REV 2-10

# REQUEST FOR QUOTATION

MARYLAND TRANSIT ADMINISTRATION
PURCHASING DEPARTMENT
1331 S. MONROE STREET
BALTIMORE, MARYLAND 21230-1713

Pur001

QUOTATION REQUEST NUMBER
102511-PZ

| AGENCY CODE | BUYER | TELEPHONE | REQUEST DATE | THIS QUOTATION MUST BE RETURNED BY 2:00 P.M. ON DATE AT RIGHT TO THE ABOVE ADDRESS | DUE DATE OF QUOTATION |
|---|---|---|---|---|---|
| 29-08-01-02 | PATRICIA TALLEY | 410-454-7884 | 10/03/11 | | 10/25/11 |

INSTRUCTIONS:

1. QUOTATION TO INCLUDE DELIVERY OF FOLLOWING ITEMS F.O.B. DESTINATION, INCLUSIVE OF ALL CHARGES, I.E. PLATFORM OR DOORWAY TO SHIP TO ADDRESS INDICATED:
   ☐ 1331 S. MONROE ST., BALTIMORE, MD. 21230 ☐ 5801 WABASH AVE., BALTIMORE, MD 21215 ☐ 344 W. NORTH AVE., BALTIMORE, MD 21217
   ☐ OTHER _____
2. STATE FIRM DELIVERY AFTER RECEIPT OF ORDER _____ WEEKS. FAILURE TO INSERT DELIVERY INFORMATION MAY RESULT IN DISQUALIFICATION OF YOUR QUOTATION
3. QUOTATIONS MUST BE SUBMITTED ON THIS FORM. EQUIVALENT ITEMS SHALL BE CONSIDERED BUT ONLY IF ACCOMPANIED BY SPECIFICATIONS AND/OR DESCRIPTIVE LITERATURE.
4. VENDOR MUST COMPLETE AND SIGN, IN INK, THE QUOTATION ON THE REVERSE SIDE.
5. PRICES QUOTED SHALL BE VALID FOR A MINIMUM OF NINETY DAYS UNLESS OTHERWISE NOTED _____
6. THE VENDOR SHALL COMPLY WITH ALL FEDERAL AND STATE REGULATIONS AND THE PURCHASING DEPARTMENT GENERAL RULES AND REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION.

| DESCRIPTION | QUANTITY | UNIT | QUOTE NET UNIT PRICE |
|---|---|---|---|
| NOT A PURCHASE ORDER | | | |

TWO YEAR CONTRACT WITH THREE-1 YEAR OPTIONS TO RENEW

To provide magnetic roll stock for metro& light rail
Vending machines per attached specifications

**NOTE 1:** only current approved vendors need respond
1. Cubic Transportation System
2. Magnetic Data USA

**NOTE 2:** any equal type or model submitted should be accompanied By specifications & must be approved by Quality Assurance For the next bid.

*Award will be made by blanket purchase order for a 12 month period.*
*Quantity is estimated annual usage and may be adjusted without penalty.*
*Releases will be made as required and confirmed in writing.*
*Prices will be made firm for a minimum of 12 months.*
*Deliveries not made within quoted lead time will be cause for purchase order cancellation at the discretion of the MTA.*

SMALL BUSINESS PREFERENCE 5%
Award will be made in whole or in part whichever is most advantageous to the Maryland Transit Administration and the State of Maryland.

MINORITY BUSINESSES ARE ENCOURAGED TO PARTICIPATE.

# MTA - Maryland

# Technical Specifications for Roll Stock Paper Tickets

Rev. 2.1

June 20, 2011

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# Introduction

## 1.1 Scope

This document defines the specifications for the ticket stock quality, dimensions and durability along with the magnetic stripe properties and durability required for tickets to be used with the MTA fare collection equipment. This specification documents the requirements and is to be used in conjunction with other appropriate documents that may be referenced and defined by the solicitation documents.

These technical specifications include:

- Ticket Physical Characteristics (Section 2)
- Printing (Section 3)
- Magnetic Stripe Characteristics (Section 4)
- Ticket Handling (Section 5)

## 1.2 Glossary

The following is a glossary of terms used in this document:

| | |
|---|---|
| Bit | A binary digit, having the value of either 0 or 1 |
| Bit cell | The distance between flux reversals on a magnetic stripe required for the recording of a binary digit, i.e. a bit; numerically equal to the reciprocal of the encoding density |
| BPI | Bits per inch, the encoding density of a magnetic stripe |
| Cgs | A system of units in which the centimeter-gram-second are the units for the fundamental quantities length-mass-time |
| Coercive Force | The demagnetizing force required to reduce the induction to zero. Usually refers to the maximum demagnetizing force required to erase a magnetic stripe i.e. that for a fully saturated material |
| Coercivity (Hc) | The property of a magnetic material which resists demagnetization, measured by the maximum value of its coercive force; the cgs unit is oersted. |
| Coercivity – Low | 300 – 900 Oersteds |
| Coercivity – High | 2500 – 4000 Oersteds |
| Curl | The deviation of a card from flat. Can be defined as three types; lengthwise curl, widthwise curl, and diagonal curl. |
| Degaussing | The process of demagnetizing a magnetic material such that its remnant magnetism is zero |
| Demagnetizing Force | A magnetic field opposite in polarity to that of a previously magnetized material in such a way that it reduces the remnant induction |
| Density | The number of bit cells encoded per unit length along the magnetic stripe, usually expressed as bits-per-inch, or BPI |
| Encoding | The process of creating flux reversals at specific locations along the length of a magnetic stripe such that the flux reversal pattern represents specific data |
| Ferromagnetic Material | Any material that has permeability substantially greater than 1 and that exhibits magnetic hysteresis properties. Strongly attracted by a magnetic field. |
| Flux Reversal | A location (interface) on the magnetic stripe where the magnetic particles on the two sides of the interface have like poles facing each other, i.e. a South-South or a North-North interface, resulting in a concentration of magnetic flux at the interface. |
| Gauss | The cgs unit of magnetic induction, = 1 maxwell/cm2 |

| | |
|---|---|
| Hc | Coercivity |
| Hub | The center cardboard or plastic part of a roll of tickets |
| Induction, magnetic (B) | The flux density entering a magnetic material; the cgs unit is gauss, equal to 1 maxwell/cm2 |
| Induction, residual (Br) | The induction remaining in a magnetic material when the magnetizing force adequate to saturate the material is reduced to zero. |
| Induction, saturation (Bs) | The largest induction possible in a magnetic material |
| ISO | International Standards Organization |
| Magnetic field | A region in which magnetic lines of the flux or force occur. |
| Magnetic field strength (H) | The magnetic of the force in free space that would be exerted on a unit magnetic pole; the cgs unit is oersted, equal to 1 maxcel/cm2 |
| Magnetic Flux ($\Phi$) | The total quantity of lines of flux that exist in a given area; the cgs unit is maxwell |
| Magnetic Stripe | A thin layer of material consisting of oriented ferromagnetic particles rigidly held together by a resin binder and bonded to a non-magnetic carrier medium such as paper or plastic. |
| Magnetization | The excess induction in a ferromagnetic material over that for free space; the cgs unit gauss, equal to $4\pi$ poles/cm3 |
| Magnetizing force (H) | Same as magnetic field strength |
| Maxwell | One millionth of a meter, equal to 40 thousandths of an inch |
| NIST | National Institute of Standards and Technology; formally called the National Bureau of Standards |
| Oersted (Oe) | The cgs unit of magnetizing force equal to one dyne per unit pole, or magnetic field strength equal to the field at one centimeter from a unit pole |
| Oxide Thickness | The thickness of the magnetic stripe material |
| Paper ticket | Card or ticket with base material made from paper stock |
| Profile | The deviation of the magnetic stripe surface from flatness; a positive profile is convex, and a negative profile is concave |
| Reference Signal Amplitude | The maximum average read signal amplitude of the PTB standard reference card corrected to the NIST master standard Tape |
| Saturation | A condition where all the available elementary magnetic domains in a ferromagnetic material are aligned in substantially the same direction. |
| Surface Roughness | The average deviation of the magnetic stripe surface from a straight line, measured in micro-inches per |

| | |
|---|---|
| | tenth of an inch of width |
| Telescoping | The deviation from flat or a roll of tickets, where the center hub is displaced from the roll. |

# 2 Ticket Physical Characteristics

This specification defines the Roll Stock paper tickets issued in the Maryland Transit Administration (MTA) fare collection equipment. The tickets are approximately credit card size with a magnetic stripe located longitudinally on the reverse side of the ticket.

## 2.1 Dimensions

The dimensions of the pre-cut paper tickets are displayed in Appendix A (Roll Stock Ticket Drawing Paper).

| Type | Encoding | Used | MTA Part No. | Comment |
|---|---|---|---|---|
| Roll Stock Paper Ticket | None – encoded at issue | Ticket Vending Machine | B60-5201 | MTA Logo and "Go Pass" on face of the ticket. |

### 2.1.1 Weight

The weight of the paper ticket is 99+/- 5.5 pounds per ream of 500 sheets, 24 X 36 inches.

### 2.1.2 Thickness

The thickness is 0.0070 +/- 0.0004 in (0.178 +/- 0.01mm).

### 2.1.3 Bursting Strength

The bursting strength is 65.0 pounds per square inch – minimum.

### 2.1.4 Stiffness (for .007" thick material)

The deflection at the center of the leading or trailing edge of the ticket with the opposite edge supported for a distance of 0.114 to 0.134-inch (2.9 to 3.4 mm) from that edge, caused by a weight of 0.13 oz. (3.5 grams) applied at the center, shall not be more than 0.700-inches (17.8 mm).

The deflection at the center of a side with the opposite side supported for a distance of 0.114 to 0.134-inch (2.9 to 3.4 mm) from that side, caused by a weight of 0.13 oz. (3.5 grams) applied at the center, shall not be more than 0.102 inch (2.6 mm).

In each case, zero deflection is defined by the position of the ticket bent under its own weight.

Alternatively, using the Taber method, on a Taber machine V-5 model 150-B with standard weight and the media cut to the Taber test specimen size the stiffness shall be within the following range:

- 16 to 21.5 gm-cm

### 2.1.5 Expansion and Contraction

The maximum expansion and contraction with a change in relative humidity of 20% to 75% to 20% shall be less than:

- In the grain direction of 0.25%
- In the cross grain direction 0.70%

### 2.1.6 Internal Tearing Resistance

The minimum resistance to tear in each direction shall be 1,225 n (in common practice this value is equivalent of 125 gm).

### 2.1.7 Adhesion

Ten pre-cut tickets, complete with graphics and serial number, shall not adhere to each other when stacked on a flat surface for 24 hours at 144 °F (62°C) and 90–95% (non-condensing) RH with an applied normal pressure on the ticket of 1 $lb/in^2$ ($70.5\ g/cm^2$). The application of anti-static coatings to the ticket may be required to meet this requirement.

### 2.1.8 Burrs

The method for measuring the burr height will be as follows:

A Mitutoyo Mu-Checker instrument will be used or equivalent. This very light pressure micrometer applies 1-gram load to the burr so as not to flatten it. The 10 mm diameter platen diameter is such that it covers the entire orientation hole in the ticket so that searching for the high spot on that feature is unnecessary.

- Place ticket on flat table or Mu Checker platen with the burr facing upward.
- Lower Mitutoyo Mu checker probe onto the middle of the ticket.
- Gently move the ticket under the probe until the probe circumference is near the edge of the ticket.

- Observe the change in height measurement on the Mu meter as the probe rises up over the burr.
- Repeat the same for the burr measurement around the orientation hole.

The readings noted must not exceed 0.001 inches.

If alternative method is to be used, method must be approved by MTA.

## 2.2 Definition of Sides

The ticket shall be defined as follows:

- Face side: Ticket type identifier (terms and conditions if any).
- Reverse side: Customer identification, magnetic stripe (terms and conditions if any).

## 2.3 Quality

Tickets shall be free of all defects that impair the in-service magnetic, printing performance, and / or general appearance; e.g., surface blemishes, loose dirt, fuzz, electrically conductive particles, residual chemicals, abrasive material, holes or missing areas of oxide, cracks, breaks, dents, edge and corner irregularities, burrs or sharp corners on any edge as defined in drawings noted in Appendix A, de-lamination of stripe, and/or loss of or blurred graphics or text.

All roll stock shall be continuous with no breakages, joins, or splices.

**Prior to commencing the initial production run the contractor shall submit preproduction samples for MTA approval. Failure to obtain preproduction approval may cause entire production run to be rejected.**

All ticket graphics must be printed using a minimum of a 150 line screen, 150 dots per square inch and shall not exceed 1½ dots out-of-registration with a 50% screen.

## 2.4 Curl

Curl shall be allowed only with the magnetic stripe on the concave side. The curl of the media shall not exceed the following values:

| | |
|---|---|
| 1. Parallel to long dimension | That formed when wrapped around a 3 – inch (76.2 mm) diameter core. |
| 2. Parallel to short dimension | 0.039 – inch (1.0 mm) chord height (excluding material thickness) measured anywhere along the length |

of the ticket on a plane parallel to the short edge.

## 2.5 Toxicity

Individual tickets shall not cause injury by contact, inhalation, or ingestion in normal use. Bulk media shall be handled and stored in accordance with the toxicological information contained in the product safety data sheets supplied by the ticket supplier.

## 2.6 Flexing Endurance

Wrapping the ticket completely around a 0.75-inch (19.5mm) diameter cylinder and then removing it shall not produce a visible crease or wrinkle in the ticket stock or any damage to the surface of the magnetic stripe.

## 2.7 Opacity

The ticket material opacity must provide more than 90% attenuation to infrared light in the wavelength range of 800 to 900 nanometers (nm).

## 2.8 Reflectivity

The surface reflectivity of the ticket can be measured with the method noted below. The vendor will measure the surface reflection of the ticket at the specific location, distance, angle and wavelength necessary for the media to be recognized in the Automatic Fare Collection System. The location of the reflectance is shown on Appendix C. The reflectance factor shall be 80% or greater in the area specified.

Acceptance criteria would be as follows:

- The surface under test is to be wrapped facing out on a 3.0-inch (7.62cm) diameter drum.
- The reflective sensor is to be positioned at a distance of 0.200-inches ± 0.030-inches (0.508cm ±0.076cm) from the surface under test.

The reflectivity of light from the ticket shall be 80% minimum of a Kodak photographic white card over a wavelength range of 500 to 1020 nm (i.e., the half-power bandwidth of a silicon photocell).

## 2.9 Delamination

Neither the ticket stock nor the magnetic material attached to it shall delaminate during normal usage (passing ticket through swipe reader on farebox or ticket transport at the Metro faregates) or any of the specified testing.

## 2.10 Thermal Coating

The thermal coating must be such that it will produce clear high contrast printing by an Axiohm® Type CMDG printer with a printing speed of 1.6 inches/second (40mm/second) at 77°F (25°C) and 203 dots/inch (8 dots/mm).

## 2.11 Coefficient of Friction

Tickets shall be measured from friction in accordance with ASTM D1894. Tickets shall be measured in the direction of the long axis and oriented the same way such that edges are coincident and the top surface of one ticket is in contact with the bottom surface of the other ticket. The measured value for the inter-ticket static coefficient of friction shall fall within the specified range of 0.15 to 0.3, including sampling error.

## 2.12 Flammability

The tickets shall be slow burning when exposed to an open flame. The physical and chemical properties that define the burning characteristics of the media shall be included in the product safety data sheets supplied by the ticket supplier.

The specification for slow burn rate should be approximately 10 to 12 inches (25.4 to 30.48 cm) per minute, measured in accordance with ISO 9773.

## 2.13 Perforation Strength

The tickets will be mechanically burst from the roll stock. The material composition must allow the tickets to burst from the roll stock by a tensile pull force applied along the longitudinal axis of the ticket stock at right angles to the perforations. When a pull force of 18 +/- 5 lbs. is applied to a ticket, the perforation will cleanly separate without damaging the adjacent ticket material.

Consistent quality of the perforation is extremely important to the proper operation of the TVM ticket transport. The ideal perforation consists of cut slits measuring .050 inches, followed by uncut sections measuring .040 inches. The Roll Stock Ticket Drawing located in Appendix A supplies additional detail on the perforation. In line with the perforation is a narrow .10 inch by .70 inch slot with rounded corners. When designing the perforation pattern, short cut slits should intersect the short dimensions on both ends of the slot. This helps with the initiation of the bursting, and insures against poor bursting patterns and resulting tear-out.

Consistent perforation quality can be enhanced by frequently inspecting during the production run to ensure specification compliance. Particular care should be given to ensure that the magnetic stripe area is completely cut-through since the abrasiveness of that material can dull cutting knives more quickly than other areas.

## 2.14 Grain

The grain of the ticket stock will be parallel to the long edge of the Ticket.

## 2.15 Last Ticket Attachment to Cardboard Spool

The last ticket on the roll that contacts the cardboard spool must be complete and not partial or have any cuts or tears.

The ticket material must separate freely from the cardboard spool. There must not be any glue, adhesive tape, or staples remaining on the ticket stock or any of the ticket material torn off.

## 2.16 Tightness of wind

The roll of tickets should be wound tight enough to prevent the spool from telescoping out in normal use.

For conformance to this requirement, the roll must pass the following test (see Figure 1):

- Use a complete flat roll of stock (a minimum of 1500 tickets) with its retaining elastic band in place (the roll may be flattened by tapping on a flat surface prior to starting the test).
- Place two bars 0.25 – inch x 0.25 inch x 9-inches (6.35 x 6.35 x 228.6 mm) on a flat surface.
- Align the bars so they are parallel with a 5-inch (127 mm) space between them.
- Place the roll on top of the bars so that it overlaps each side by an equal amount.
- Carefully apply a 4.4 lb. (2 kg) weight to the cardboard spool.
- Leave for 1 hour at 74 +/ 5 degrees F (21 degrees C) and 50 +/- 10% RH.

After one hour, a 0.125 inch (3.175 mm) thick gauge resting on the flat surface should slide under the roll without touching it.

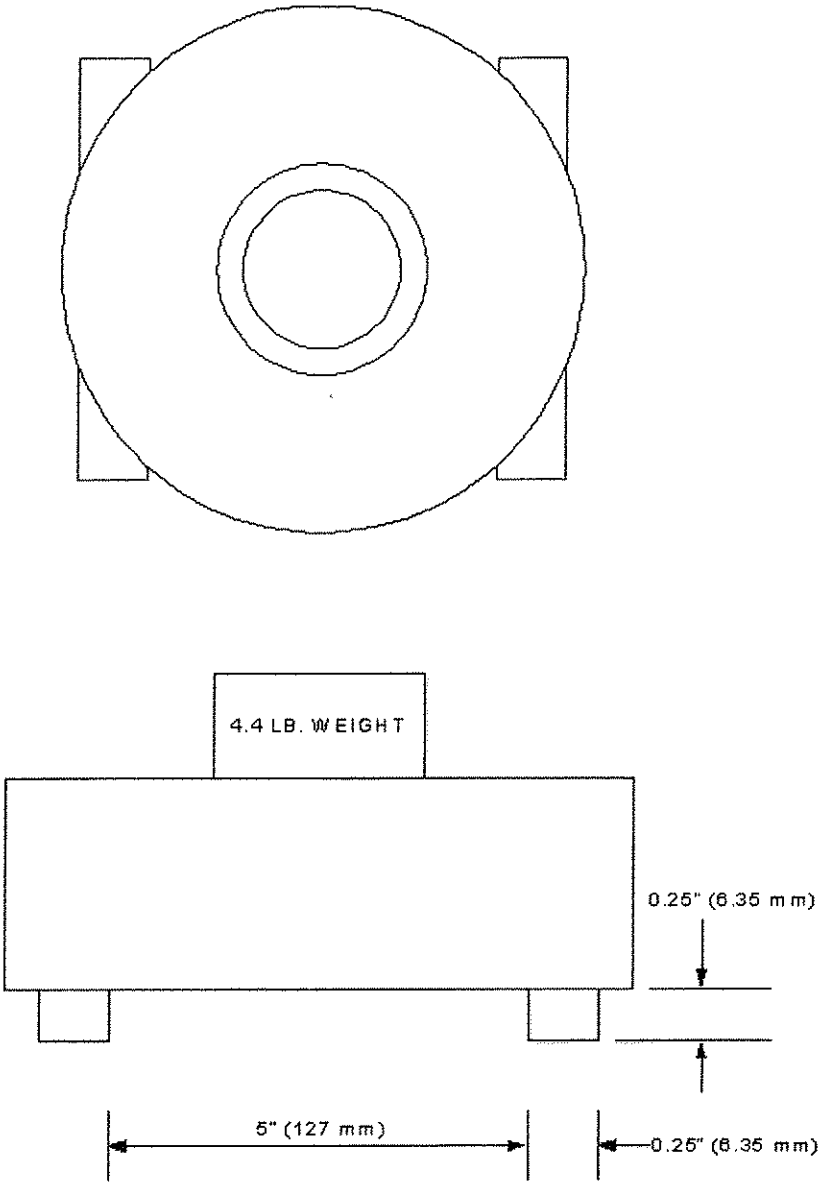



**Figure 1. Ticket Test Setup**

# 3 Printing

The tickets will be delivered with design elements and printed graphics as provided in the customer supplied CD. Tickets shall not be embossed or distorted by the printing process. The ink shall not be conductive, abrasive, or magnetic. Printing shall not smear or transfer during normal handling or processing through an encoding transport. The encoding transport consists of pinch rollers and drive belts that are in contact with the tickets. Additional information will be thermally printed in the "printed data" area of the ticket by the MTA when the ticket is issued.

## 3.1 Color and graphics

Printed graphics for the tickets shall be the four color process with design elements, colors and graphics conforming to the design, artwork and instructions supplied by MTA with the contract/purchase order after award. The MTA will provide artwork to the successful contractor for design and graphics in the form required by the contractor (Examples: Adobe Illustrator, PDF, JPEG, EPS, etc.).

## 3.2 Manufacturer's identification number

The manufacturer shall include a batch identification number in the location shown the customer supplies artwork. The batch identification number shall not exceed 11-characters in length and not exceed 0.08-inch (2.0 mm) in height, and shall include the date of manufacture. It is the responsibility of the ticket vendor to record the materials and process conditions associated with each batch number and to revise this number when these conditions change.

## 3.3 Signature Block

A full color signature block is provided with this solicitation for informational purposes and is located in Appendix B. The sample signature block as provided in Appendix B is for informational purposes only and should not be construed as providing an indication of the final graphic design. Final graphic design artwork and instructions will be provided to the successful contractor directly after contract award.

## 3.4 Anti-Fraud features

Required preprinted security features can be applied to the ticket material during its manufacture. These security features provide methods to deter fraudulent use of the ticket in the rail system by having a recognizable feature that is not easily recreated by other simple means. The acceptable security feature to be incorporated into each ticket is reflectance "Watermark".

The location of the security feature will be specified in the customer graphic artwork supplied by the MTA.

### 3.5 Standard Ink Printing

All non-magnetic and non-optical sense ink shall be referred to as colored print. The colored print shall balance the requirements for security and the problems created by offsetting onto the mechanical components of the ticket handling equipment.

### 3.6 Varnish Coating

The tickets shall be varnish coated on the face side and for producing the watermark security feature. This will improve the operating performance of the ticket by limiting moisture absorption during storage, equipment processing, and customer usage. The varnish coating must be adequately and completely dried during the manufacturing process to insure against tickets sticking together in the roll. Additionally, the dried varnish coating must be free of all oil/waxy substances on the faces of tickets that result in transfer and accumulation to equipment rollers, belts, thermal printers, etc. The varnish shall not be a high-gloss type since this can result in slippage problems in the TVM roll stock transport mechanism.

### 3.7 Thermal Printing

The ticket shall have the same thermal printing properties similar to Fax Grade 3 paper. All thermal printing shall employ ribbons, which "bond" with the substrate material to form a durable, scratch resistant finish.

## 4 Magnetic Stripe Characteristics

Quality of the magnetic coating shall be evaluated by comparing the measured characteristics of test tickets as specified below. Ten tickets will be tested for each batch of up to 100,000 tickets. The test quantity for larger batches will be specified on the purchase order. The supplier for each batch will submit certification, in the form of the supplier's normal manufacturing Quality Assurance (QA) documentation, to the MTA.

### 4.1 Magnetic Stripe Parameters

The size and location of the stripe shall be in accordance with Appendix A. The magnetic performance of the magnetic media shall not be impaired when a stripe of 3M® Scotch Magic Tape is applied to the full length of the magnetic stripe and then peeled off.

## 4.2 Stripe surface

One continuous (single) magnetic tape or ink stripe shall be applied to the ticket. The thickness of the magnetic material shall be less than 0.0006-inch (0.015mm); and a non-magnetic protective coating, if used, shall be less than 0.0001-inch (0.0025mm) thick.

## 4.3 Protrusion

The maximum protrusion of the magnetic stripe surface above the surface of the base material shall not be less than 0.0-inch (0.0mm) and shall not be greater than 0.0007-inch (0.018mm).

## 4.4 Surface Roughness

The surface roughness of the magnetic stripe, measured along lines parallel to the height and width dimensions, shall be determined in accordance with ISO 4287-1 and 5.4 of ISO/IEC 10373. A contact profile meter as prescribed in ISO 3274 shall be used along with the following measuring instrument parameters:

- Cut off wavelength of 0.030-inch (0.75mm).
- Stylus radius ≤0.0002-inch (0.005mm).
- Vertical force ≤0.0036 oz. (1mN).
- Total uncertainty of measurement ≤5%.

$R_a$ (average surface roughness) shall not be greater than 0.00055-inch (0.014mm).
$R_z$ (maximum surface roughness) shall not be greater than 0.0003-inch (0.008mm).

## 4.5 Erasure

All magnetic media shall be dc erased or degaussed to the specifications defined below, prior to delivery.

### 4.5.1 DC Erasure

The dc erasure process is required to determine the magnetic polarity and to ensure removal of any spurious pulses. The polarity shall be such that the leading edge of the ticket bears a north-seeking pole. The erasure process shall be sufficient to ensure that any spurious pulse, found anywhere along the length of the stripe, excluding the ends of the card, shall not exceed 0.06 $U_R$.

### 4.5.2 Degaussing

All tickets shall be degaussed (particle magnetization randomized) by means of a decaying AC field. This process is required to ensure removal of any unidirectional magnetization. The degaussing process shall be sufficient to ensure that any spurious pulse, found anywhere along the length of the stripe, including the ends of the ticket, shall not exceed 0.06 $U_R$.

## 4.6 Magnetic Oxide Characteristics

Coercive force shall be 2750 Oersteds ± 20%.

When encoded to saturation, the magnetic fare media shall be capable of producing a read-back signal amplitude of 80% to 130% as referenced to the ISO 7811-6 standard.
There shall be only one slope reversal in the read back signal for each change in flux read back signal obtained from the sample in any region where the signal exceeds 15% of the average zero-to-peak signal level in either the positive or negative direction.

## 4.7 Magnetic Surface Abrasion Resistance

The representative test tickets recorded with a density of 80 flux reversals per inch shall be subjected to the following abrasion test. The average pulse amplitude read from the abraded portion shall be at least 50% of the average pulse amplitude read from the non-abraded portion of the same ticket (the paper in the path of the abrasion tester wheel may be removed or protected to prevent clogging of the abrasive wheel).

The abrasion test consists of subjecting test tickets to a test cycle of 10 revolutions on a Taber "Abrader" using clear CS-10F wheels with a load on each wheel of 500 grams. (Taber Instrument Corp., North Tonawanda, New York.)

## 4.8 Contamination of magnetic Heads by Tickets

The surface quality of the magnetic oxide on unused tickets shall be such that oxide dust and other accumulated dirt do not accumulate on the magnetic heads.

## 4.9 Ticket Encoding

Tickets shall not be encoded prior to delivery. Any encoding used to check the integrity of the magnetic stripe during the manufacturing process shall be erased prior to delivery.

### 4.9.1 Location

The data shall be encoded in an area extending between two lines that are 0.353 in. and 0.643 in. from the edge of the card.

Data shall be arranged as providing in the following bullets and shall begin in sequence from the right side of the card as viewed from the front with the encoded tract at the bottom.

- The centerline of the first data bit (start sentinel) is 0.293 in. +/- 0.020 in. from the right edge of the card.
- When the data is re-encoded in a terminal, the centerline of the first encoded data bit in the start sentinel may be located 0.293 in +/-0.040 in. from the right edge of the card.
- The lead-in up to the first data bit (start sentinel) shall be clocking bits (zeros), and the distance from the last data bit (longitudinal redundancy check (LRC) character) to the end shall also be clocking bits.

Note: It is recognized that the zeros prior to 0.125 in. or after 3.250 in. from the right edge of the card when viewed from the back may not meet specifications; however, nothing other than intended zeros should be encoded in the area.

### 4.9.2 Encoding Technique

The encoding technique is known as two-frequency, coherent phase recording. This method allows for serial recording of self-clocking data (on one channel). This data is comprised of data bits and clocking bits together. An intermediate flux transition occurring between clocking transitions signifies a ONE; the absence of an intermediate flux transitions signifies a ZERO.

Flux transitions are, for the purpose of this document, defined as the locations of the maxima of the magnitude of the magnetic flux density component normal to the surface of the magnetic stripe.

The data shall be recorded as a synchronous sequence of characters without intervening gaps.

### 4.9.3 Angle of Recording

The signal shall be recorded in such a way that the maximum playback amplitude will occur when the magnetic centerline along the head gap is at an angle of 0 +/- 20 mins to a line normal to the top edge of the card.

### 4.9.4 Bit Density

The average bit density of the recorded signal shall be 120 bits/in. (+/- 3%) when measured along the line parallel to the top reference edge of the card. The spacing between adjacent flux changes shall be 0.008333 in. +/- 0.00025 in. (+/- 3%) for a ZERO and 0.004167 in. +/- 0.000167 in. (+/- 4%) for each interval of a ONE. For a sequence of recorded ONEs, the density corresponds to a nominal 240 ftpi.

### 4.9.5 Code Character Set

The character code, which is numeric only, shall be a binary coded decimal (BCD) 4-bit subset with odd parity. The following special meanings shall be attached to the following characters:

- 11 Start Sentinel
- 13 Data Separator
- 15 End Sentinel

### 4.9.6 Bit Configuration

When viewing the card from the back, with the magnetic stripe at the top of the card, the rightmost bit of the character is defined as the least significant bit ($b_1$). The significance decreases to the left through the leftmost position, which is defined as the parity bit ($b_p$).

### 4.9.7 Error Detection

Two techniques of error detection, as describe below, shall be encoded. In both techniques, the clocking bits recording at the ends of the data message are used for synchronization and shall not re regarded as data characters.

### 4.9.8 Parity

A parity bit for all encoded characters shall be used. The value of the party bit is defined such that the total quantity of ONE bits recorded, for a character, including the party bit, shall be odd.

### 4.9.9 Longitudinal Redundancy Check

A longitudinal redundancy check (LRC) character shall appear for each data message. The LRC character shall be encoded so that it immediately follows the end sentinel where the card is read in a direction giving the start sentinel first, followed by data and the end sentinel. The bit configuration of the LRC character shall be identical to the bit configuration of the data characters.

The LCR character shall be calculated with the following procedure:

- The value of each bit in the LRC character, excluding the parity bit, is defined such that the total count of ONE bits encoded in the corresponding bit location of all characters of the data message, including the start sentinel, data, end sentinel, and LRC characters shall be even.
- The LRC characters parity bit is not a parity bit for the individual party bits of the data message, but is only the parity bit for the characters encoded.

#### 4.9.10 Number of Tracks

Only one track of data shall be encoded on the card.

### 4.10 Signal Performance

The read-back signal waveform and jitter shall be in accordance with waveform and jitter specified in ISO 7811-2/3/4/.

### 4.11 Magnetic recording performance

The magnetic media recording performance shall be in accordance with ISO 7811-6 High Coercivity Magnetic Media Specification.

When encoded to saturation, the magnetic fare media shall be capable of producing a read-back signal amplitude of 80 to 130 percent as referenced to the ISO 7811-6 standard.

### 4.12 Stripe Adherence

The magnetic stripe shall remain firmly fixed to the ticket material during the lifetime of the ticket. It shall not be possible to remove the magnetic stripe without stripping off part of the ticket material. Adhesion of the magnetic stripe material to the ticket surface shall be such that, regardless of the means employed to detach it, the stripe cannot be removed intact. Removal of any portion of the magnetic stripe shall result in visually detectable damage to the ticket. No portion of the magnetic material shall separate from the ticket when a stripe of "3M™ Scotch Magic Tape" is applied to the full length of the stripe and peeled off starting at either edge.

## 5 Ticket Handling

### 5.1 Packaging and Shipping

Tickets shall be packaged in such a manner as to inhibit pilferage, prevent damage during shipment, and facilitate storage in a manner to be acceptable to

purchaser. Tickets shall be packaged in quantities as specified by purchaser in the purchase order. In general, the ticket rolls shall be sucured with a rubber band around the outer circumference, shrink wrapped, and then packed in cartons, of 4 rolls per carton, The outside of cartons shall be labeled with the name of the manufacturer, the contract number, the purchase order number, the MTA part number as defined in Table 2-1, the production run number, date of manufacture, and the quantity of the tickets. Cartons shall be of sufficient strength and material to permit stacking them six high without damage to the tickets or the cartons, as well as shrink-wrapped to withstand environmental conditions during a storage period of 3 years. If the delivery quantity specified is sufficient to allow palletizing, then the cartons of production tickets shall be fastened together on pallets in a manner that doesn't deform the cartons and contents, or allow for damage during handling by forklifts. Plastic stretch wrap is considered an acceptable method. Strapping is not acceptable since it easily damages cartons and contents. Additional pre-fabricated cardboard edge protectors should also be used to further protect the cartons during shipment.

Pallets – Top surface of pallets upon which boxes are stacked should be of a solid continuous surface without missing boards, protruding nails, or other defects that would degrade the condition of tickets during shipment and subsequent storage at MTA facilities.

The production tickets shall be shipped via common carrier with signature security service, which traces all handlers of freight.

## 5.2 Environment

Fare media material shall meet all requirements of this specification when used within the environmental limits specified:

- Temperature –10°F to 120°F (–23°C to +49°C)
- Relative Humidity (RH) 15% to 97% non-condensing

### 5.2.1 Storage environment

**Long Term Storage**

Tickets that are to be stored for long periods of up to 3 years shall be stored within the following temperature and humidity range.

- Temperature: 68 +/- 9 deg F
- RH: 60% +/- 10% non-condensing

**Short Term Storage**

Ticket rolls that are installed in Ticket Vending Machines endure a wide range of temperature and humidity and must still be reliably printed, encoded, and fed from the ticket transport. The following range defines the temperature and humidity extremes for up to a three (3) month period.

- Temperature 32 to 105 deg F
- Humidity 15% to 80% RH non-condensing

Tickets stored within the specified time frame and within the environmental tolerances noted that exhibit degradation sufficient to render the tickets unusable in the Ticket Vending Machines will be replaced by the contractor at no charge to the MTA.

## 5.3 Disposal

All surplus tickets, rejected tickets, and scrap ticket materials shall be disposed of in a manner that renders the fare media unusable. All artwork, special tools, dies, and related material used in the manufacture of customer tickets shall become the property of the MTA and surrendered to the MTA on demand. Failure to provide the artwork and related materials will subject the contractor to liquidated damages in the form of the standard costs of providing media artwork of the type specified herein.

## 5.4 Safety / Security

The vendor shall keep track of all materials used in the production of the ticket stock. Tickets shall be manufactured in a secure area accessible only to personnel who are involved in the manufacture and handling of the tickets. An account shall be kept of all tickets at all times during production, packaging, and delivery. The vendor shall furnish a certified record of the total number of tickets produced in a specific batch run. The tickets shall be packed and be kept in a secure location before shipment. A batch number of up to 11 characters shall be printed on the magnetic stripe side of the ticket.

### 5.4.1 Security Control on Test Tickets

Test tickets shall be kept in a limited access locked location when not in use.

## 5.5 Certification

Upon request the vendor shall provide product safety data sheets for the materials included in the tickets. This will include a description of the material, the magnetic media, and all other printing materials applied to the ticket surface.

The vendor shall test and certify that the material used in the fabrication of the tickets meet all requirements of this specification. MTA reserves the right to

review the supplier's test data and supporting documentation and to conduct independent tests on delivered tickets prior to acceptance.

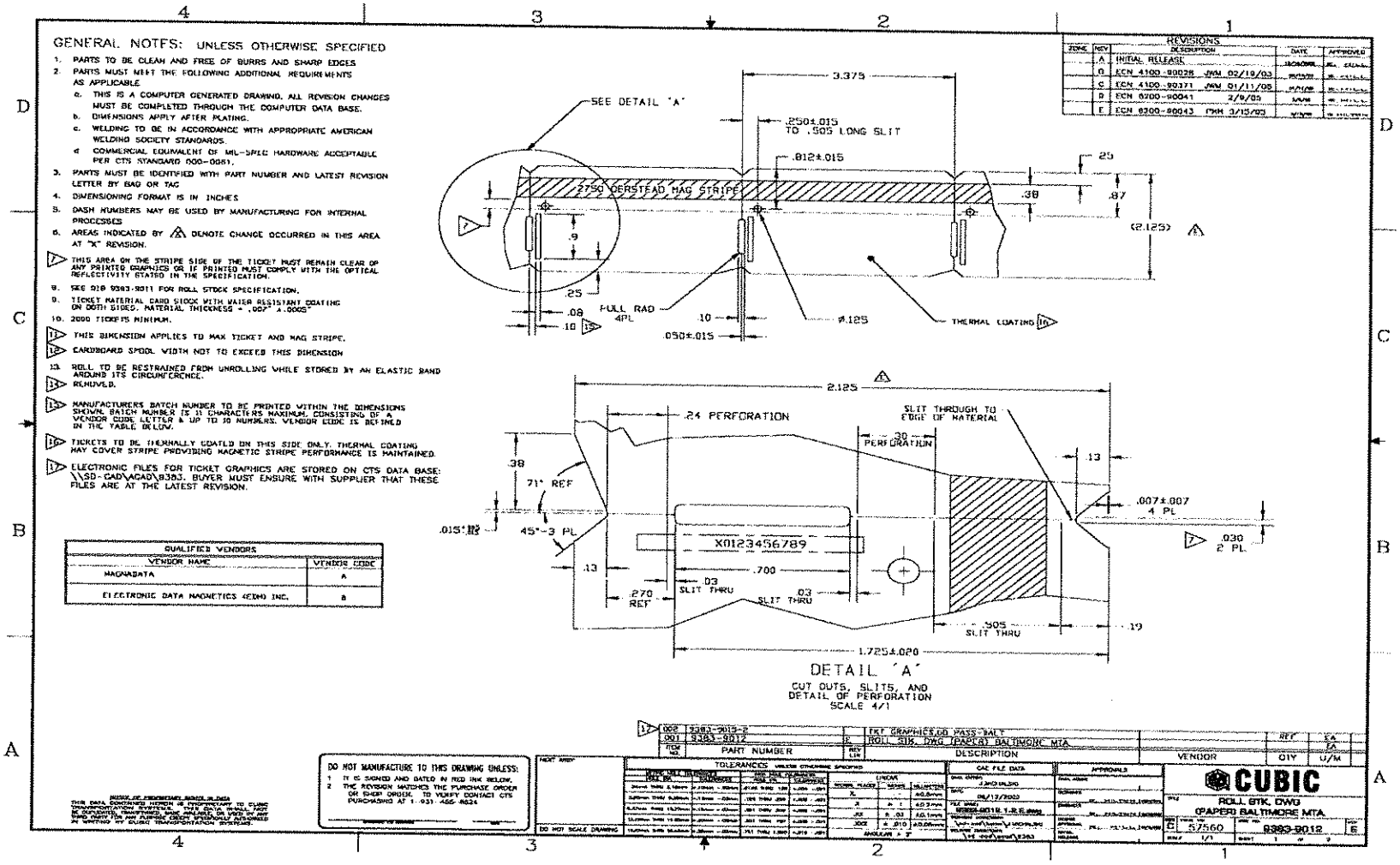
Certification of compliance must accompany each ticket delivery.

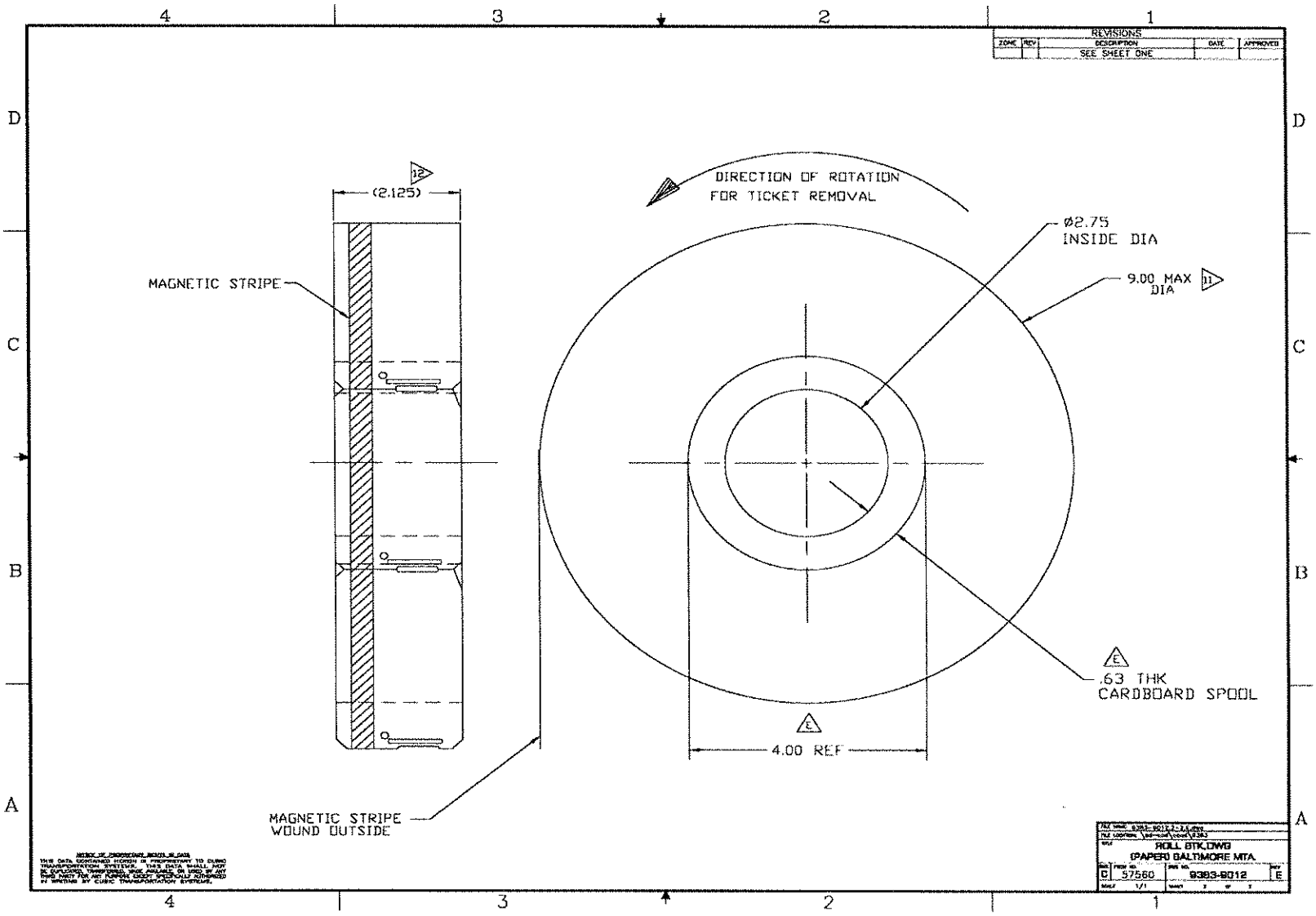
## 5.6 Delivery Schedule

**The delivery schedules for the tickets are time sensitive and it is critical to MTA operations that the deadlines for the deliveries are strictly adhered to.**

**Failure to meet the delivery schedules noted herein will be subject to liquidated damages of $1300.00, charged per day for each day the supply of tickets remain undelivered beyond the delivery date(s) stated.**

# 6 Appendix A – Roll Stock Ticket Drawing (Paper)

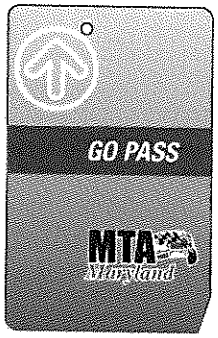



REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
SEE SHEET ONE
(2.125)
MAGNETIC STRIPE
DIRECTION OF ROTATION
FOR TICKET REMOVAL
Ø2.75
INSIDE DIA
9.00 MAX
DIA
.63 THK
CARDBOARD SPOOL
4.00 REF
MAGNETIC STRIPE
WOUND OUTSIDE
ROLL BTK.DWG
(PAPER) BALTIMORE MTA
C
57560
9383-9012
E

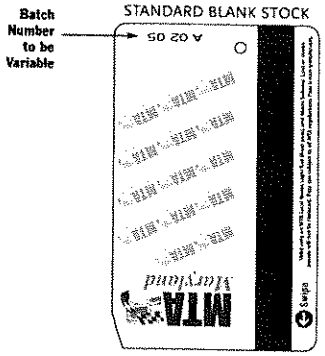
# 6 Appendix B – Roll Stock Paper Ticket Sample Signature Blocks

## MTA MARYLAND BASIC GO PASS

**Face**




**Reverse**




**Note:**
**3-color process + black**
**O/All Varnish**

**All Printing – Black**
**Patt Varnish. W/B** (not on stripe)
**Security Varnish** (shown for reference only)

# Request for Quotation



**INSTRUCTIONS:**

1. QUOTATIONS SHALL INCLUDE DELIVERY OF FOLLOWING ITEMS F.O.B. DESTINATION, INCLUSIVE OF ALL CHARGES, I.E. PLATFORM OR DOORWAY OF SHIP-TO ADDRESS INDICATED.

2. PROVIDE MAXIMUM LEAD TIME (TIME BETWEEN RECEIPT OF PO AND DELIVERY), IN DAYS, FOR EACH ITEM QUOTED. FAILURE TO INSERT DELIVERY INFORMATION MAY RESULT IN DISQUALIFICATION OF QUOTATION.

3. QUOTATIONS MUST BE SUBMITTED ON THIS FORM.

4. EQUIVALENT ITEMS REQUIRE MTA APPROVAL PRIOR TO AWARD. THESE ITEMS MUST BE IDENTIFIED ON RFQ AND ACCOMPANIED BY SPECIFICATIONS AND DESCRIPTIVE LITERATURE FOR MTA EVALUATION.

5. VENDOR MUST COMPLETE AND SIGN, IN INK, THE QUOTATION

6. PRICES QUOTED SHALL BE VALID FOR A MINIMUM OF NINETY DAYS UNLESS OTHERWISE NOTED:_____

7. VENDOR SHALL COMPLY WITH ALL FEDERAL AND STATE REGULATIONS AND THE PURCHASING DEPARTMENT RULES AND REGULATIONS IN EFFECT AT TIME OF SUBMISSION.

8. ANY CHANGE OF THE VENDOR PART NUMBER, AS IT IS LISTED ON THE RFQ, MUST BE IDENTIFIED BY CIRCLING THE NUMBER ON THE RFQ AND COMPLETING THE ATTACHED "PART NUMBER VERIFICATION REQUEST". THE PART NUMBER VERIFICATION REQUEST FORM MUST BE COMPLETED IN FULL AND SUBMITTED WITH THE RFQ FOR ANY CHANGE IN PART NUMBERS.

**SOLICITATION REQUIREMENTS**

Award to be made on the basis of the lowest evaluated bid price based on a combination of the unit price, delivery, and quality rating of commodity. In addition, all items are subject to the Small Business set-aside when applicable.

Financial Disclosure by Persons Doing Business with the State

Vendors and Contractors providing materials, equipment, supplies or services to the State of Maryland herewith agree to comply with State Finance and Procurement Article, Sect. 13-221 of the Annotated Code of Maryland which requires that every business that enters into contracts, leases or other agreements with the State and receives in the aggregate $100,000 or more during a calendar year shall, within 30 days of the time when the $100,000 is reached, file with the Secretary of State certain specified information to include disclosure of beneficial ownership of the business.

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## ANTI-BRIBERY AFFIDAVIT

I HEREBY CERTIFY that

1. I am the _____ and the duly authorized representative of the firm of _____ whose address is _____, and that I possess the legal authority to make this affidavit on behalf of myself and the firm for which I am acting.

2. Except as described in paragraph 3 below, neither I, nor to the best of my knowledge, the above firm, nor any of its officers, directors, or partners, or any of its employees directly involved in obtaining contracts with the State or any county, bi-county, or multi-county agency, or subdivision of the State have been convicted of, or have pleaded nolo contendre to a charge of, or have during the course of an official investigation or other proceeding admitted in writing or under oath acts or omissions committed after July 1, 1977 which constitute bribery, attempted bribery, or conspiracy to bribe under the laws of any state or federal government.

3. (State 'none' or, as appropriate, list any conviction, plea, or admission described in paragraph 2 above, with the date: court, official, or administrative body; and the sentence or disposition, if any.) _____

_____

I ACKNOWLEDGE THAT THIS AFFIDAVIT is to be furnished to the Procurement Officer and may be distributed to boards, commissions, administrations, departments and agencies of: (1) the State of Maryland; (2) counties or other subdivisions of the State of Maryland; (3) other states; and (4) the federal government. I further acknowledge that this Affidavit or the Contract is subject to applicable laws of the United States and the State of Maryland, both criminal and civil, and that nothing in this Affidavit or the Contract shall be construed to supersede, amend, modify or waive, on behalf of the State of Maryland, and any office or agency of the State of Maryland having jurisdiction, the exercise of any statutory right or remedy conferred by the Constitution and the laws of Maryland in respect to any misrepresentation made or any violation of the obligations, terms or covenants undertaken by the above Contractor in repect to (1) this Affidavit, (2) the Purchase Order, and (3) other Affidavits comprising part of the bid or proposal documents associated with the Purchase Order.

I do solemnly declare and affirm under the penalties of perjury that the contents of this affidavit are true and correct.

_____
(Signature)

_____
(Printed or Typed Name)

_____
(Date)

_____
(Telephone Number)

_____
(Company Federal I.D. or Social Security Number)

# Standard Terms and Conditions

1. GENERAL

The following are mandatory terms and conditions to be included in all purchase orders.

1.1 INCORPORATION BY REFERENCE

"All terms and conditions of the solicitation, and any amendments thereto, are made a part of this contract."

2. TAX EXEMPTION

"The State is generally exempt from federal excise taxes, Maryland sales and use taxes, District of Columbia sales taxes,and transportation taxes. Exemption certificates shall be completed upon request. Where a contractor is required to furnish and install material in the construction improvement of real property in performance of a contract, the Contractor shall pay the Maryland sales tax and the exemption does not apply."

3. SPECIFICATIONS

"All materials, equipment, supplies or services shall conform to federal and state laws and regulations and to thespecifications contained in the solicitation"

4. DELIVERY AND ACCEPTANCE

"Delivery shall be made in accordance with the solicitation specifications. The State, in its sole discretion, may extend the time of performance for excusable delays due to unforeseeable causes beyond the Contractor's control. The State unilaterally may order in writing the suspension, delay, or interruption of performance hereunder. The State reserves the right to test any materials, equipment, supplies, or services delivered to determine if the specifications have been met. The materials listed in the bid or proposal shall be delivered FOB the point or points specified prior to or on the date specified in the bid or proposal. Any material that is defective or fails to meet the terms of the solicitation specifications shall be rejected. Rejected materials shall be promptly replaced. The State reserves the right to purchase replacement materials in the open market. Contractors failing to promptly replace materials lawfully rejected shall be liable for any excess price paid for the replacement, plus applicable expenses, if any."

5. NON-HIRING OF OFFICIALS AND EMPLOYEES

"No official or employee of the State, as defined under State Government Article, § 15-102, Annotated Code of Maryland, whose duties as such official or employee include matters relating to or affecting the subject matter of this contract shall, during the pendancy and term of this contract and while serving as an official or employee of the State become or be an employee of the contractor or any entity that is a subcontractor on this contract."

6. NONDISCRIMINATION IN EMPLOYMENT

"The Contractor agrees not to discriminate in any manner against an employee or applicant for employment because of race, color, religion, creed, age, sex, martial status, national origin, ancestry, or physical or mental disability of a qualified individual with a disability and to post and to cause subcontractors to post in conspicuous places available to employees and applicants for employment, notices setting forth the substance of this clause."

7. FINANCIAL DISCLOSURE

"The Contractor shall comply with State Finance and Procurement Article, § 13-221, Annotated Code of Maryland, which requires that every business that enters into contracts,lease or other agreements with the State and receives in the aggregate $100,000 or more during a calendar year shall, within 30 days of the time when the $100,000 is reached, file with the Secretary of State certain specified information to include disclosure of beneficial ownership of the business."

8. POLICITAL CONTRIBUTION DISCLOSURE

"The Contractors shall comply with Election Law Article, §§ 14-101 - 14-108, Annotated Code of Maryland, which requires that every person that enters into contracts, leases, or other agreements with the State of Maryland or a political subdivision of the State, including its agencies, during a calendar year in which the person receives in the aggregate $100,000 or more,shall file with the State Administration Boardof Election Laws a statement disclosing contributions in excess of $500 made during the reporting period to a candidate for elective office in any primary or general election."

9. ANTI-BRIBERY

"The Contractor warrants that neither it nor any of its officers, directors, or partners nor any of its employees who are directly involved in

# Standard Terms and Conditions

obtaining or performing contracts with any public body has been convicted of bribery, attempted bribery, or conspiracy to bribe under the laws of any state or of the federal government or has engaged in conduct since July 1, 1977, which would constitute bribery, attempted bribery, or conspiracy to bribe under the laws of any state or the federal government."

10. REGISTRATION

"Pursuant to § 7-201 et seq. of he Corporations and Associations Article of the Annotated Code of Maryland, corporations not incorporated in the State shall be registered with the State Department of Assessments and Taxation, 301 West Preston St., Baltimore, Maryland 21201, before doing any interstate or foreign business in this State. Before doing any intrastate business in this State, a foreign corporation shall qualify with the Department of Assessments and Taxation."

11. CONTINGENT FEES

"The Contractor warrants that it has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee or agent working for the Contractor, to solicit or secure this agreement, and that it has not paid or agreed to pay any person, partnership, corporation, or other entity, other than a bona fide employee or agent, any fee or any other consideration contingent on the making of this agreement."

12. EPA COMPLIANCE

"Materials, supplies, equipment, or services shall comply in all respects with the Federal Noise Control Act of 1972, where applicable."

13. OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.)

"All materials, supplies, equipment, or services supplied as a result of this contract shall comply with the applicable U.S. and Maryland Occupational Safety and Health Act standards."

14. TERMINATION FOR CONVENIENCE

"Upon written notice to the Contractor, the State may terminate this contract, in whole or in part, whenever the State shall determine that such termination is in the best interest of the State. The State shall pay all reasonable costs incurred up to the date of termination and all reasonable costs associated with termination of the contract. However, the Contractor may not be reimbursed for anticipatory profits. Termination hereunder, including the determination of the rights and obligations of the parties, shall be governed by the provisions of COMAR 21.07.01.12A(2)."

15. TERMINATION FOR DEFAULT

"When the Contractor has not performed or has unsatisfactorily performed the contract, payment shall be withheld at the discretion of the State. Failure on the part of a Contractor to fulfill contractual obligations shall be considered just cause for termination of the contract and the Contractor is not entitled to recover any costs incurred by the Contractor up to the date of termination. Termination hereunder, including the determination of the rights and obligations of the parties, shall be governed by the provisions of COMAR 21.07.01.11B."

16. DISPUTES

"This contract shall be subject to the provisions of Title 15, Subtitle 2, of the State Finance and Procurement Article of the Annotated Code of Maryland and COMAR 21.10 (Administrative and Civil Remedies). Pending resolution of a claim, the Contractor shall proceed diligently with the performance of the contract in accordance with the procurement officer's decision."

17. MULTI-YEAR CONTRACTS

"If funds are not appropriated or otherwise made available to support continuation in any fiscal year succeeding the first fiscal year, this contract shall terminate automatically as of the beginning of the fiscal year for which funds are not available. The Contractor may not recover anticipatory profits or costs incurred after termination."

18. INTELLECTUAL PROPERTY

"Contractor agrees to indemnify and save harmless the State, its officers, agents and employees with respect to any claim, action, cost or judgment for patent infringement, or trademark or copyright violation arising out of purchase or use of materials, supplies, equipment or services covered by this contract."

19. MARYLAND LAW PREVAILS

"The provisions of this contract shall be governed by the laws of Maryland."

20. CONTRACTOR'S INVOICES

# Standard Terms and Conditions

"Contractors agrees to include on the face of all invoices billed to the State, its Taxpayer Identification Number, which is the Social Security Number for individuals and sole proprietors and the Federal Employer Identification Number for all other types of organizations."

21. PRE-EXISTING REGULATIONS

"The regulations set forth in Title 21 of the Code of Maryland Regulations (COMAR Title 21) in effect on the date of execution of this Contract are applicable to this Contract."

22. REPEALED

23. INDEMNIFICATION

"The State shall not assume any obligation to indemnify, hold harmless, or pay attorney's fee that may arise from or in any way be associated with the performance or operation of this agreement."

24. CONFLICTING TERMS

"Any proposal for terms in addition to or different from those set forth in this purchase order or any attempt by the Contractor to vary any of the terms of this offer by Contractor's acceptance shall not operate as a rejection of this offer, unless such variance is in the terms of the price or delivery schedule, but shall be deemed a material alteration thereof, and this offer shall be deemed acceptable by the Contractor description, quantity, additional or different terms. If this purchase is an acceptance of a prior offer by the Contractor, the acceptance is without the Contractor's assent to any additional or different terms contained herein. The Contractor understands and agrees that the terms and conditions of this expressly conditioned upon purchase order may not be waived."

25. DRUG AND ALCOHOL FREE WORKPLACE

"The contractor warrants that the contractor shall comply with COMAR 21.11.08, and that the contractor shall remain in compliance throughout the term of this purchase order."

26. GOVERNMENTAL RESTRICTION

"In the event any governmental restrictions may be imposed which would necessitate alteration of the material, quality, workmanship, or performance of the items offered on this proposal prior to their delivery, it shall be the responsibility of the supplier to notify the Purchasing Department at once, indicating in his letter the specific regulation which required an alteration. The State reserves the right to accept any such alteration, including any price adjustments occasioned thereby, or to cancel the contract at no expense to the State."

27. ASSIGNMENT

"This Purchase Order and the monies which may become due hereunder are not assignable except with the prior written approval of the Procurement Officer."

28. BID AWARD-RESIDENT BUSINESS

"Pursuant to Section 14-401 of the State Finance and Procurement Article of the Annotated Code of Maryland, the procuring agency shall give a preference to the lowest responsive and responsible bid from a Maryland firm over that of a nonresident firm if the state in which the non-resident firm is located gives a resident business preference. The percentage of preference awarded under this section shall be the same as that awarded by the State in which the non-resident firm is located.
This provision shall not apply if it conflicts with any federal grant or regulation affecting this contract."

29. SUPERCESSION OF PREVIOUS TERMS AND CONDITIONS

These Terms and Conditions supercede previous versions, including, but not limited to those printed on the reverse side of the Purchase Order.

## .07 Bid/Proposal Affidavit.

A. Each solicitation shall provide notice that the affidavit in §B of this regulation shall be completed and submitted to the procurement agency with the vendor's bid or offer.

B. Mandatory Solicitation Addendum. The solicitation addendum shall be in substantially the same form as follows:

BID/PROPOSAL AFFIDAVIT

A. AUTHORIZED REPRESENTATIVE

I HEREBY AFFIRM THAT:

I am the (title) _____ and the duly authorized representative of (business) _____ and that I possess the legal authority to make this Affidavit on behalf of myself and the business for which I am acting.

B. CERTIFICATION REGARDING COMMERCIAL NONDISCRIMINATION

The undersigned bidder hereby certifies and agrees that the following information is correct: In preparing its bid on this project, the bidder has considered all proposals submitted from qualified, potential subcontractors and suppliers, and has not engaged in "discrimination" as defined in §19-103 of the State Finance and Procurement Article of the Annotated Code of Maryland. "Discrimination" means any disadvantage, difference, distinction, or preference in the solicitation, selection, hiring, or commercial treatment of a vendor, subcontractor, or commercial customer on the basis of race, color, religion, ancestry, or national origin, sex, age, marital status, sexual orientation, or on the basis of disability or any otherwise unlawful use of characteristics regarding the vendor's, supplier's, or commercial customer's employees or owners. "Discrimination" also includes retaliating against any person or other entity for reporting any incident of "discrimination". Without limiting any other provision of the solicitation on this project, it is understood that, if the certification is false, such false certification constitutes grounds for the State to reject the bid submitted by the bidder on this project, and terminate any contract awarded based on the bid. As part of its bid or proposal, the bidder herewith submits a list of all instances within the past 4 years where there has been a final adjudicated determination in a legal or administrative proceeding in the State of Maryland that the bidder discriminated against subcontractors, vendors, suppliers, or commercial customers, and a description of the status or resolution of that determination, including any remedial action taken. Bidder agrees to comply in all respects with the State's Commercial Nondiscrimination Policy as described under Title 19 of the State Finance and Procurement Article of the Annotated Code of Maryland.

B-1. Certification Regarding Minority Business Enterprises.

The undersigned bidder hereby certifies and agrees that it has fully complied with the State Minority Business Enterprise Law, State Finance and Procurement Article, §14-308(a)(2), Annotated Code of Maryland, which provides that, except as otherwise provided by law, a contractor may not identify a certified minority business enterprise in a bid or proposal and:

(1) Fail to request, receive, or otherwise obtain authorization from the certified minority business enterprise to identify the certified minority proposal;

(2) Fail to notify the certified minority business enterprise before execution of the contract of its inclusion in the bid or proposal;

(3) Fail to use the certified minority business enterprise in the performance of the contract; or

(4) Pay the certified minority business enterprise solely for the use of its name in the bid or proposal.

Without limiting any other provision of the solicitation on this project, it is understood that if the certification is false, such false certification constitutes grounds for the State to reject the bid submitted by the bidder on this project, and terminate any contract awarded based on the bid.

C. AFFIRMATION REGARDING BRIBERY CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business (as is defined in Section 16-101(b) of the State Finance and Procurement Article of the Annotated Code of Maryland), or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies has been convicted of, or has had probation before judgment imposed pursuant to Criminal Procedure Article, §6-220, Annotated Code of Maryland, or has pleaded nolo contendere to a charge of, bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, except as follows (indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of person(s) involved, and their current positions and responsibilities with the business):

_____

_____

_____.

D. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies, has:

(1) Been convicted under state or federal statute of:

(a) A criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract; or

(b) Fraud, embezzlement, theft, forgery, falsification or destruction of records or receiving stolen property;

(2) Been convicted of any criminal violation of a state or federal antitrust statute;

(3) Been convicted under the provisions of Title 18 of the United States Code for violation of the Racketeer Influenced and Corrupt Organization Act, 18 U.S.C. §1961 et seq., or the Mail Fraud Act, 18 U.S.C. §1341 et seq., for acts in connection with the submission of bids or proposals for a public or private contract;

(4) Been convicted of a violation of the State Minority Business Enterprise Law, §14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(5) Been convicted of a violation of §11-205.1 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(6) Been convicted of conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any law or statute described in subsections (1)–(5) above;

(7) Been found civilly liable under a state or federal antitrust statute for acts or omissions in connection with the submission of bids or proposals for a public or private contract;

(8) Been found in a final adjudicated decision to have violated the Commercial Nondiscrimination Policy under Title 19 of the State Finance and Procurement Article of the Annotated Code of Maryland with regard to a public or private contract; or

(9) Admitted in writing or under oath, during the course of an official investigation or other proceedings, acts or omissions that would constitute grounds for conviction or liability under any law or statute described in §§B and C and subsections D(1) –(8) above, except as follows (indicate reasons why the affirmations cannot be given, and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of the person(s) involved and their current positions and responsibilities with the business, and the status of any debarment):

_____

_____

_____.

E. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities, including obtaining or performing contracts with public bodies, has ever been suspended or debarred (including being issued a limited denial of participation) by any public entity, except as follows (list each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceedings, the name(s) of the person(s) involved and their current positions and responsibilities with the business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension).

_____

_____

_____.

F. AFFIRMATION REGARDING DEBARMENT OF RELATED ENTITIES

I FURTHER AFFIRM THAT:

(1) The business was not established and it does not operate in a manner designed to evade the application of or defeat the purpose of debarment pursuant to Sections 16-101, et seq., of the State Finance and Procurement Article of the Annotated Code of Maryland; and

(2) The business is not a successor, assignee, subsidiary, or affiliate of a suspended or debarred business, except as follows (you must indicate the reasons why the affirmations cannot be given without qualification):

_____

_____

_____.

G. SUB-CONTRACT AFFIRMATION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, has knowingly entered into a contract with a public body under which a person debarred or suspended under Title 16 of the State Finance and Procurement Article of the Annotated Code of Maryland will provide, directly or indirectly, supplies, services, architectural services, construction related services, leases of real property, or construction.

H. AFFIRMATION REGARDING COLLUSION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business has:

(1) Agreed, conspired, connived, or colluded to produce a deceptive show of competition in the compilation of the accompanying bid or offer that is being submitted;

(2) In any manner, directly or indirectly, entered into any agreement of any kind to fix the bid price or price proposal of the bidder or offeror or of any competitor, or otherwise taken any action in restraint of free competitive bidding in connection with the contract for which the accompanying bid or offer is submitted.

I. FINANCIAL DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, the provisions of Section 13-221 of the State Finance and Procurement Article of the Annotated Code of Maryland, which require that every business that enters into contracts, leases, or other agreements with the State of Maryland or its agencies during a calendar year under which the business is to receive in the aggregate $100,000 or more shall, within 30 days of the time when the aggregate value of the contracts, leases, or other agreements reaches $100,000, file with the Secretary of State of Maryland certain specified information to include disclosure of beneficial ownership of the business.

J. POLITICAL CONTRIBUTION DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, Election Law Article, §§14-101—14-108, Annotated Code of Maryland, which requires that every person that enters into contracts, leases, or other agreements with the State of Maryland, including its agencies or a political subdivision of the State, during a calendar year in which the person receives in the aggregate $100,000 or more shall file with the State Board of Elections a statement disclosing contributions in excess of $500 made during the reporting period to a candidate for elective office in any primary or general election.

K. DRUG AND ALCOHOL FREE WORKPLACE

(Applicable to all contracts unless the contract is for a law enforcement agency and the agency head or the agency head's designee has determined that application of COMAR 21.11.08 and this certification would be inappropriate in connection with the law enforcement agency's undercover operations.)

I CERTIFY THAT:

(1) Terms defined in COMAR 21.11.08 shall have the same meanings when used in this certification.

(2) By submission of its bid or offer, the business, if other than an individual, certifies and agrees that, with respect to its employees to be employed under a contract resulting from this solicitation, the business shall:

(a) Maintain a workplace free of drug and alcohol abuse during the term of the contract;

(b) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of drugs, and the abuse of drugs or alcohol is prohibited in the business' workplace and specifying the actions that will be taken against employees for violation of these prohibitions;

(c) Prohibit its employees from working under the influence of drugs or alcohol;

(d) Not hire or assign to work on the contract anyone whom the business knows, or in the exercise of due diligence should know, currently abuses drugs or alcohol and is not actively engaged in a bona fide drug or alcohol abuse assistance or rehabilitation program;

(e) Promptly inform the appropriate law enforcement agency of every drug-related crime that occurs in its workplace if the business has observed the violation or otherwise has reliable information that a violation has occurred;

(f) Establish drug and alcohol abuse awareness programs to inform its employees about:

(i) The dangers of drug and alcohol abuse in the workplace;

(ii) The business' policy of maintaining a drug and alcohol free workplace;

(iii) Any available drug and alcohol counseling, rehabilitation, and employee assistance programs; and

(iv) The penalties that may be imposed upon employees who abuse drugs and alcohol in the workplace;

(g) Provide all employees engaged in the performance of the contract with a copy of the statement required by §K(2)(b), above;

(h) Notify its employees in the statement required by §K(2)(b), above, that as a condition of continued employment on the contract, the employee shall:

(i) Abide by the terms of the statement; and

(ii) Notify the employer of any criminal drug or alcohol abuse conviction for an offense occurring in the workplace not later than 5 days after a conviction;

(i) Notify the procurement officer within 10 days after receiving notice under §K(2)(h)(ii), above, or otherwise receiving actual notice of a conviction;

(j) Within 30 days after receiving notice under §K(2)(h)(ii), above, or otherwise receiving actual notice of a conviction, impose either of the following sanctions or remedial measures on any employee who is convicted of a drug or alcohol abuse offense occurring in the workplace:

(i) Take appropriate personnel action against an employee, up to and including termination; or

(ii) Require an employee to satisfactorily participate in a bona fide drug or alcohol abuse assistance or rehabilitation program; and

(k) Make a good faith effort to maintain a drug and alcohol free workplace through implementation of §K(2)(a)—(j), above.

(3) If the business is an individual, the individual shall certify and agree as set forth in §K(4), below, that the individual shall not engage in the unlawful manufacture, distribution, dispensing, possession, or use of drugs or the abuse of drugs or alcohol in the performance of the contract.

(4) I acknowledge and agree that:

(a) The award of the contract is conditional upon compliance with COMAR 21.11.08 and this certification;

(b) The violation of the provisions of COMAR 21.11.08 or this certification shall be cause to suspend payments under, or terminate the contract for default under COMAR 21.07.01.11 or 21.07.03.15, as applicable; and

(c) The violation of the provisions of COMAR 21.11.08 or this certification in connection with the contract may, in the exercise of the discretion of the Board of Public Works, result in suspension and debarment of the business under COMAR 21.08.03.

L. CERTIFICATION OF CORPORATION REGISTRATION AND TAX PAYMENT

I FURTHER AFFIRM THAT:

(1) The business named above is a (domestic ___ ) (foreign ___ ) corporation registered in accordance with the Corporations and Associations Article, Annotated Code of Maryland, and that it is in good standing and has filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation, and that the name and address of its resident agent filed with the State Department of Assessments and Taxation is: Name: _____ Address: _____ .

(If not applicable, so state).

(2) Except as validly contested, the business has paid, or has arranged for payment of, all taxes due the State of Maryland and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, and the Department of Labor, Licensing, and Regulation, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final settlement.

M. CONTINGENT FEES

I FURTHER AFFIRM THAT:

The business has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency working for the business, to solicit or secure the Contract, and that the business has not paid or agreed to pay any person, partnership,

corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency, any fee or any other consideration contingent on the making of the Contract.

N. Repealed.

O. ACKNOWLEDGEMENT

I ACKNOWLEDGE THAT this Affidavit is to be furnished to the Procurement Officer and may be distributed to units of: (1) the State of Maryland; (2) counties or other subdivisions of the State of Maryland; (3) other states; and (4) the federal government. I further acknowledge that this Affidavit is subject to applicable laws of the United States and the State of Maryland, both criminal and civil, and that nothing in this Affidavit or any contract resulting from the submission of this bid or proposal shall be construed to supersede, amend, modify or waive, on behalf of the State of Maryland, or any unit of the State of Maryland having jurisdiction, the exercise of any statutory right or remedy conferred by the Constitution and the laws of Maryland with respect to any misrepresentation made or any violation of the obligations, terms and covenants undertaken by the above business with respect to (1) this Affidavit, (2) the contract, and (3) other Affidavits comprising part of the contract.

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

Date: _____ By: _____(Authorized Representative and Affiant)