

# Request for Quote

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
 ONE CAPITOL HILL  
 PROVIDENCE RI 02908

CREATION DATE : 16-SEP-19  
 BID NUMBER: 7599778  
 TITLE: REFLECTIVE SHEETING, ACRYLIC FILM & CAST VINYL FOR TRAFFIC SIGNS  
 BLANKET START : 01-OCT-19  
 BLANKET END : 30-JUN-22  
 BID CLOSING DATE AND TIME:04-OCT-2019 11:30:00

BUYER: Ward, Alyssa J  
 PHONE #: 401-574-8472

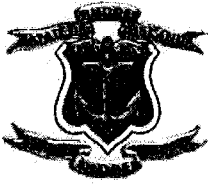
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 DOT ACCOUNTS PAYABLE  
 TWO CAPITOL HILL, RM 230  
 SMITH ST  
 PROVIDENCE, RI 02903  
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 DOT MAINTENANCE BUSINESS OFFICE  
 360 LINCOLN AVE  
 WARWICK, RI 02888  
 US

Requisition Number: 1627315

| Line | Description  | Quantity  | Unit        | Unit Price | Total |
|------|--|-----------|-------------|------------|-------|
|      | TO ESTABLISH AN APA FOR THE PURCHASE OF MATERIALS USED IN THE FABRICATION/RECONSTRUCTION OF HIGHWAY SIGNS<br><br>**PRICES MUST INCLUDE SHIPPING<br>**NO MINIMUM SHIPPING<br>**ALL SUPPLIERS SHALL BID THEIR ACRYLIC FILM, TYPE XI AND TYPE IV REFLECTIVE TO ENSURE MATCH COMPONENT SYSTEM AND TO MAINTAIN MANUFACTURERS WARRANTY<br>** ATSM= STANDARD SPEC FOR RETRO-REFLECTIVE SHEETING FOR TRAFFIC CONTROLS# D4956-11A |           |             |            |       |
| 1    | No-Read Clause Attached<br><br>*****<br>10/1/19-9/30/20 - ASTM TYPE I RETROREFLECTIVE SHEETING; ADVANCED FLEXIBLE ENGINEER GRADE REFLECTIVE;<br>3M 7310/7311/7314 OR APP EQUIVALENT<br>AVL COLORS: WHITE, YELLOW, RED<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"   | 2,500.00  | Square Foot |            |       |
| 2    | 10/1/19-9/30/20 - ASTM TYPE IV HI INTENSITY PRISMATIC; RETROREFLECTIVE;<br>AVL COLORS: WHITE, YELLOW, BROWN, RED, BLUE, ORANGE, & GREEN;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WDS: 1, 1-1/2, 2, 12, 15, 24, 30, 36, & 48IN   | 23,000.00 | Square Foot |            |       |
| 3    | 10/1/19 - 9/30/20 - ASTM TYPE XI PRISMATIC; RETROREFLECTIVE, FLUORESCENT YELLOW-GREEN; PRESSURE SENSITIVE ADHESIVE;<br>AVL BUT NOT LIMITED TO ROLL WIDTHS: 24", 30", 36", AND 48"  | 3,000.00  | Square Foot |            |       |
| 4    | 10/1/19 - 9/30/20 - ASTM TYPE XI PRISMATIC; RETROREFLECTIVE, FLUORESCENT ORANGE;PRESSURE SENSITIVE ADHESIVE;AVL BUT NOT LIMITED TO ROLL WIDTHS: 24", 30", 36", AND 48"   | 3,000.00  | Square Foot |            |       |

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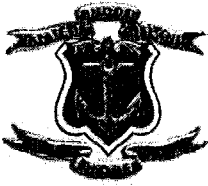
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Requisition Number: 1627315

| Line | Description   | Quantity | Unit        | Unit Price | Total |
|------|---|----------|-------------|------------|-------|
| 5    | 10/1/19 - 9/30/20 - ASTM TYPE XI PRISMATIC; RETROREFLECTIVE, FLUORESCENT YELLOW; PRESSURE SENSITIVE ADHESIVE; AVL BUT NOT LIMITED TO ROLL WIDTHS: 24", 30", 36", AND 48"                                  | 3,000.00 | Square Foot |            |       |
| 6    | 10/1/19 - 9/30/20 - ELECTRONIC CUTTABLE TRANSPARENT ACRYLIC FILM; AVL COLORS: GREEN, RED, YELLOW, BROWN AND BLUE; PRESSURE SENSITIVE ADHESIVE; AVL BUT NOT LIMITED TO ROLL WIDTHS: 24", 30", 36", AND 48" | 8,000.00 | Square Foot |            |       |
| 7    | 10/1/19 - 9/30/20 - ELECTRONIC CUTTABLE TRANSPARENT ACRYLIC FILM; CLEAR TRANSPARENT; PRESSURE SENSITIVE ADHESIVE; AVL BUT NOT LIMITED TO ROLL WIDTHS: 24", 30", 36", AND 48"                              | 4,000.00 | Square Foot |            |       |
| 8    | 10/1/19 - 9/30/20 - ELECTRONIC CUTTABLE ACRYLIC FILM; BLACK OPAQUE; PRESSURE SENSITIVE ADHESIVE; AVL BUT NOT LIMITED TO ROLL WIDTHS: 24", 30", 36", AND 48"   | 3,000.00 | Square Foot |            |       |
| 9    | "10/1/19 - 9/30/20 - DOT-C2 PRISMATIC CONSPICUITY TAPE; RIGID, RETROREFLECTIVE; 2 IN X 50 YD ROLL"  | 4.00     | Roll        |            |       |
| 10   | 10/1/19 - 9/30/20 - DOT-C2 PRISMATIC CONSPICUITY TAPE; FLEXIBLE, RETROREFLECTIVE; 2 IN X 50 YD ROLL   | 4.00     | Roll        |            |       |
| 11   | 01/1/19 - 9/30/20 - HIGH PERFORMANCE CAST VINYL; BLACK OPAQUE; PRESSURE SENSITIVE ADHESIVE; AVL BUT NOT LIMITED TO ROLL WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/4", 2", 12", 24", 30", 36", AND 48" | 6,000.00 | Square Foot |            |       |
| 12   | 10/1/19 - 9/30/20 - HIGH PERFORMANCE CAST VINYL; WHITE OPAQUE; PRESSURE SENSITIVE ADHESIVE; AVL BUT NOT LIMITED TO ROLL WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/4", 2", 12", 24", 30", 36", AND 48" | 3,000.00 | Square Foot |            |       |

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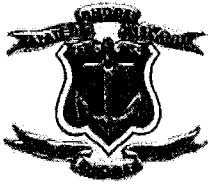
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 WARWICK, RI 02888  
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Requisition Number: 1627315

| Line | Description  | Quantity | Unit        | Unit Price | Total |
|------|--|----------|-------------|------------|-------|
| 13   | 10/1/19 - 9/30/20 - HIGH PERFORMANCE CAST VINYL; SAPPHIRE BLUE OPAQUE; PRESSURE SENSITIVE ADHESIVE; AVL BUT NOT LIMITED TO ROLL WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/4", 2", 12", 24", 30", 36", AND 48"                    | 6,000.00 | Square Foot |            |       |
| 14   | 10/1/19-9/30/20 - HI-PRFM INKJET VINYL; CLEAR TRANSPARENT; AIR-RELEASE, PRESS. SENSITIVE ADHESIVE BACKING; ROLAND VARSACAMM 540I, ECO-SOL MAX 2 COMP; 3M IJ180 C, ORAJET3951 RA OR APP EQUIV; AVL BUT NOT LTD WIDTHS: 30", 50", 54"  | 2,500.00 | Square Foot |            |       |
| 15   | 10/1/19-9/30/20 - HI-PRFM INKJET VINYL; WHITE OPAQUE; AIR-RELEASE, PRESS. SENSITIVE ADHESIVE BACKING; ROLAND VARSACAMM 540I, ECO-SOL MAX 2 COMP; 3M IJ180 C, ORAJET3951 RA OR APP EQUIV; AVL BUT NOT LTD WIDTHS: 30", 50", 54"       | 6,000.00 | Square Foot |            |       |
| 16   | 10/1/19 - 9/30/20 - PAPER TRANSFER (PRE-SPACING) TAPE; FOR USE IN LIFTING OFF LEGENDS FROM SHEETING BACKING AND ONTO TRAFFIC SIGNS; AVAILABLE 50 LINEAR YARD ROLLS AT WIDTHS: 4", 6", 8", 12", 24"                                   | 3,000.00 | Square Foot |            |       |
| 17   | 10/1/19 - 9/30/20 - CLEAR TRANSFER (PRE-SPACING) TAPE; FOR USE IN LIFTING OFF LEGENDS FROM SHEETING BACKING AND ONTO TRAFFIC SIGNS; AVAILABLE 50 LINEAR YARD ROLLS AT WIDTHS: 4", 6", 8", 12", 24"                                   | 3,000.00 | Square Foot |            |       |
| 18   | 10/1/19 - 9/30/20 - OVERLAMINATE SURF PROTECTION FILM; CAST VINYL; CLEAR TRANSPARENT; FOR CLEAR & OPAQUE SOLVENT INKJET FILMS, BOTH FLAT & SLIGHTLY CURVED SURF; 3M 8519, ORAGUARD 293, OR APP EQV; AVL BUT NOT LTD TO WDS: 30", 54" | 2,000.00 | Square Foot |            |       |
| 19   | 10/1/19 - 9/30/20 - FHWA MUTCD R1-1 30-INCH STOP SIGN FACE; ASTM TYPE IV HIGH INTENSITY PRISMATIC; RETROREFLECTIVE; PRESSURE SENSITIVE ADHESIVE  | 200.00   | Each        |            |       |

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 DOT MAINTENANCE BUSINESS OFFICE  
 360 LINCOLN AVE  
 WARWICK, RI 02888  
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Requisition Number: 1627315

| Line | Description  | Quantity  | Unit        | Unit Price | Total |
|------|--|-----------|-------------|------------|-------|
| 20   | 10/1/19 - 9/30/20 - FHWA MUTCD R1-1 36-INCH YIELD SIGN FACE;<br>ASTM TYPE IV HIGH INTENSITY PRISMATIC;<br>RETROREFLECTIVE;<br>PRESSURE SENSITIVE ADHESIVE  | 200.00    | Each        |            |       |
| 21   | 10/1/19 - 9/30/20 - FHWA MUTCD R5-1 30-INCH DO NOT ENTER SIGN FACE;<br>ASTM TYPE IV HIGH INTENSITY PRISMATIC;<br>RETROREFLECTIVE;<br>PRESSURE SENSITIVE ADHESIVE   | 200.00    | Each        |            |       |
| 22   | 10/1/20 - 9/30/21 - ASTM TYPE I RETROREFLECTIVE SHEETING; ADVANCED FLEXIBLE ENGINEER GRADE REFLECTIVE;<br>3M 7310/7311/7314 OR APP EQUIVALENT<br>AVL COLORS: WHITE, YELLOW, RED<br>AVL BUT NOT LTD TO ROLL WIDTHS: 24", 30", 36", & 48"  | 2,500.00  | Square Foot |            |       |
| 23   | 10/1/20-9/30/21 - ASTM TYPE IV HI INTENSITY PRISMATIC; RETROREFLECTIVE;<br>AVL COLORS: WHITE, YELLOW, BROWN, RED, BLUE, ORANGE, & GREEN;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WDS: 1, 1-1/2, 2, 12, 15, 24, 30, 36, & 48IN | 23,000.00 | Square Foot |            |       |
| 24   | 10/1/20-9/30/21 - ASTM TYPE XI PRISMATIC; RETROREFLECTIVE, FLUORESCENT YELLOW-GREEN;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"   | 3,000.00  | Square Foot |            |       |
| 25   | 10/1/20-9/30/21 - ASTM TYPE XI PRISMATIC; RETROREFLECTIVE, FLUORESCENT ORANGE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"   | 3,000.00  | Square Foot |            |       |
| 26   | 10/1/20-9/30/21 - ASTM TYPE XI PRISMATIC; RETROREFLECTIVE, FLUORESCENT YELLOW;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"   | 3,000.00  | Square Foot |            |       |
| 27   | 10/1/20-9/30/21 - ELECTRONIC CUTTABLE TRANSPARENT ACRYLIC FILM;<br>AVL COLORS: GREEN, RED, YELLOW, BROWN & BLUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"   | 8,000.00  | Square Foot |            |       |
| 28   | 10/1/20-9/30/21 - ELECTRONIC CUTTABLE TRANSPARENT ACRYLIC FILM;<br>CLEAR TRANSPARENT;  | 4,000.00  | Square Foot |            |       |

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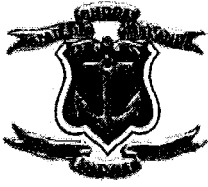
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DOT ACCOUNTS PAYABLE  
TWO CAPITOL HILL, RM 230  
SMITH ST  
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360 LINCOLN AVE  
WARWICK, RI 02888  
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Requisition Number: 1627315

| Line | Description   | Quantity | Unit        | Unit Price | Total |
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|      | PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"  |          |             |            |       |
| 29   | 10/1/20-9/30/21 - ELECTRONIC CUTTABLE ACRYLIC FILM;<br>BLACK OPAQUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"  | 3,000.00 | Square Foot |            |       |
| 30   | 10/1/20-9/30/21 - DOT-C2 PRISMATIC CONSPICUITY TAPE;<br>RIGID, RETROREFLECTIVE;<br>2 IN X 50 YD   | 4.00     | Roll        |            |       |
| 31   | 10/1/20-9/30/21 - DOT-C2 PRISMATIC CONSPICUITY TAPE;<br>FLEXIBLE, RETROREFLECTIVE;<br>2 IN X 50 YD  | 4.00     | Roll        |            |       |
| 32   | 10/1/20-9/30/21 - HI PERFORMANCE CAST VINYL;<br>BLACK OPAQUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/4", 2", 12", 24", 30", 36", & 48"  | 6,000.00 | Square Foot |            |       |
| 33   | 10/1/20-9/30/21 - HI PERFORMANCE CAST VINYL;<br>WHITE OPAQUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/4", 2", 12", 24", 30", 36", & 48"  | 3,000.00 | Square Foot |            |       |
| 34   | 10/1/20-9/30/21 - HI PERFORMANCE CAST VINYL;<br>SAPPHIRE BLUE OPAQUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/4", 2", 12", 24", 30", 36", & 48"  | 6,000.00 | Square Foot |            |       |
| 35   | 10/1/20-9/30/21 - HI-PRFM INKJET VINYL;<br>CLEAR TRANSPARENT;<br>AIR-RELEASE, PRESS. SENSITIVE ADHESIVE BACKING;<br>ROL & VARSACAMM 540I, ECO-SOL MAX 2 COMP;<br>3M IJ180 C, ORAJET3951 RA OR APP EQUIV;<br>AVL BUT NOT LTD WIDTHS: 30", 50", 54" | 2,500.00 | Square Foot |            |       |
| 36   | 10/1/20-9/30/21 - HI-PRFM INKJET VINYL;<br>WHITE OPAQUE;<br>AIR-RELEASE, PRESS. SENSITIVE ADHESIVE BACKING;<br>ROL & VARSACAMM 540I, ECO-SOL MAX 2 COMP;<br>3M IJ180 C, ORAJET3951 RA OR APP EQUIV;<br>AVL BUT NOT LTD WIDTHS: 30", 50", 54"      | 6,000.00 | Square Foot |            |       |

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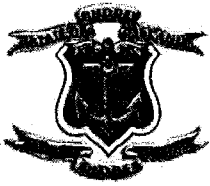
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| 38   | 10/1/20-9/30/21 - CLEAR TRANSFER (PRE-SPACING) TAPE;<br>FOR USE IN LIFTING OFF LEGENDS FROM SHEETING BACKING & ONTO TRAFFIC SIGNS;<br>AVL 50 LINEAR YARD S AT WIDTHS: 4", 6", 8", 12", 24"   | 3,000.00  | Square Foot |            |       |
| 39   | 10/1/20-9/30/21 - OVERLAMINATE SURF PROTECTION FILM;<br>CAST VINYL; CLEAR TRANSPARENT;<br>FOR CLEAR & OPAQUE SOLVENT INKJET FILMS, BOTH FLAT & SLIGHTLY CURVED SURF;<br>3M 8519, ORAGUARD 293, OR APP EQV;<br>AVL BUT NOT LTD TO WDS: 30", 54" | 2,000.00  | Square Foot |            |       |
| 40   | 10/1/20-9/30/21 - FHWA MUTCD R1-1 30-INCH STOP SIGN FACE;<br>ASTM TYPE IV HI INTENSITY PRISMATIC;<br>RETROREFLECTIVE;<br>PRESS SENSITIVE ADHESIVE;   | 200.00    | Each        |            |       |
| 41   | 10/1/20-9/30/21 - FHWA MUTCD R1-1 36-INCH YIELD SIGN FACE;<br>ASTM TYPE IV HI INTENSITY PRISMATIC;<br>RETROREFLECTIVE;<br>PRESS SENSITIVE ADHESIVE   | 200.00    | Each        |            |       |
| 42   | 10/1/20-9/30/21 - FHWA MUTCD R5-1 30-INCH DO NOT ENTER SIGN FACE;<br>ASTM TYPE IV HI INTENSITY PRISMATIC;<br>RETROREFLECTIVE;<br>PRESS SENSITIVE ADHESIVE  | 200.00    | Each        |            |       |
| 43   | 10/1/21-9/30/22 - ASTM TYPE I RETROREFLECTIVE SHEETING; ADVANCED FLEXIBLE ENGINEER GRADE REFLECTIVE;<br>3M 7310/7311/7314 OR APP EQUIVALENT<br>AVL COLORS: WHITE, YELLOW, RED<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"               | 2,500.00  | Square Foot |            |       |
| 44   | 10/1/21-9/30/22 - ASTM TYPE IV HI INTENSITY PRISMATIC; RETROREFLECTIVE;<br>AVL COLORS: WHITE, YELLOW, BROWN, RED, BLUE, ORANGE, & GREEN;<br>PRESS SENSITIVE ADHESIVE;  | 23,000.00 | Square Foot |            |       |

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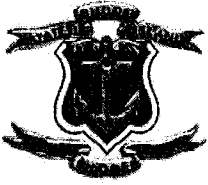
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|      | AVL BUT NOT LTD TO WDS: 1, 1-1/2, 2, 12, 15, 24, 30, 36, & 48IN   |          |             |            |       |
| 45   | 10/1/21-9/30/22 - ASTM TYPE XI PRISMATIC;<br>RETROREFLECTIVE, FLUORESCENT YELLOW-GREEN;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"                             | 3,000.00 | Square Foot |            |       |
| 46   | 10/1/21-9/30/22 - ASTM TYPE XI PRISMATIC;<br>RETROREFLECTIVE, FLUORESCENT ORANGE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"                                   | 3,000.00 | Square Foot |            |       |
| 47   | 10/1/21-9/30/22 - ASTM TYPE XI PRISMATIC;<br>RETROREFLECTIVE, FLUORESCENT YELLOW;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"                                   | 3,000.00 | Square Foot |            |       |
| 48   | 10/1/21-9/30/22 - ELECTRONIC CUTTABLE<br>TRANSPARENT ACRYLIC FILM;<br>AVL COLORS: GREEN, RED, YELLOW, BROWN & BLUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48" | 8,000.00 | Square Foot |            |       |
| 49   | 10/1/21-9/30/22 - ELECTRONIC CUTTABLE<br>TRANSPARENT ACRYLIC FILM;<br>CLEAR TRANSPARENT;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"                            | 4,000.00 | Square Foot |            |       |
| 50   | 10/1/21-9/30/22 - ELECTRONIC CUTTABLE ACRYLIC<br>FILM;<br>BLACK OPAQUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 24", 30", 36", & 48"   | 3,000.00 | Square Foot |            |       |
| 51   | 10/1/21-9/30/22 - DOT-C2 PRISMATIC CONSPICUITY<br>TAPE;<br>RIGID, RETROREFLECTIVE;<br>2 IN X 50 YD  | 4.00     | Roll        |            |       |
| 52   | 10/1/21-9/30/22 - DOT-C2 PRISMATIC CONSPICUITY<br>TAPE;<br>FLEXIBLE, RETROREFLECTIVE;<br>2 IN X 50 YD   | 4.00     | Roll        |            |       |
| 53   | 10/1/21-9/30/22 - HI PERFORMANCE CAST VINYL;<br>BLACK OPAQUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8",<br>1", 1-1/4", 2", 12", 24", 30", 36", & 48" | 6,000.00 | Square Foot |            |       |

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# Request for Quote

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
 ONE CAPITOL HILL  
 PROVIDENCE RI 02908

CREATION DATE : 16-SEP-19  
 BID NUMBER: 7599778  
 TITLE: REFLECTIVE SHEETING, ACRYLIC FILM & CAST VINYL FOR TRAFFIC SIGNS

BLANKET START : 01-OCT-19  
 BLANKET END : 30-JUN-22  
 BID CLOSING DATE AND TIME: 04-OCT-2019 11:30:00

BUYER: Ward, Alyssa J  
 PHONE #: 401-574-8472

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 DOT ACCOUNTS PAYABLE  
 TWO CAPITOL HILL, RM 230  
 SMITH ST  
 PROVIDENCE, RI 02903  
 US

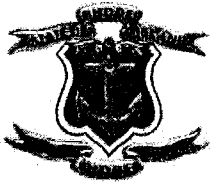
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 DOT MAINTENANCE BUSINESS OFFICE  
 360 LINCOLN AVE  
 WARWICK, RI 02888  
 US

Requisition Number: 1627315

| Line | Description  | Quantity | Unit           | Unit Price | Total |
|------|--|----------|----------------|------------|-------|
| 54   | 10/1/21-9/30/22 - HI PERFORMANCE CAST VINYL;<br>WHITE OPAQUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8",<br>1", 1-1/4", 2", 12", 24", 30", 36", & 48"  | 3,000.00 | Square<br>Foot |            |       |
| 55   | 10/1/21-9/30/22 - HI PERFORMANCE CAST VINYL;<br>SAPPHIRE BLUE OPAQUE;<br>PRESS SENSITIVE ADHESIVE;<br>AVL BUT NOT LTD TO WIDTHS: 3/8", 1/2", 5/8", 3/4", 7/8",<br>1", 1-1/4", 2", 12", 24", 30", 36", & 48"  | 6,000.00 | Square<br>Foot |            |       |
| 56   | 10/1/21-9/30/22 - HI-PRFM INKJET VINYL;<br>CLEAR TRANSPARENT;<br>AIR-RELEASE, PRESS. SENSITIVE ADHESIVE BACKING;<br>ROL & VARSACAMM 540I, ECO-SOL MAX 2 COMP;<br>3M IJ180 C, ORAJET3951 RA OR APP EQUIV;<br>AVL BUT NOT LTD WIDTHS: 30", 50", 54"    | 2,500.00 | Square<br>Foot |            |       |
| 57   | 10/1/21-9/30/22 - HI-PRFM INKJET VINYL;<br>WHITE OPAQUE;<br>AIR-RELEASE, PRESS. SENSITIVE ADHESIVE BACKING;<br>ROL & VARSACAMM 540I, ECO-SOL MAX 2 COMP;<br>3M IJ180 C, ORAJET3951 RA OR APP EQUIV;<br>AVL BUT NOT LTD WIDTHS: 30", 50", 54"         | 6,000.00 | Square<br>Foot |            |       |
| 58   | 10/1/21-9/30/22 - PAPER TRANSFER (PRE-SPACING)<br>TAPE;<br>FOR USE IN LIFTING OFF LEGENDS FROM SHEETING<br>BACKING & ONTO TRAFFIC SIGNS;<br>AVL 50 LINEAR YARD S AT WIDTHS: 4", 6", 8", 12", 24"   | 3,000.00 | Square<br>Foot |            |       |
| 59   | 10/1/21-9/30/22 - CLEAR TRANSFER (PRE-SPACING)<br>TAPE;<br>FOR USE IN LIFTING OFF LEGENDS FROM SHEETING<br>BACKING & ONTO TRAFFIC SIGNS;<br>AVL 50 LINEAR YARD S AT WIDTHS: 4", 6", 8", 12", 24"   | 3,000.00 | Square<br>Foot |            |       |
| 60   | 10/1/21-9/30/22 - OVERLAMINATE SURF PROTECTION<br>FILM;<br>CAST VINYL; CLEAR TRANSPARENT;<br>FOR CLEAR & OPAQUE SOLVENT INKJET FILMS, BOTH<br>FLAT & SLIGHTLY CURVED SURF;<br>3M 8519, ORAGUARD 293, OR APP EQV;<br>AVL BUT NOT LTD TO WDS: 30", 54" | 2,000.00 | Square<br>Foot |            |       |
| 61   | 10/1/21-9/30/22 - FHWA MUTCD R1-1 30-INCH STOP<br>SIGN FACE;<br>ASTM TYPE IV HI INTENSITY PRISMATIC;<br>RETROREFLECTIVE;   | 200.00   | Each           |            |       |

It is the Vendor's responsibility to check and download any and all addenda from the RIVIP. This offer may not be considered unless a signed RIVIP generated Bidder Certification Cover Form is attached and the Unit Price column is completed. The signed Certification Cover Form must be attached to the front of the offer





# Request for Quote

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
 ONE CAPITOL HILL  
 PROVIDENCE RI 02908

**CREATION DATE :** 16-SEP-19  
**BID NUMBER:** 7599778  
**TITLE:** REFLECTIVE SHEETING, ACRYLIC FILM & CAST VINYL FOR TRAFFIC SIGNS  
  
**BLANKET START :** 01-OCT-19  
**BLANKET END :** 30-JUN-22  
**BID CLOSING DATE AND TIME:**04-OCT-2019 11:30:00

**BUYER:** Ward, Alyssa J  
**PHONE #:** 401-574-8472

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 DOT ACCOUNTS PAYABLE  
 TWO CAPITOL HILL, RM 230  
 SMITH ST  
 PROVIDENCE, RI 02903  
 US

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 DOT MAINTENANCE BUSINESS OFFICE  
 360 LINCOLN AVE  
 WARWICK, RI 02888  
 US

Requisition Number: 1627315

| Line | Description   | Quantity | Unit | Unit Price | Total |
|------|---|----------|------|------------|-------|
|      | PRESS SENSITIVE ADHESIVE  |          |      |            |       |
| 62   | 10/1/21-9/30/22 - FHWA MUTCD R1-1 36-INCH YIELD SIGN FACE; ASTM TYPE IV HI INTENSITY PRISMATIC; RETROREFLECTIVE; PRESS SENSITIVE ADHESIVE   | 200.00   | Each |            |       |
| 63   | 10/1/21-9/30/22 - FHWA MUTCD R5-1 30-INCH DO NOT ENTER SIGN FACE;ASTM TYPE IV HI INTENSITY PRISMATIC;RETROREFLECTIVE;PRESS SENSITIVE ADHESIVE<br>Line Note to Bidders: VENDOR OFFERS _____% DISCOUNT ON LIST FOR UNSPECIFIED ITEMS PAID AT \$1.00 PER \$1.00 OF ALLOWABLE EXPENSE | 200.00   | Each |            |       |

Delivery: \_\_\_\_\_

Terms of Payment: \_\_\_\_\_

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**Contract Terms and Conditions**

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**Terms and Conditions**

**BID STANDARD TERMS AND CONDITIONS**

**TERMS AND CONDITIONS FOR THIS BID**

**LICENSE REQUIREMENTS**

VENDOR (OWNER OF COMPANY) IS RESPONSIBLE TO COMPLY WITH ALL LICENSING OR STATE PERMITS REQUIRED FOR THIS TYPE OF SERVICE. A COPY OF LICENSE/PERMIT SHOULD BE SUBMITTED WITH THIS BID. IN ADDITION TO THESE LICENSE REQUIREMENTS, BIDDER, BY SUBMISSION OF THIS BID, CERTIFIES THAT ANY/ALL WORK RELATED TO THIS BID, AND ANY SUBSEQUENT AWARD WHICH REQUIRES A RHODE ISLAND LICENSE(S), SHALL BE PERFORMED BY AN INDIVIDUAL(S) HOLDING A VALID RHODE ISLAND LICENSE.

**RIVIP INFO - BID SUBMISSION REQUIREMENTS**

It is the vendor's responsibility to check and download any and all addenda from the RIVIP. This offer may not be considered unless a signed RIVIP generated Bidder Certification Cover Form is attached and the Unit Price column is completed. The signed Certification Cover Form should be attached to the front of the offer. Each bid proposal must be submitted in a separate sealed envelope with the bidder's name and address and the specific "Solicitation Number," "Solicitation Title," and the "Bid Proposal Submission Deadline" marked in the upper left-hand corner of the envelope.

The bid proposal must be delivered (via mail, messenger service, or personal delivery) to the Division of Purchases and date-stamped/receipted by the date and time specified for the bid proposal submission deadline. Bidders should mail bid proposals sufficiently in advance of the bid proposal submission deadline to ensure timely delivery to the Division of Purchases or, when delivering a bid proposal in person or by messenger, should allow additional time for parking and clearance through security checkpoints. Bid proposals must be addressed to:

Rhode Island Department of Administration

Division of Purchases, 2nd Floor

One Capitol Hill, Providence, RI 02908-5855

Bid proposals that are not received by the Division of Purchases by the bid proposal submission deadline for whatever reason will be deemed late and will not be considered. The submission time will be determined by the time clock in the Division of Purchases. Postmarks will not be considered proof of timely submission.

Bid proposals in electronic format are not accepted at this time.

At the bid proposal submission deadline, bid proposals will be opened and read aloud in public.

**DIVESTITURE OF INVESTMENTS IN IRAN REQUIREMENT:**

No vendor engaged in investment activities in Iran as described in R.I. Gen. Laws §37-2.5-2(b) may submit a bid proposal to, or renew a contract with, the Division of Purchases. Each vendor submitting a bid proposal or entering into a renewal of a contract is required to certify that the vendor does not appear on the list maintained by the General Treasurer pursuant to R.I. Gen. Laws §37-2.5-3.

**PURCHASE AGREEMENT BID**

BIDDING (a) A single price shall be quoted for each item against which a proposal is submitted. This price will be the maximum in effect during the agreement period. Any price decline at the manufacturer's level shall be reflected in a reduction of the agreement price to the State. (b) Quantities, if any, are estimated only. The agreement shall cover the actual quantities ordered during the period. Deliveries will be billed at

the single, firm, awarded unit price quoted regardless of the quantities ordered. (c) Bid price is net F.O.B. destination and shall include inside delivery at no extra cost. (d) Bids for single items and/or a small percentage of total items listed, may, at the State's sole option, be rejected as being non-responsive to the intent of this request. ORDERING (a) The User Agency(s) will submit individual orders for the various items and various quantities as may be required during the agreement period. (b) Exception - Regardless of any agreement resulting from this bid, the State reserves the right to solicit prices separately for any extra large requirements for delivery to specific destinations.

Mailing Address for Bid Proposals issued by the State of Rhode Island, Division of Purchases:

All Bid Proposals must be submitted to the following address:

State of Rhode Island  
Department of Administration  
Division of Purchases, 2nd Floor  
One Capitol Hill  
Providence, RI 02908

**DELIVERY PER AGENCY**

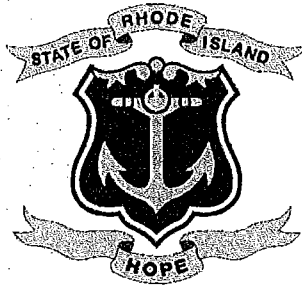
DELIVERY OF GOODS OR SERVICES AS REQUESTED BY AGENCY.

**MULTI YEAR AWARD**

THIS IS A MULTI-YEAR BID/CONTRACT. PER RHODE ISLAND STATE LAW 37-2-33, CONTRACT OBLIGATIONS BEYOND THE CURRENT FISCAL YEAR ARE SUBJECT TO AVAILABILITY OF FUNDS. CONTINUATION OF THE CONTRACT BEYOND THE INITIAL FISCAL YEAR WILL BE AT THE DISCRETION OF THE STATE. TERMINATION MAY BE EFFECTED BY THE STATE BASED UPON DETERMINING FACTORS SUCH AS UNSATISFACTORY PERFORMANCE OR THE DETERMINATION BY THE STATE TO DISCONTINUE THE GOODS/SERVICES, OR TO REVISE THE SCOPE AND NEED FOR THE TYPE OF GOODS/SERVICES; ALSO MANAGEMENT OWNER DETERMINATIONS THAT MAY PRECLUDE THE NEED FOR GOODS/SERVICES.

**READING VENDOR NAMES ONLY**

~~DUE TO LENGTH OF BID AND TIME CONSTRAINTS, THE STATE WILL ONLY~~ ACKNOWLEDGE RECEIPT AND READ THE NAMES OF VENDORS SUBMITTING PROPOSALS. NO EXAMINATION OF DOCUMENTS OR PRESENTATION OF INFORMATION CONTAINED IN PROPOSALS WILL BE MADE AVAILABLE AT THE BID OPENING; HOWEVER, INSTRUCTIONS TO OBTAIN THE TABULATION OR SUMMARY OF BID RESPONSES WILL BE MADE AVAILABLE AT THE RI DIVISION OF PURCHASES WEBSITE AT [WWW.PURCHASING.RI.GOV](http://WWW.PURCHASING.RI.GOV)



**State of Rhode Island**  
**Department of Transportation**  
Division of Highway and Bridge Maintenance

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Reflective Sheeting, Acrylic Film and Cast  
Vinyl for Traffic Signs

## **1. GENERAL PROVISIONS**

### **1.1. CONTRACT DOCUMENTS / QUESTION SUBMISSION**

Responses to this solicitation shall be in accordance with the guidelines set forth by the RI Department of Administration, Division of Purchasing and must be submitted in duplicate with each page numbered (ex. 1 of X) and including the vendors name. All questions regarding this solicitation shall be submitted to the person of contact listed on the bid sheet in the manner specified no later than the deadline specified so that they may be answered publicly through the addendum process.

### **1.2. SHIPPING PRICES**

All prices must include shipping. There shall be no minimum shipping requirements on any item.

### **1.3. DELIVERY SCHEDULE**

Delivery is to be made within thirty (30) calendar days after receipt of purchase order or notice to proceed with shipment. Replacement of rejected material shall be made within twenty (20) days after receiving notice of rejection.

### **1.4. CONSIDERATIONS OF AWARD**

The State of Rhode Island reserves the right to award or to not award this contract on the base of cost alone, to accept or reject any or all proposals, and to award in its best interest.

### **1.5. INDUSTRY STANDARDS**

If not otherwise provided, materials and supplies in this contract shall be furnished in accordance with best established practice and standards recognized by the contracted industry and comply with all codes and regulations which shall apply.

### **1.6. NEW MATERIALS AND SUPPLIES**

Unless otherwise specified, all materials and supplies offered by the Supplier shall be new, unused in any regard and of most current design. All materials and supplies shall be first class in all respects. Seconds or flawed items will not be acceptable. All materials and supplies shall be suitable for their intended purpose and, unless otherwise specified, ready for use on delivery.

**1.7. IMPLIED REQUIREMENTS**

All products and services not specifically mentioned in this contract, but which are necessary to provide the functional capabilities described by the specifications, shall be included.

**1.8. INSPECTION**

The State reserves the right to reject, on arrival at destination, any items which do not conform with specification of the Contract.

**1.9. ACCEPTANCE**

No contract provision or use of items by the State shall constitute acceptance or relieve the Supplier of liability in respect to any expressed or implied warranties.

**1.10. INFORMATION / DATA**

Any and all information/data required to be provided at any time during the contract term shall be made available in a format as requested and/or approved by the State.

**1.11. CERTIFICATION OF MATERIALS SUBMITTED**

The Bid document, together with the specifications set forth herein and all data submitted by the Supplier to support their response including brochures, manuals, and descriptions covering the operating characteristics of the item(s) proposed, shall become a part of the contract between the Supplier and the State of Rhode Island. Any written representation covering such matters as reliability of the item(s), the experience of other users, or warranties of performance shall be incorporated by reference into the contract.

**2. SPECIAL PROVISIONS****2.1. APPLICABLE STANDARDS FOR TRAFFIC SIGN FABRICATION MATERIALS**

All retroreflective sheeting, cast vinyl, and transparent acrylic films shall conform to the latest specifications and standards set forth by RIDOT Standard Specifications for Road and Bridge Design M16.02, ASTM D4956, AASHTO M268, and all other applicable accepted regulations.

**2.2. MATCH COMPONENT ITEMS**

All suppliers shall bid their Acrylic Films and Retroreflective Sheeting (Lines 1-8, 22-28, 43-50) from the same manufacturer. These line items will be awarded together ensuring a match component system that ensures maximum compliance/

performance and maintains manufacturer's warranty on traffic signs produced.

### **2.3. DIGITAL PRINTING COMPLIANCE AND WARRANTY FOR RETROREFLECTIVE SHEETING**

#### **2.3.1. Type IV and XI Support for printing with HP Latex 365**

Type IV and XI Retroreflective Sheeting (Lines 2-5, 23-26, 44-47) provided by the Supplier shall support direct digital printing with an HP Latex 365 printer and FlexiPrint RIP Software with the application of a clear acrylic film overlaminated (Lines 7, 48, 49). Support is defined by both the ability to print directly onto the sheeting and the availability of any required media/ICC profiles, spot colors, and any additional software or technical support needed to produce traffic colors that meet ASTM D4956 and AASHTO M268 specifications. As a condition of award, samples may be requested for verification purposes.

#### **2.3.2. Warranty for Digital Printing on Type IV and Type XI**

Digitally printed traffic signs made using an HP Latex 365 printer and Type IV and XI retroreflective sheeting (Lines 2-5, 23-26, 44-47) bid by supplier shall be covered by a limited supplier/manufacturer warranty that meets or exceeds the matrix chart on page 4, labeled Chart 1.



**CHART 1: Traffic Warranty Matrix for Type IV and Type XI with HP Latex 365**

| Sheeting | Components              |                   |                              | Warranty Type and Period (years from Fabrication Date) |                                    |                                 | Limited Remedy Type and Period (years from Fabrication Date) |                       |
|----------|-------------------------|-------------------|------------------------------|--|------------------------------------|---------------------------------|--|-----------------------|
|          | Printed Traffic Color   | Ink               | Clear Overlay Film           | Legibility Warranty                                    | Retroreflection Retention Warranty |                                 | Sign Restoration   | Materials Replacement |
|          |                         |                   |                              |  | 80% of R <sub>A</sub> Benchmark    | 70% of R <sub>A</sub> Benchmark |  |                       |
| Type IV  | Red, Blue, Green, Brown | HP Series 831/871 | Match Component Acrylic Film | 0-10   | 0-7 <sup>a</sup>                   | 8-10 <sup>a</sup>               | 0-7  | 8-10                  |
| Type XI  | Red, Blue, Green, Brown | HP Series 831/871 | Match Component Acrylic Film | 0-12   | 0-7 <sup>b</sup>                   | 8-12 <sup>b</sup>               | 0-7  | 8-12                  |
| Type XI  | Purple                  | HP Series 831/871 | Match Component Acrylic Film | 0-8  | 0-5 <sup>b</sup>                   | 6-8 <sup>b</sup>                | 0-5  | 6-8                   |
| Type IV  | Black                   | HP Series 831/871 | Match Component Acrylic Film | 0-10   | 0-7 <sup>c</sup>                   | 8-10 <sup>c</sup>               | 0-7  | 8-10                  |
| Type XI  | Black                   | HP Series 831/871 | Match Component Acrylic Film | 0-12   | 0-7 <sup>d</sup>                   | 8-10 <sup>d</sup>               | 0-7  | 8-12                  |

- a. The R<sub>A</sub> benchmark is 70% of the coefficient of retroreflection for each standard traffic color, as defined in ASTM D4956, Type IV
- b. The R<sub>A</sub> benchmark is 70% of the coefficient of retroreflection for each standard traffic color, as defined in ASTM D4956, Type XI
- c. The R<sub>A</sub> benchmarks are the coefficients of retroreflection for white and yellow sheeting, as defined in ASTM D4956, Type IV
- d. The R<sub>A</sub> benchmarks are the coefficients of retroreflection for white and yellow sheeting, as defined in ASTM D4956, Type XI

SOLICITATION # 7599778

VENDOR: \_\_\_\_\_

Locking tab fastenings engaging the sign stringers and connected to the sign sheets shall be designed with a factor of safety of not less than 1.61 against the minimum yield stress of the material and shall be fabricated of 6061-T6 aluminum alloy material as shown on the Plans.

Stud material shall be aluminum alloy 1100-H16, electrically welded to the sign sheets by the capacitor discharge method.

Hardware required to fasten panels together or to attach signs to posts shall be aluminum or stainless steel. Stainless hardware shall conform to the requirements of ASTM A320. Nuts shall be of the self-locking type.

**M.16.01.2 Aluminum Sheets.** Aluminum sheets for signs shall conform to ASTM B209, latest issue, alloy 6061-T6. The minimum thickness of sheets shall be as shown on the Plans.

**M.16.01.3 Temporary Construction Sign Panels.** The plywood shall be of the exterior type and conform to the requirements as set forth in Department of Commerce product standard PSI-66.

Face, core, and cross veneers shall be grade B or better, and the entire area of contacting veneer surface shall be bonded with a waterproof adhesive that meets the test requirements for exterior type.

The overlay shall be of the high-density type. Precautions shall be taken during plywood manufacture and subsequent handling to prevent any press caul lubricants, release agents, or other contaminants from coming in contact with the overlay surface.

Thickness, length, and width shall be as shown on the Plans. Sign blanks shall be cut to shape using a saw blade that does not tear plywood grain. Holes shall be clean cut and uniform.

The Contractor may use aluminum sheets for temporary construction signs which meet the requirements of ~~Subsection M.16.01.2; Aluminum Sheets~~, of these Specifications.

The Contractor may also use vinyl rollup signs which meet the requirements for Type II Engineering Grade reflective sheeting.

## **M.16.02 REFLECTIVE SHEETING.**

**M.16.02.1 General.** The reflective sheeting covered by this Specification shall consist of a retroreflective system having a smooth outer surface. When an adhesive backing is used, the sheeting shall have a precoated adhesive on the back protected by an easily removable liner.

a. Type IIIA and Type IIIB are high performance grade encapsulated lens sheetings with designations "A" for glass bead and "B" for prismatic sheeting.

b. Type IV is a reflectorized, reboundable flexible sheeting designed for channeling devices with markings, and shall meet or exceed the retroreflection requirements, color conformance and all tests in accordance with ASTM D4956.

c. Type V is durable fluorescent orange retroreflective sheeting for certain work zone signs.

d. Type VI is a prismatic retroreflective sheeting used for certain outside work zone signs.

AASHTO M268 Type I retroreflective sheeting, Type II engineering grade and Type IIA super engineering grade are not included in these Specifications.

#### **M.16.02.2 Applications.**

a. **Type IIIA or Type IIIB Sheeting.** Type IIIA, or Type IIIB sheeting shall be used on any sign for which Type V or Type VI sheeting is not specified.

b. **Type IV Sheeting.** Type IV sheeting shall be used on channelling devices with markings, including fluorescent traffic cones, drum barricades and plastic pipe-type barricades.

c. **Type V sheeting shall be used on:**

1. All W20-1 and W21-4 signs.
2. All W3-1a, W3-2a, W4-1, W4-2, W10-1, E5-1 and E5-1a signs within work zones with orange background sheeting choice.
3. All G20 Series.

d. **Type VI sheeting shall be used on all R1-1, R1-2, R4-7, R5-1, R5-1a, W3-1a, W3-2a, W4-1, W4-2, W10-1 signs, Hazard Markers Type 1, 3, and Typical End-of-Road Markers, E5-1 and E5-1a series.**

#### **M.16.02.3 Material Requirements, Type IIIA, IIIB, and Type IV Sheeting.**

a. **Color Requirements.** The colors specified shall conform to the applicable requirements of AASHTO M268 except modified as follows:

1. Silver is an acceptable color designation for white.

The purchaser may accept colors by certification or may require the Contractor to provide copies of laboratory test reports to substantiate compliance with contract color requirements.

When testing is required, the test instrument used shall be one of the following or an approved equal:

- GARDNER Model AC-2a Color Difference Meter or Model XL 30 Color Difference Meter.
- HUNTERLAB D25 Color Difference Meter

Test panels shall be mounted in accordance with the manufacturer's recommendations.

b. **Specific Intensity Per Unit Area (SIA).** The reflective sheeting shall have the minimum SIA requirements as shown in Tables 1 and 2 for the Type(s) of sheeting specified. SIA is expressed in "candelas per foot candle per square foot" (candelas per lux per square meter). Measurement of SIA shall be conducted in accordance with the applicable requirements. Test panels shall be mounted in accordance with manufacturer's recommendations.

**Table 1**

**Minimum Specific Intensity Per Unit Area (SIA)**  
(candelas per footcandle per square foot)

**Type III Sheeting**

**A -- Glass Bead Reflective Element Material**

| Observation Angle (°) | Entrance Angle (°) | White | Red | Orange | Yellow | Green | Blue |
|-----------------------|--------------------|-------|-----|--------|--------|-------|------|
| 0.2                   | -4                 | 250   | 45  | 100    | 170    | 45    | 20.0 |
| 0.2                   | +30                | 150   | 25  | 60     | 100    | 25    | 11.0 |
| 0.5                   | -4                 | 95    | 15  | 30     | 62     | 15    | 7.5  |
| 0.5                   | +30                | 65    | 10  | 25     | 45     | 10    | 5.0  |

**B -- Prismatic Reflective Element Material**

| Observation Angle (°) | Entrance Angle (°) | White | Red  | Orange | Yellow | Green | Blue |
|-----------------------|--------------------|-------|------|--------|--------|-------|------|
| 0.2                   | -4                 | 250   | 45.0 | 100    | 170    | 45.0  | 20.0 |
| 0.2                   | +30                | 95    | 13.3 | 26     | 64     | 11.4  | 7.6  |
| 0.5                   | -4                 | 200   | 28.0 | 56     | 136    | 24.0  | 18.0 |
| 0.5                   | +30                | 65    | 10.0 | 25     | 45     | 10.0  | 5.0  |

**Table 2**

**Minimum Specific Intensity per Unit Area (SIA)**  
(candelas per lux per square meter)

**Type IV Sheeting**

| Observation Angle (°) | Entrance Angle (°) | White | Flourescent Orange |
|-----------------------|--------------------|-------|--------------------|
| 0.2                   | -4                 | 550   | 180                |
| 0.2                   | +30                | 330   | 100                |

**c. Specular Gloss.** The reflective sheeting shall have an 85-degree specular gloss of not less than 50 for Types IIIA, IIIB, and IV when tested in accordance with ASTM D523.

**d. Color Processing.** Color processing shall be in accordance with the applicable requirements of AASHTO M268.

**e. Shrinkage.** Shrinkage shall be in accordance with the applicable requirements of AASHTO M268 except the shrinkage of Type III reboundable sheeting shall not be more than 0.10-

inch in 24 hours in any dimension.

**f. Flexibility.** Type III and IV sheeting, with the liner removed and conditioned for 24 hours at 72°F (22°C) and 50 percent relative humidity shall be sufficiently flexible to show no cracking when slowly bent around a 1/8-inch (3.2 mm) mandrel with adhesive contacting the mandrel. For ease of testing, spread talcum powder on adhesive to prevent sticking to mandrel. The test specimen shall be 2¾-inches by 11 inches.

Non-adhesive sheetings shall show no signs of cracking or crazing when flexed repeatedly over a 1/16-inch mandrel to 180 at 72°F.

Type III reboundable sheeting shall be conditioned and tested at 32°F.

**g. Adhesive.** When an adhesive is used, the reflective sheeting shall have either a pressure sensitive adhesive backing (Class 1) or a heat activated adhesive backing (Class 2) which shall provide for application of the sheeting without the necessity of additional adhesive coats on either the reflective sheeting or application surface.

The Class 1 adhesive shall be a pressure sensitive adhesive of the aggressive tack type requiring no heat, solvent, or other preparation for adhesion to smooth clean surfaces. The Class 2 adhesive shall be an adhesive activated by applying heat in excess of 175°F (73°C) to the material as in the heat-vacuum process of sign fabrication.

The protective liner attached to the adhesive shall be removed by peeling without soaking in water or other solvents without breaking, tearing or removing any adhesive from the backing. The protective liner shall be easily removed following accelerated storage for 4 hours at 160°F (71°C) under a weight of 2.5 pounds per square inch (0.18 kg/cm<sup>2</sup>).

The adhesive backing of the reflective sheeting shall produce a bond to support a 1¼ pound (0.79 kg) weight for 5 minutes, without the bond peeling for a distance of more than 2 inches (5.08 cm) (1 inch for Type III reboundable sheeting) when applied to a smooth aluminum surface and tested as specified.

**h. Impact Resistance.** The impact resistance of Type III and IV reflective sheeting shall conform to the applicable requirements of AASHTO M268 with the following exception: For Type III reboundable and Type IV sheeting, a 100 inch-pound setting shall be used on the test instrument. Type III reboundable sheeting shall also be further conditioned and tested at 32°F.

**i. Accelerated Weathering.** When applied in accordance with recommended procedures, the reflective sheeting shall be weather resistant and, following cleaning in accordance with manufacturer's recommendations, shall show no appreciable discoloration, cracking, blistering or dimensional change. Following exposure, the panels shall be washed with a 5 percent hydrochloric acid solution for 45 seconds, rinsed thoroughly with clean water, blotted with a soft clean cloth, brought to equilibrium at standard conditions and tested. It shall have not less than the percent of the minimum SIA specified in Table 3 when subjected to accelerated weathering in accordance with ASTM G23, Type E or EH Weatherometer with humidifier off.

**Table 3****Accelerated Weathering Testing Requirements****Type III & IV Sheeting**

| Type of Material | Hours Tested | Minimum Specific Intensity Per Unit Area |
|------------------|--------------|--|
| III              | *2,200       | 80% of Table 1                           |
| IV               | 250          | 50% of Table 2                           |

\* For orange material having glass bead retroreflective elements and for Type III reboundable sheeting, the hours tested shall be 500.

**M.16.02.4 Material Requirements - Type V Sheeting**

a. **Photometric - Coefficient of Retroreflection  $R_A$ .** When the sheeting applied on aluminum test panels is measured in accordance with ASTM E810, it shall have minimum coefficient of retroreflection values as shown in Table 4. The rotation angle shall be  $90^\circ$ , the observation angles shall be  $0.2^\circ$ , and  $0.5^\circ$ , the entrance angles (component B1) shall be  $-4^\circ$ , and  $+30^\circ$ , and the entrance angle component B2 shall be  $0^\circ$ .

**Table 4**

**Minimum Coefficient of Retroreflection  $R_A$**   
(candelas per footcandle per square foot)  
( $90^\circ$  Rotation Angle)

**Type V Sheeting**

| Observation Angle ( $^\circ$ ) | Entrance Angle ( $^\circ$ ) | Orange |
|--------------------------------|-----------------------------|--------|
| 0.2                            | -4                          | 200    |
| 0.2                            | +30                         | 90     |
| 0.5                            | -4                          | 80     |
| 0.5                            | +30                         | 50     |

b. **Daytime Color.** Color shall conform to the requirements of Table 5. Daytime color and maximum spectral radiance factor (peak reflectance) of sheeting mounted on aluminum test panels shall be determined instrumentally in accordance with ASTM E991. The values shall be determined on a Hunter Lab Labscan 6000 0/45 Spectrocolorimeter with option CMR 559 [or approved equal 0/45 (45/0) instrument with circumferential viewing (illumination)]. Computations shall be done in accordance with ASTM E308 for the  $2^\circ$  observer.

Table 5

## Color Specification Limits\* (Daytime)

## Type V Sheeting

| Color  | 1    |      | 2    |      | 3    |      | 4    |      | Reflectance Limit Y (%) |      |
|--|------|------|------|------|------|------|------|------|-------------------------|------|
|  | x    | y    | x    | y    | x    | y    | x    | y    | min.                    | max. |
| Orange (new)   | .583 | .416 | .523 | .397 | .560 | .360 | .631 | .369 | 30                      | —    |
| Orange (weathered)   | .583 | .416 | .523 | .397 | .560 | .360 | .631 | .369 | 20                      | 45   |
| Maximum spectral radiance factor, new: 110%, min. - weathered: 60% |      |      |      |      |      |      |      |      |                         |      |

c. **Nighttime Color.** Nighttime color of the sheeting applied to aluminum test panels shall be determined instrumentally in accordance with ASTM E811 and calculated in the  $u'$ ,  $v'$  coordinate system in accordance with ASTM E308. Sheeting shall be measured at  $0.33^\circ$  observation and  $-4^\circ$  entrance at  $90^\circ$  rotation. Color shall conform to the requirements of Table 6.

Table 6

## Color Specification Limits\* (Nighttime)

## Type V Sheeting

| Color                      | 1    |      | 2    |      | 3    |      | 4    |      |
|----------------------------|------|------|------|------|------|------|------|------|
|                            | $u'$ | $v'$ | $u'$ | $v'$ | $u'$ | $v'$ | $u'$ | $v'$ |
| Orange (new and weathered) | .400 | .540 | .475 | .529 | .448 | .522 | .372 | .534 |

\* The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 standard colorimetric system measured with standard illuminant D65.

d. **Resistance to Accelerated Weathering.** The retroreflective surface of the sheeting shall be weather resistant and show no appreciable cracking, blistering, crazing, or dimensional change after one year of unprotected outdoor exposure in south Florida, south-facing and inclined  $45^\circ$  from the vertical, or after 1500 hours of exposure in a xenon arc weatherometer in accordance with ASTM G26, Type B, Method A. Following exposure, panels shall be washed in a 5 percent HCL solution for 45 seconds, rinsed thoroughly with clean water, blotted with a soft clean cloth and brought to equilibrium at standard conditions. After cleaning, the coefficient of retroreflection shall



be not less than 100 when measured as indicated in **Para. d.2** of this Subsection, and the color is expected to conform to the requirements of Tables 5 and 6 for weathered sheeting. The sample shall:

1. Show no appreciable evidence of cracking, scaling, pitting, blistering, edge lifting or curling or more than 1/32-inch (0.08 cm) shrinkage or expansion.

2. Be measured only at angles of 0.2° observation, -4° entrance and 90° rotation. Where more than one panel of a color is measured, the coefficient of retroreflection shall be the average of all determinations.

**e. Impact Resistance.** The retroreflective sheeting applied according to the sheeting manufacturer's recommendations to a test panel of alloy 6061-T6, 0.040" (0.10 cm) by 3" (7.6 cm) by 5" (12.7 cm) and conditioned for 24 hours, shall show no cracking outside the impact area when the face of the panel is subjected to an impact of 100 inch-pounds (11.3 Nm), using a weight with a 5/8-inch (15.8 mm) diameter rounded tip dropped from a height necessary to generate an impact of 100 inch-pounds, at test temperatures of both 32°F (0°C) and 72°F (22°C).

**f. Resistance to Heat.** The retroreflective sheeting, applied to a test panel as in **Para. e**, above, and conditioned for 24 hours, shall be measured in accordance with **Para. a** at 0.2° observation and -4° entrance angles at 90° rotation and exposed to 170± 5°F (77± 3°C) for 24 hours in an air circulating oven. After heat exposure, the sheeting shall retain a minimum of 70 percent of the original coefficient of retroreflection.

**g. Field Performance.** Retroreflective sheeting processed and applied to sign blank materials in accordance with the sheeting manufacturer's recommendations, is expected to perform effectively. The retroreflective sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that 1) the sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions; or 2) the coefficient of retroreflection is less than 100 when measured at 0.2° observation and -4° entrance at 90° rotation. All measurements shall be made after sign cleaning according to the sheeting manufacturer's recommendations.

#### **M.16.02.5 Material Requirements - Type VI Sheeting**

**a. Coefficient of Retroreflection,  $R_A$ .** The coefficients of retroreflection shall not be less than the minimum values specified in Table 7. Testing shall be in accordance with ASTM D4956, latest edition.

Units: Coefficients of retroreflection  $R_A$  shall be specified in units of candelas per lux per square meter (candelas per footcandle per square foot).

The observation angles shall be as per ASTM D4956, latest edition.

For colored, transparent overlay films and for screen printed transparent color areas on white sheeting, the ratios of the  $R_A$  for the white to the  $R_A$  for the color, when measured at 0.2° observation, -4° entrance, and 0° rotation, shall be 5:1 to 15:1 for red, not less than 5:1 for blue and not less than 5:1 for green when processed in accordance with the sheeting manufacturer's recommendations.

Table 7

**Minimum Coefficient of Retroreflection  $R_A$**   
(candelas per lux per square meter)

**Type VI Sheeting - ASTM D4956, Latest Edition**

| Observation Angle (°) | Entrance Angle (°) | Rotation Angle (°) | White | Yellow | Blue | Green |
|-----------------------|--------------------|--------------------|-------|--------|------|-------|
| 0.2                   | -4                 | 0                  | 430   | 350    | 20   | 45    |
| 0.2                   | +30                | 0                  | 235   | 190    | 11   | 24    |
| 0.33                  | -4                 | 0                  | 300   | 250    | 15   | 33    |
| 0.33                  | +30                | 0                  | 150   | 130    | 7    | 18    |
| 0.5                   | -4                 | 0                  | 250   | 200    | 10   | 25    |
| 0.5                   | +30                | 0                  | 170   | 140    | 7    | 19    |
| 1.0                   | -4                 | 0                  | 28    | 22     | 2.4  | 5.0   |
| 1.0                   | +30                | 0                  | 16    | 12     | 1.0  | 2.7   |

**b. Color Requirements.** Conformance to color requirements of Table 8 shall be determined by instrumental method in accordance with ASTM E1164 on sheeting applied to aluminum test panels. The values shall be determined on a HunterLab Labscan 6000 0/45 Spectrocolorimeter with option CMR 559 [or approved equal 0/45 (45/0) instrument with circumferential viewing (illumination)]. Computations shall be done in accordance with ASTM E308 for the 2° observer.

Table 8

**Color Specification Limits\* (Daytime)**

**Type VI Sheeting**

| Color  | 1     |       | 2     |       | 3     |       | 4     |       | Reflectance Limit Y (%) |      |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------------|------|
|        | x     | y     | x     | y     | x     | y     | x     | y     | min.                    | max. |
| White  | 0.305 | 0.305 | 0.355 | 0.355 | 0.335 | 0.375 | 0.285 | 0.325 | 40                      | -    |
| Yellow | 0.487 | 0.423 | 0.545 | 0.454 | 0.465 | 0.534 | 0.427 | 0.483 | 24                      | 45   |
| Blue   | 0.078 | 0.171 | 0.150 | 0.220 | 0.210 | 0.160 | 0.137 | 0.038 | 1                       | 10   |
| Green  | 0.030 | 0.398 | 0.166 | 0.364 | 0.286 | 0.446 | 0.201 | 0.794 | 3                       | 9    |

\* The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 standard colorimetric system measured with standard illuminant D65.

**c. Gloss.** The retroreflective sheeting shall have an 85° specular gloss of not less than 50 when tested in accordance with ASTM D523.

**d. Color Processing.** The retroreflective sheeting shall permit cutting and color processing with compatible transparent and opaque process colors in accordance with the sheeting manufacturer's recommendations at temperatures of 15 to 38°C (59 to 100°F) and relative humidities of 20 percent to 80 percent. The sheeting shall be heat resistant and permit force curing without staining of applied or unapplied sheeting at temperatures recommended by the sheeting manufacturer.

**e. Flexibility.** The retroreflective sheeting with the liner removed and conditioned at standard conditions shall be sufficiently flexible to show no cracking when slowly bent, in one second's time, around a 3 mm (1/8 inch) mandrel, with the adhesive contacting the mandrel, at test conditions. Talcum powder shall be spread on the adhesive to prevent sticking to the mandrel.

**f. Adhesive.** The protective liner attached to the adhesive shall be removed by peeling without soaking in water or other solutions, without breaking, tearing, or removing any adhesive from the backing. The protective liner shall be easily removed following accelerated storage for 4 hours at 70°C (158°F) under a weight of .175 Kg/cm<sup>2</sup> (2.5 pounds per square inch). The adhesive backing of the retroreflective sheeting shall produce a bond to support a .80 Kg (1.75 pound) weight for 5 minutes without the bond peeling for a distance of more than 5.0 cm (2 inches) when applied to a test panel. Apply 10 cm (4 inches) of a 2.5 cm x 15 cm (1" x 6") specimen to a test panel. Condition and then position the panel face down horizontally, suspend the weight from the free end of the sample and allow it to hang free at an angle of 90° to the panel surface for 5 minutes.

**g. Impact Resistance.** The retroreflective sheeting applied according to the sheeting manufacturer's recommendations to a test panel of alloy 6061-T6, 0.10 cm (0.040 inches) by 7.5 cm (3 inches) by 12.5 cm (5 inches) and conditioned at standard conditions, shall show no cracking outside the impact area when the face of the panel is subjected to an impact of 5.65 Nm (50 inch-pounds) using a weight with a 1.6 cm (5/8 Inch) diameter rounded tip dropped from a height necessary to generate an impact of 5.65 Nm, at test temperatures of both 0°C (32°F) and 22°C (72°F).

**h. Resistance to Accelerated Outdoor Weathering.** The retroreflective surface of the sheeting shall be weather resistant and show no appreciable cracking, blistering, crazing, or dimensional change after two years unprotected outdoor exposure, facing the equator and inclined 45° from the vertical. Following weather exposure, panels shall be washed in a 5% HCL solution for 45 seconds, rinsed thoroughly with clean water, blotted with a soft clean cloth and brought to equilibrium at standard conditions. After cleaning, the coefficient of retroreflection shall not be less than the values in Table 9 when measured at 0° rotation and the colors shall conform to the requirements of Table 8. The sample shall:

1. Show no appreciable evidence of cracking, scaling, pitting, blistering, edge lifting or curling or more than 0.8 mm (1/32 inch) shrinkage or expansion;

2. Be measured only at angles of 0.2° observation, -4° entrance, and 0° rotation, and 1.0° observation, -4° entrance, and 0° rotation. Where more than one panel of a color is measured, the coefficient of retroreflection shall be the average of all determinations.

Table 9

**Minimum Coefficient of Retroreflection  $R_A$   
after Accelerated Outdoor Weathering**  
(candelas per lux per square meter)

**Type VI Sheeting**

| Observation<br>Angle<br>(°) | Entrance Rotation |              | White | Yellow | Blue | Green |
|-----------------------------|-------------------|--------------|-------|--------|------|-------|
|                             | Angle<br>(°)      | Angle<br>(°) |       |        |      |       |
| 0.2                         | -4                | 0            | 250   | 200    | 11   | 25    |
| 1.0                         | -4                | 0            | 45    | 35     | 1.3  | 3     |

**i. Resistance to Heat.** The retroreflective sheeting, applied to a test panel and conditioned at standard conditions, shall be measured for retroreflectance at 0.2° observation and -4° entrance angles and 0° rotation and exposed to 77± 3°C (170± 3°F) for 24 hours in an air circulating oven. After heat exposure the sheeting shall retain a minimum of 70 percent of the original coefficient of retroreflection when measured at room temperature.

**j. Resistance to Corrosion.** The retroreflective sheeting applied to a test panel and conditioned at standard conditions shall show no loss of adhesion, appreciable discoloration or corrosion and after cleaning shall retain a minimum of 80 percent of the original coefficient of retroreflection when measured at 0.2° observation, -4° entrance and 0° rotation angles after 1000 hours exposure to a 5 percent concentration of salt spray at 35°C (95°F) when tested in accordance with ASTM B117.

**k. General Characteristics and Packaging.** The retroreflective sheeting as supplied shall be of good appearance, free from ragged edges, cracks and extraneous materials, and shall be furnished in either rolls or sheets. When furnished in continuous rolls, the average number of splices shall not be more than 3 per 50 meters (54.7 yards) of material with a maximum of 4 pieces in any 50 meter (45.7 yard) length. Splices shall be butted or overlapped and shall be suitable for continuous application as furnished. When furnished as cut sheets or sign faces, the sheeting shall be packaged flat in accordance with commercially accepted standards. The sheeting shall be packed snugly in corrugated fiberboard cartons, in accordance with commercially accepted standards. Each carton shall clearly stipulate the brand, quantity, size, lot or run number and color. Stored under normal conditions the retroreflective sheeting as furnished shall be suitable for use for a minimum period of one year.

**I. Performance Requirements and Obligations.**

**1. Certification.** The sheeting manufacturer shall, upon request, supply with each lot or shipment, a certification which states that the material supplied will meet all of the requirements listed herein.

**2. Field Performance Requirements.** After ten years in service the coefficient of retroreflection shall not be less than the values listed in Table 10.

**Table 10**

**Minimum Coefficient of Retroreflection  $R_A$   
after Ten Years**  
(candelas per lux per square meter)

**Type VI Sheeting**

| Observation<br>Angle<br>( $^{\circ}$ ) | Entrance<br>Angle<br>( $^{\circ}$ ) | White | Yellow | Blue | Green |
|--|-------------------------------------|-------|--------|------|-------|
| 0.2                                    | -4                                  | 250   | 200    | 10   | 23    |
| 1.0                                    | -4                                  | 45    | 35     | 2    | 5     |

All measurements shall be made after sign cleaning according to the sheeting manufacturer's recommendations.

Natural causes include effects of exposure to weather. Natural causes exclude (without limitation) damage from exposure to chemicals, abrasion and other mechanical damage from fasteners used to mount the sign, collisions or mishandling.

For screen printed transparent colored areas on white sheeting, the coefficients of retroreflection shall maintain the ratios required for new sheeting.

**3. Process Inks.** The manufacturer of the sheeting shall furnish at no additional cost the process inks, clears and thinners recommended for the sheeting to meet the performance requirements of this Specification, and shall further be responsible for technical assistance in the use of these inks in accordance with this Specification.

**4. Slip Sheet.** Slip sheet paper, if recommended by the sheeting manufacturer for sheeting surface protection or for use in packaging, storage or shipping finished signs, shall be furnished in rolls by the manufacturer at no additional charge, in at least equal dimension (square meters) and in the same sizes as the sheeting supplied.

**5. Washers.** Washers, if recommended by the sheeting manufacturer to protect the sign surface from damage by bolts or other fasteners, shall be furnished by the manufacturer at no additional charge.

**m. Fabrication Date.** The sign fabricator shall date all signs at the time of fabrication with the fabrication date so that the start of the warranty period can be determined.

**M.16.02.6 Testing Procedures.**

**a. Testing Conditions.** Unless otherwise specified herein, all applied and unapplied test samples and specimens shall be conditioned at the standard conditions of  $23 \pm 3^{\circ}\text{C}$  ( $73 \pm 3^{\circ}\text{F}$ ) and  $50 \pm 5$  percent relative humidity for 24 hours prior to testing.

**b. Testing Panels.** Unless otherwise specified herein, when tests are to be performed using test panels, the specimens of retroreflective material shall be applied to smooth aluminum cut from ASTM B209 Alloy 5052-H36, 5052-H38, 5154-H38 or 6061-T6 sheets in 0.05 cm (0.020 inch),

0.10 cm (0.040 inch) or 0.16 cm (0.063 inch) thickness. The aluminum shall be degreased and lightly acid etched before the specimens are applied. The specimens shall be applied to the panels in accordance with the recommendations of the retroreflective sheeting manufacturer.

**c. Specific Intensity Per Unit Area (SIA).** Measurements shall be conducted in accordance with Instrumental Photometric Measurements of Retroreflective Materials and Retroreflective Devices, Federal Test Method Standard 370. Test will be conducted at 50 feet with 1-inch source and 1-inch receiver on 12-inch square test specimen. Observation and entrance angles shall be in the same plane.

Rotate specimen to orientation angles recommended by the manufacturer. The presentation angle is zero.

The SIA of the sheeting when totally wet, shall not be less than 90 percent of the dry values in Tables 1, 2, 4 and 7. Wet performance measurements shall be made on new sheeting in accordance with the standard rainfall test specified in Section 7.10.1 of AASHTO M268.

**d. Adhesion Test.** Adhesion test shall be in accordance with the applicable requirements of AASHTO M268.

**e. Colorfastness.** The colorfastness test shall be in accordance with the applicable requirements of AASHTO M268 except that the specimens shall be prepared and subjected to accelerated weathering as specified above.

**f. Fungus Resistance.** For use in areas where fungus growth may be a problem and if specified by the Engineer, fungus resistance shall be determined as specified herein.

After inoculation with the test organism, *Aspergillus niger*, and incubation for 14 days, the reflective material shall show no appreciable formation of fungus growth. Any formation of fungus growth shall be non-injurious to the reflective material and shall be removable by wiping with a soft cloth. After completion of the incubation and after being wiped clean, the reflective material shall retain the full SIA values as specified in Tables 1, 2, 4 and 7.

**1. Test Organism.** The test organism used in this test shall be ***Aspergillus Niger*, ATCC No. 6275.** (This organism may be obtained upon request from the American Type Culture Collection (ATCC), 12301 Parklawn Drive, Rockville, Maryland 20852, or Mycology Laboratory, PRL, U.S. Army Natick Laboratories, Natick, Massachusetts 01760.) Cultures of this organism shall be carefully maintained on a potato-dextrose agar medium and promptly renewed if there is evidence of contamination. The stock cultures may be kept for not more than 4 months in a refrigerator at a temperature from 37.4°F to 50°F (3°C to 10°C). Subcultures incubated at 82.4°F to 86°F (28°C to 30°C) for 10 to 14 days shall be used in preparing the inoculum.

**2. Culture Medium.** The culture medium shall have the following composition:

|                                      |              |
|--------------------------------------|--------------|
| NaNO <sub>3</sub>                    | - 3.0 grams  |
| K <sub>2</sub> HPO <sub>4</sub>      | - 1.0 grams  |
| MgSO <sub>4</sub> ·7H <sub>2</sub> O | - 0.5 grams  |
| KCl                                  | - 0.25 grams |
| Agar                                 | -15.0 grams  |
| Distilled water to make 1,000 ml.    |              |

The pH shall be 5.5 to 6.5: if otherwise, adjust to that range with HCL or NaOH. After mixing, the ingredients shall be sterilized by autoclaving for 15 minutes at 15 psi (1.05 kg-cm<sup>2</sup>) at 248°F (120°C).

Under sterile conditions, the medium shall be poured into 6, 150 mm by 20 mm petri dishes, about 65 ml per dish, and allowed to harden.

**3. Inoculum.** Add about 10 ml of sterile, distilled water containing about 0.005 percent of nontoxic wetting agent to a subculture (10 to 14 days old) of the test organism in a ripe, fruiting condition. The spores shall be forced into suspension with a sterile camel's hair brush (or other suitable means) and diluted to 100 ml with sterile, distilled water.

**4. Preparation of Specimens.** Cut three, 3" x 3" (7.62 cm by 7.62 cm) specimens from the sample and apply to test panels with the reflective surface up. Completely immerse the test specimens in a leaching tank of continuously flowing water for 24 hours and then remove and dry. The leaching tank shall be large enough to hold an amount of water weighing not less than 50 times the weight of the specimens. The water entering the tank shall not fall directly on the specimens and shall flow at a rate of 5 to 10 liters per hour. The pH of the water shall be in the range of 6.0 to 8.0.

**5. Inoculation.** Under aseptic conditions, dip each specimen in 70 percent ethanol for a few seconds, rinse in distilled water, and place firmly on the surface of the solidified agar medium contained in the petri dishes. Place specimens with the reflective surface facing up, one specimen to each dish. With a sterile pipette, distribute 1.0 to 1.5 ml of inoculum over the surface of each specimen and the surrounding medium.

**6. Incubation Period.** The period of incubation shall be 14 days at a temperature of 84.2°F to 89.6°F (29°C to 32°C) and 85 to 90 percent relative humidity.

**7. Control.** Test three control specimens of untreated, porous grade filter paper with the specimens of the reflective material to check the viability of the inoculum. At the end of the incubation period, the controls should be covered with fungus growth.

**8. Test Results.** Upon completion of the incubation period, examine the specimens visually for fungus growth. Wipe the specimens with a soft cloth wet with a 70 percent ethanol solution. Condition the specimens at standard conditions for 48 hours. Test the specimens in accordance with **Para. c** of this Subsection, and when finished, attempt to remove specimen from the test panel.

**M.16.02.7 Intended Use.** The reflective sheeting specified herein is intended for use on surfaces of highway signs to assure their optimum visibility by day and at night when exposed to a light source and whether dry or totally wet by rain.

Purchasers should select colors and preferred options permitted herein and specify the type of adhesive backing: Class 1, precoated pressure sensitive adhesive; or Class 2, heat activated adhesive as required.

SOLICITATION # 7599778

VENDOR: \_\_\_\_\_