection of the proposal.
- Alternative approaches and/or methodologies to accomplish the desired or intended results of this request are solicited. However, responses which depart from or materially alter the terms, requirements, or scope of work defined by this Request will be rejected as being non-responsive.
- All costs associated with developing or submitting a proposal in response to this Request, or to provide oral or written clarification of its content, shall be borne by the offeror. The State assumes no responsibility for these costs.
- Responses misdirected to other State locations or which are otherwise not present in the Division of Purchases at the time of opening for any cause will be determined to be late and may not be considered. The “Official” time clock is in the reception area of the Division of Purchases.

Respondents are advised that all materials submitted to the State of Rhode Island for consideration in response to this RFI will be considered to be public records, as defined in Title 38 Chapter 2 of the Rhode Island General Laws, without exception, and will be released for inspection immediately upon request, once an award has been made.

- The State of Rhode Island has a goal of ten per cent (10%) participation by MBE's in all State procurements. For further information, visit the web site www.mbe.ri.gov. To speak with an M.B.E. Officer, call (401) 574-8253.
- Interested parties are instructed to peruse the Division of Purchases web site on a regular basis, as additional information relating to this solicitation may be released in the form of an addendum to this RFI.

- **Equal Employment Opportunity (RIGL 28-5.1)**
§ 28-5.1-1 Declaration of policy. – (a) Equal opportunity and affirmative action toward its achievement is the policy of all units of Rhode Island state government, including all public and quasi-public agencies, commissions, boards and authorities, and in the classified, unclassified, and non-classified services of state employment. This policy applies in all areas where the state dollar is spent, in employment, public service, grants and financial assistance, and in state licensing and regulation. For further information, contact the Rhode Island Equal Employment Opportunity Office, at 222-3090.

NOTE TO OFFERERS:

Offers received without the entire completed four page RIVIP Generated Bidder Certification Form attached may result in disqualification. Registration is quick and easy and is available at :

<http://www.purchasing.ri.gov/RIVIP/VendorRegistration.aspx>

Instructions are available at:

<http://www.purchasing.ri.gov/vendors/vendorinfo/quickStart.aspx>

If you have any questions, or need assistance in registering or downloading a request, you may call the Purchasing Help Desk at (401) 574-8100.

Request for Information

This RFI outlines the type of information being solicited from potential vendors and includes guidelines for content and format of responses.

Questions, in **Microsoft Word Format**, concerning this solicitation, may be E-Mailed to the Division of Purchases to questions2@purchasing.ri.gov no later than the Date and Time indicated on page one (1) of this solicitation. Please reference the **RFQ #7465369** on all correspondence.

Respondents desiring to reply to this RFI must do so, in writing, providing one (1) original and ten (10) complete copies by the date & time indicated on page one of this solicitation. Submit responses to this RFI, marked “RFI #7465369 Digital License Plate Production System (Revenue)” to:

RI Department of Administration
Division of Purchases, 2nd Floor
One Capitol Hill
Providence, RI 02908-5855

Note:

Responses received after the above-referenced due date and time will not be considered. Responses misdirected to other State locations or which otherwise are not presented in the Division of Purchases by the scheduled due date and time will be determined to be late and will not be considered. Responses faxed or emailed, to the Division of Purchases will not be considered. The “official” time clock for this solicitation is located in the Reception Area of the Department of Administration/Division of Purchases, One Capitol Hill, Providence, RI.

Purpose of this Request for Information

The Division of Motor Vehicles (DMV) is a division of the Department of Revenue (DOR).

The objective of this RFI is to solicit information regarding available options for design, printing, assembly, support and distribution of license plates in accordance with the requirements outlined in the RFI and Appendix A to the RFI.

The DMV believes that improvements in fraud reduction and customer service will result from the application of new technology involving digital printing and from improved business processes related to the production of license plates. The DMV believes cost savings are likely to be realized in the following areas:

- Electronic flow improvement (automating the manual ordering process)
- Automatic alpha-numerical series development
- Inventory and Supply Chain Management
- Labor efficiencies

To that end, it is the DMV’s intent to review responses to this RFI with all stakeholders in order to determine the most efficient and affordable system that provides for the manufacture of motor vehicle plates for the State of Rhode Island. The State is seeking to learn what options are available for digital plate production and to determine whether implementing a digital license plate production system will result in cost savings and increased efficiencies. The State is also seeking to determine the execution options for the new system, including but not limited to 1) production location options, 2) options for acquisition of the equipment(purchase or lease), and 3) ongoing costs associated with the proposed system(i.e., plate materials, software license fees, hazardous waste disposal fees).

Rhode Island License Plate Issuance - Background

Rhode Island residents are required to properly register their motor vehicles with the Division of Motor Vehicles (DMV). A registration is evidence of having paid the registration tax and fees. For motor vehicles, the registration consists of a metal license plate which is placed on the motor vehicle and a registration certificate

A license plate is issued upon initial registration of a vehicle. Pursuant to R.I.G.L. § 31-3-33, a general plate reissuance is required every ten years. Registrants will receive a new registration certificate (with validation stickers) upon receipt of the renewal application and payment of renewal fees.

Rhode Island currently uses a metal license plate with the alpha numeric system, meaning there are combinations of letters and numbers used for identification. The current general issue license plate has a six (6) character configuration. Depending on the plate type, some registrations utilize only numbers.

Because of the requirements to maintain large inventory supplies to produce embossed plates with varying backgrounds and graphics, the DMV is looking to the availability of new technology and production methods to more quickly and easily accommodate the many new plate types that are authorized by the Legislature and ordered by the public. The DMV also seeks to explore new methods of producing license plates that will increase the readability of the plates to assist law enforcement.

Current License Plate Production Process

The Department of Revenue has a contract with RI Correctional Industries to manufacture and distribute license plates. The DMV has forty (40) different types of plates (passenger, commercial, combination, etc.). Last year, one hundred fifty-one thousand four hundred fifty-nine (151,459) license plates were produced.

The current general issue license plate includes “Rhode Island” and the state slogan, “Ocean State”. The license plates currently produced are embossed metal. License plates are issued by the Department of Revenue. When additional license plate inventory is needed, the Department sends an order request to Correctional Industries. After manufacturing the numbered license plates, Correctional Industries delivers the order to the Plate Department of the Division of Motor Vehicles. There are currently two (2) major points of inventory control. The first is at Correctional Industries, after a license plate is manufactured. The second is when the Plate Department receives the license plates, and checks the plates for accuracy and compares the delivery to the purchase order. The Plate Department maintains its own inventory count of all types of plates using manual inventory logs. A customer receives a pair of license plates and/or a registration certificate over-the-counter. Over-the-counter issuance is provided by all DMV branches, AAA locations and participating auto dealerships. To allow for over the

counter issuance, offices must be stocked with an adequate supply of license plates. New license plates are generally provided for new registrations and for persons choosing to pay for a new replacement plate. Original and renewed license plates are always accompanied by a registration certificate and annual validation sticker.

Digital License Plates Production System Sought by Rhode Island

A digital license plate production system must be proposed that will improve the DMV's overall process for the manufacturing and distribution of license plates. The Prospective Production Contractor, (hereinafter referred to as "vendor" only) will be responsible for the installation of the system used to assemble the DMV's license plates. These plates must meet or exceed specifications for reflectivity, readability, durability and performance listed in Appendix A of this RFI and as referenced throughout the RFI. To the extent that the specifications in Appendix A are not considered to be the most cost-effective solution, the State requests that the offeror provide alternative solutions and explain why the resulting modifications would not compromise the reflectivity, readability, durability or performance of the plates as specified in the Appendix.

The vendor must provide a plan for producing license plates, and must also provide physical samples of the license plates, including twenty printed with standard numbering typefaces, as well as twenty with any alternative typefaces proposed, in the response to this RFI.

- **System Installation and Configuration**

Describe options for system installation, configuration, testing and start up at various locations (i.e. at Correctional Industries in Cranston RI, or a location determined by the vendor). Describe the equipment and software which could be employed and the product which results. Describe system and software compatibilities.

Procurement Options

Describe the options the State could consider to finance the system.

Implementation Timeline

Describe the timeline required for installation, training and implementation.

Technical and Maintenance Support

Describe the options for technical support, software license fees, and maintenance agreements.

Training

Describe the on-site training program which would be required for successful implementation.

- **Consumables/Supplies**

Describe options for provision of all consumables and supplies necessary to print and assemble a finished license plate that meets current State standards for reflectivity, durability, readability and performance as described in this RFI. Describe compatibility of the vendor's production system with materials available from other vendors as a result of a periodic competitive bid process.

- **Disposal of Hazardous Material**

Describe options for proper disposal of any hazardous waste material resulting from the plate production process, in compliance with any applicable Federal and or State rules and regulations. Please provide cost estimates related to hazardous waste handling and disposal.

- **Quality Assurance Inspections and Sampling**

Describe the quality control features which should be present in a new system. In the event that plates are found to be defective, describe how the system and business processes proposed by the vendor would allow the DMV to trace defective plate (i.e. software, equipment, raw materials).

- **Graphic Design**

Periodically, the Legislature approves new license plate types for issuance, or approves modifications to existing license plates. Describe the vendor's role, if any, in the graphic design process.

Inventory, Distribution and Order Management Capabilities

Describe how the vendor's proposed system could interface with DMV's existing vehicle registration system through a secure web services interface. Describe the process for accepting electronic orders from the Department and effectively manage these orders through shipping. Describe capabilities to process and track orders as well as print production reports, management summary reports, packing lists, and box labels. Describe inventory features that would allow plates to be stocked at minimum levels.

Please describe in detail an inventory management solution depending upon production location, which at a minimum should include the following:

1. Ability to track inventory orders (orders must not include excluded plate numbers or plate numbers that already exist in the DMV system).
2. Ability to allow DMV personnel to track and place inventory orders.
3. Ability to receive inventory orders from DMV.
4. Inventory order inquiry functionality
5. Ability to create Purchase Orders
6. Invoice/Billing Inquiry Functionality
7. DMV Order Approval
8. Maintaining Excluded Plates
9. Ability to maintain branch location inventory
10. Ability to mark inventory Obsolete/Missing/Defaced
11. Ability to handle Returned Plates
12. Ability to audit and track the transfer, receipt, and acceptance of inventory by individual and location.

Distribution

Describe options for distribution of plates. Please also comment on options for a mass plate reissuance, graphic design options, and possibilities surrounding direct mailing of plates. Discuss your knowledge of successful plate reissuances in other jurisdictions and timeframes.

Management Reporting

Describe the reporting capability for standard reports as well as ad hoc reports identifying production stats as well as inventory stats that can be accessed by the DMV via an online web portal, or by integration into the DMV registration system.

Describe the ability of the proposed system to group or filter results by those shipped to DMV offices, authorized dealers or AAA branches, including but not limited to:

- a. Inventory Quantity – Shows the inventory currently at a location.
- b. Removed Inventory – Shows the inventory items that have been removed from inventory management system due to damage, issuance to motorists at a branch or mailed to motorists.
- c. Shipped Inventory – Shows the inventory items that have been shipped from the inventory management system.
- d. Plates Shipped by Month – Shows the total number of plates shipped within a given month, summarized by order number, plate type and destination.
- e. Plates Shipped Year to Date – Indicates the number of plates shipped per month for a given fiscal year, summarized by plate type.
- f. Order Status Summary – Shows the number of plates with the following statuses: Order Received, Assembled; In Transit; Received and Issued.
- g. Shipping Summary – This report must provide DOR with the flexibility to select a date range and the ability to sort the data to gain a comprehensive list of what has been shipped from the system.

1. Please provide a list of the standard reports currently provided to client agencies, including examples, as an attachment to your RFI response. Please note which, if any, are available online. Please include the production time to provide new periodic reports.
2. Please detail your company’s customized and ad hoc reporting capabilities including turnaround times for new requests for information.
3. Does your company provide an online application that enables the DMV to monitor order and delivery activity? If so, please provide a list of all functions of online capabilities, including reporting.

RFI Response

The following outline (and suggested page counts) is intended to concentrate the effort of the respondent and structure the response for ease of analysis. Be sure to incorporate the above expectations for the consolidated system in your response.

Section 1. Organization/ Partnership Profile and Capacity and Past Experience (4 pages)

Provide a brief description of the organization. Please describe any past experience with other governmental agencies and include those as references. Describe experience with digital license plate production systems.

Section 2. Description of Proposal (8-10 pages)

Describe your proposed approach by addressing the specific items under the header “Digital License Plates Production System Sought by Rhode Island” , recognizing all specifications included in Appendix A below. Exceptions and alternatives to any or all of these elements should also be described here. A broader description of the proposal and how it includes these elements plus your recommended approach is also appropriate in this section.

Section 3. Feasibility Assessment (4-5 pages)

Assess the feasibility of your proposed approach. Note the primary obstacles, including any potential legal impediments. Recommend any solutions for resolving those obstacles.

Section 4. Cost Estimates (no page limits)

Vendors may also wish to propose quantitative and/or qualitative measurements to be used as deliverables in a proposed RFP contract.

Finally, vendors should indicate whether performance incentives and penalties should be considered in any proposed RFP.

Section 5. Additional Material (20 page maximum)

As required

Response Date

Submit one (1) original and ten (10) complete copies of responses by the date and time stated on page one of this RFI. Submissions should be single spaced on 8 ½” by 11” pages with 1” margins using Times Roman 12 font.

Disclaimer

This Request for Information is solely for information and planning purposes and does not constitute a Request for Proposal. All information received in response to the RFI and marked as “Proprietary” will be handled accordingly. Responses to the RFI cannot be accepted by the Government to form a binding contract. Responses to the RFI will not be returned. Respondents are solely responsible for all expenses associated with replying to this RFI.

END OF SOLICITATION

Continue to Appendix A, Specifications

Appendix A

SPECIFICATIONS FOR LICENSE PLATE SHEETING, THERMAL TRANSFER RIBBONS AND PROTECTIVE CLEAR FILM FOR DIGITAL LICENSE PLATE PRODUCTION

This specification shall cover the materials, performance characteristics, quality, and testing of retro-reflective sheeting and support services necessary to produce digitally printed license plates. The following specification is intended to establish minimum standards for sheeting reflectivity and performance. The state reserves the right to waive particular individual specifications during the evaluation of sheeting products to determine if any proposed substitute is equivalent. Proposed substitutes must be equivalent in the areas of retro-reflectivity, security features, and durability.

Description of Plates

The retro-reflective license plate shall consist of retro-reflective (hereinafter referred to as “reflective” only) sheeting that is digitally printed with thermal transfer ribbons and then laminated to a specified aluminum substrate according to the sheeting manufacturer’s recommendations.

The reflective sheeting shall consist of lens elements enclosed within a transparent resin and shall have a pre-coated pressure sensitive adhesive backing protected by a removable liner.

The reflective sheeting, when applied to the license plate substrate and blanked to finished size, shall contain:

- Identifying marks for purposes of on-vehicle traceability, warranty enforcement and anti-counterfeiting in accordance with these specifications. The warranty marks shall be buried below the sheeting surface for durability and shall incorporate the manufacturer’s production run number that designates the source of manufacture, year of manufacture, and specific lot from which the material was supplied. The warranty marks shall not interfere or detract from the graphic design or reduce sheeting brightness and shall be durable for the service life of the license plate.
- Three-Dimensional Security Mark
- The retro-reflective sheeting shall also have a three-dimensional security mark that runs vertically or horizontally through standard vehicle registration plates for

purposes of security and anti-counterfeiting in accordance with these specifications. The three-dimensional security mark shall be buried beneath the surface of the sheeting and shall consist of two sinusoidal waves where one wave appears to float above and one wave appears to float below the warranty marks of the retroreflective sheeting. The three-dimensional security mark shall be durable for the service life of the license plate. The three-dimensional security mark shall be verifiable under both daylight and retroreflected light, shall not interfere or conflict with the plate legibility, and shall not reduce sheeting brightness below minimum specified brightness levels when measured in accordance with ASTM E 808 and ASTM E 809.

- The three-dimensional security mark shall be visible in the unprinted areas of the plate from within a standard police vehicle under high beam headlight illumination, as well as outside of the vehicle, on a license plate properly affixed to the vehicle's designated mounting area, from an approximate distance of 0 to 40 feet (0 to 12 meters) at a head-on viewing angle. The two sinusoidal wave images shall be visibly distinct from an approximate distance of 0 to 20 feet (0 to 6 meters). The three-dimensional security mark shall not be visible when viewed at an angle greater than 45 degrees from the head-on viewing position.

Pre-printed reflective sheeting shall conform to the design, colors and sheeting type as approved by the state and reflective sheeting manufacturer.

PERFORMANCE STANDARDS FOR REFLECTIVE SHEETING FOR DIGITAL LICENSE PLATE PRODUCTION

- Substrate

The sheeting shall be laminated to aluminum substrate recommended by the sheeting manufacturer.

- Diffuse Daytime Color

Through instrumental color testing, the diffuse daytime color of the reflective sheeting shall conform to color requirements as determined spectrophotometrically in accordance with ASTM E-1164 and E-1349, utilizing either 45/0 or 0/45 degree illumination/viewing conditions as described in E-1164 and E-1349 for retroreflective materials. Chromaticity and the Luminance Factor based on CIE tristimulus values for the 2° observer and illuminant D65 shall be calculated in accordance with ASTM E-308.

The color specification limits for white license plate sheeting are listed on the following chart.

COLOR SPECIFICATION
Chromaticity Coordinates

Pairs	White Corner Points		Luminance Factor
	x	y	Y%
1	.303	.287	42 min.
2	.368	.353	
3	.340	.380	
4	.274	.316	

- Adhesive and Protective Liner:

1. The pre-coated adhesive shall form a durable bond to flat conversion coated license plate surfaces as recommended by the reflective sheeting manufacturer.
2. The protective liner attached to the adhesive shall be removable by peeling without soaking in water or other solvents and shall be easily removed after accelerated conditioning for four hours at 150°F (66°C) under weight of 2.5 lbs. per square inch (1.14KG per 6.45 sq. cm). The liner shall be non-printed to permit reuse.

- Thermal Transfer Printing

1. The reflective sheeting shall be printable with thermal transfer ribbons supplied by the sheeting manufacturer.
2. The sheeting manufacturer shall provide a complete line of thermal transfer ribbons, in process and spot colors, that allow the license plate shop to print the graphic designs and variable information required by the state.

- Protective Clear Overlaminates

The sheeting manufacturer shall provide a protective clear film that will be laminated to the sheeting in-line with the thermal transfer printing process. Printed sheeting with the protective clear film shall pass all performance tests.

- Inventory Control

To assist the license plate shop with inventory control problems, the sheeting manufacturer shall mark the sheeting with an integral, directional

image that incorporates the lot number so that the tag shop can employ first in - first out principles.

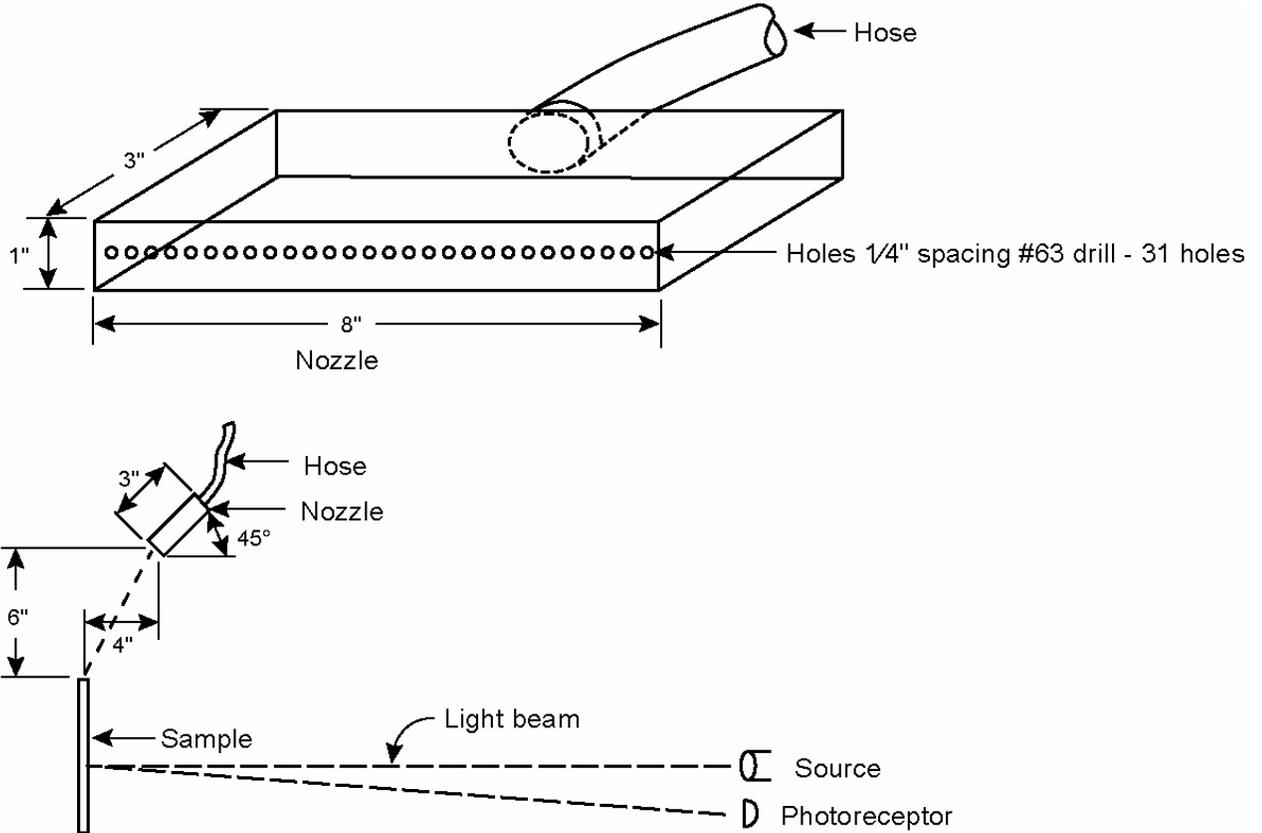
FINISHED LICENSE PLATES

- Retro-reflective Characteristics
 1. The coefficient of retro-reflection for the sheeting shall be measured on flat, clean, finished license plate test panels prepared per Section III and shall have the following minimum values at 0.2° observation angle, expressed as candelas per lux per square meter of material. Measurements shall be conducted in accordance with ASTM E-810, “Standard Test Method for Coefficient of Retro-reflection of Retro-reflective Sheeting”. Measurements on reflective sheeting with a preprinted graphic design shall be taken in an unprinted sheeting area.

Color	Entrance Angle	
	-4°	40°
White	50	16

- Resistance to Accelerated Weathering.
 1. The sheeting shall be weather resistant and show no appreciable discoloration, crazing, cracking, blistering, lifting or dimensional change and the surface shall continue to be essentially smooth to provide direct application of validation stickers, determined after the following accelerated weathering tests.
 2. Laboratory testing – 2,000 hours in Xenon arc weatherometer using ASTM G 155 -Type BH, Method A. Samples shall maintain 70% of retro-reflective table values.
 3. Outdoor accelerated testing – Samples shall be placed in a 24 month unprotected outdoor exposure, facing the equator and positioned vertically. Retro-reflective measurements, taken after cleaning, shall result in 70% or more retention of the table values.
- Rainfall Performance

1. The Coefficient of Retro-reflection of the same finished license plate test panels, measured on the same flat area of the test panels, totally wet by rain, shall not be less than 90 percent of the values specified above. The photometric performance during rainfall shall be determined as follows:
2. Test set-up for rainfall performance:



Place source and photoreceptor in horizontal plane

3. Place the test panel in an upright position 6 inches (15.2 cm) below and 4 inches (10.1 cm) in front of the nozzle as shown below:
4. Apply sufficient water pressure so that the upper surface of the spray envelope strikes the top of the panel.
5. With water falling on the panel, measure the coefficient of retroreflection. Wet performance measurements shall be conducted at 0.2° observation and -4° entrance angles in accordance with ASTM E-810.

- Daytime/Nighttime Color

To assist in positive daytime/nighttime identification of license plates, the color of the reflective background of the sheetings, including any pre-

printed design or digitally printed design, shall be similar in daylight and by illumination at night.

- Flexibility – Embossing
 1. The sheeting shall, when correctly applied to treated aluminum, conform to the minimum/maximum tolerances for an embossed rim or flange as used by the manufacturing facility that supplies finished plates to the state and as recommended by the sheeting manufacturer.
 2. Finished license plates shall show no appreciable wrinkling, cracking, or squirming at or around the embossed rim or flange.

- Cleanability.
 1. Finished license plates, manufactured in accordance with the recommendations of the reflective sheeting manufacturer, shall be easily cleansed of normal dirt accumulation by washing with water and mild detergent. A test panel shall be sprayed with water-suspended soils collected from the underside of vehicle fenders, mixed with water in the proportion of five pounds (2.27 kg) of soil to one gallon (3.78 liters) of water, and poured through a paint strainer.
 - a. The mixture shall then be sprayed onto the panel while particles are in suspension. After the panel is thoroughly dry, it shall be cleaned by washing with a mixture of water and mild detergent, rinsed with clean water and wiped dry for examination. The panel shall show no appreciable difference when compared to a new clean panel.

- Solvent Resistance
 1. License plate panels prepared per III.A shall be sufficiently solvent resistant to withstand exposure to mineral spirits and turpentine in accordance with the test method described in this section without wrinkling, puckering or edge lifting.
 2. Test panels shall be 1 inch x 6 inch strips cut from license plate blanks. Strips of the license plate shall be exposed as follows: mineral spirits and turpentine - submerged in a container with 4 inches of solvent for 10 minutes.
 3. Samples shall be allowed to dry and be examined for any wrinkling, puckering, blistering, or edge lifting. Failure of samples shall be cause for rejections.

TEST PANELS AND QUALITY CONFORMANCE

- Test Panels

Finished license plate test panels 6" x 12" (15.2cm x 30.5cm) must be provided for testing and evaluation within ten (10) calendar days of request? if required by the state, and shall be produced of the same materials, on the same equipment and by the same general processes of substrate preparation as the production plates, in accordance with the sheeting manufacturer's recommendations. Test panels shall be provided with and without thermal transfer printed graphics and variable information as required by the state.

- Quality Conformance

Failure of the reflective sheeting to meet any requirement specified herein shall be cause for refusal to accept materials until evidence has been provided by the manufacturer that corrective action has been taken to eliminate deficiencies.

PERFORMANCE LIFE & WARRANTIES

- Performance Life

1. Reflective sheeting applied and processed into finished license plates according to the sheeting manufacturer's instruction shall be considered to perform effectively for the service life specified (excluding those plates showing mechanical damage) if:
 - a. The plates show no fading, cracking, blistering or peeling which will significantly impair the intended visibility or legibility of the plate, and if
 - b. The clean rear plate retains at least 9 candlepower per foot-candle per plate (.84 candelas per lux per plate) for the length of the intended issue being bid. (up to a period of 5 years). Measurements shall be taken in clean, white, unprinted areas of rear plates.
2. Measurements shall be conducted at 0.2° observation angle and -4° entrance angle. Coefficient of Luminous Intensity shall be measured using the test method outlined in ASTM E-810 except that the coefficient of luminous intensity shall be determined in accordance with ASTM E-808-01 Para. 3.2.2 and ASTM E-809-02 Para. 12.3. Note: Reflective license plates with a digitally printed graphic design may not meet this

requirement, as large graphic printed areas may affect the reflectivity levels of the finished license plates.

- Warranty Provisions

1. The sheeting shall be imaged with a directional, integral warranty mark, so as to be traceable to the specific manufacturer's production run numbers from which the material originated. If at any time during the specified performance life of the reflective material provided, a one half of one percent sample of clean, rear plates produced from a given production run (identified by the integral warranty mark) reveals that 10 percent or more of that sample are found to be defective in visual or brightness performance requirements as defined herein, the vendor shall be responsible for replacement of all plates manufactured from that specific lot of material.
2. The sheeting manufacturer shall be responsible for all replacement costs associated with a specific lot; a maximum liability assessment of \$5.00 per plate will be invoked for failed plates associated with a specific lot. Reimbursement of the State shall be in dollars and/or materials equal to the assessed damage, at the State's discretion.
3. To assure effective identification, the warranty marks shall be approximately 1.125 inches in diameter on standard 6" x 12" plates and shall be of a design mutually agreed upon by the State and the sheeting manufacturer. The manufacturer may vary the number, design and placement of the marks for motorcycle or smaller license plate sizes.
4. The warranty marks shall be verifiable on a license plate once properly affixed to the vehicle's designated mounting area, from an approximate head-on distance of six (6) feet; warranty marks shall not be observable at 2 feet or 20 feet or when the viewer steps to one side from the head-on viewing position so as not to compete or conflict with vital plate information.
5. The warranty marks shall be verifiable under both ambient light and retro-reflected light at night, shall not interfere or conflict with the plate design or aesthetics, and shall not alter sheeting colors or reduce sheeting brightness below specified levels.

- Three-Dimensional Security Mark

1. The retro-reflective sheeting shall also have a three-dimensional security mark that runs vertically or horizontally through standard vehicle registration plates for purposes of security and anti-counterfeiting in

accordance with these specifications. The three-dimensional security mark shall be buried beneath the surface of the sheeting and shall consist of two sinusoidal waves where one wave appears to float above and one wave appears to float below the warranty marks of the retro-reflective sheeting. The three-dimensional security mark shall be durable for the service life of the license plate. The three-dimensional security mark shall be verifiable under both daylight and retro-reflected light, shall not interfere or conflict with the plate legibility, and shall not reduce sheeting brightness below minimum specified brightness levels when measured in accordance with ASTM E 808 and ASTM E 809.

2. The three-dimensional security mark shall be visible in the unprinted areas of the plate from within a standard police vehicle under high beam headlight illumination, as well as outside of the vehicle, on a license plate properly affixed to the vehicle's designated mounting area, from an approximate distance of 0 to 40 feet (0 to 12 meters) at a head-on viewing angle. The two sinusoidal wave images shall be visibly distinct from an approximate distance of 0 to 20 feet (0 to 6 meters). The three-dimensional security mark shall not be visible when viewed at an angle greater than 45 degrees from the head-on viewing position.

PACKAGING AND SHIPPING

To ensure easy access and proper inventory control, the reflective sheeting shall be shipped in bulk packages. To prevent roll damage, each pallet of bulk packages shall be designed to prevent double stacking by the shipper. Production run sequence numbers shall be affixed to the outside of each shipping package that corresponds to the materials contained therein. Each roll shall be additionally designated by a core identifier stamped or affixed with a permanent label to the inside of each roll core. A shipping or packaging list shall be affixed to one box on a pallet identifying all production runs contained within the shipment.

PROCESSING

The reflective sheeting processing shall be in accordance with the recommendations of the manufacturer. All processing procedures for reflective material, thermal transfer ribbons and clear protective laminate must be compatible, or made compatible at the vendor's expense, with equipment.

END OF DOCUMENT