

MA 18P 21081100000000000009
MODIFICATION

State of Maine



Master Agreement

Effective Date: 08/12/21

Expiration Date: 08/31/25

Master Agreement Description: Signs, Traffic, Warning & Regulatory

Buyer Information

William Allen 207-624-7871 ext. NULL WJE.Allen@maine.gov

Issuer Information

Sharon Krechkin 207-624-3038 ext. sharon.krechkin@maine.gov

Requestor Information

Sharon Krechkin 207-624-3038 ext. sharon.krechkin@maine.gov

Agreement Reporting Categories

Reason For Modification: Extend at current pricing

Authorized Departments

ALL

Vendor Information

Vendor Line #: 1

Vendor ID

VS0000017877

Vendor Name

Vulcan Inc

Alias/DBA

Vulcan Inc.

Vendor Address Information

408 East Berry Ave

Foley, AL 36535

US

Vendor Contact Information

David Beviacqua

800-633-6845 ext.

vulcan3@vulcaninc.com

Commodity Information**Vendor Line #:** 1**Vendor Name:** Vulcan Inc**Commodity Line #:** 1**Commodity Code:** 80100**Commodity Description:** Signs, Traffic, Warning & Regulatory**Commodity Specifications:****Commodity Extended Description:** Signs, Traffic, Warning & Regulatory.

Quantity	UOM	Unit Price
0.00000		0.000000
Delivery Days	Free On Board	
0		
Contract Amount	Service Start Date	Service End Date
0.00		
Catalog Name	Discount	
Vulcan Signs	0.0000 %	
	Discount Start Date	Discount End Date
	08/12/21	08/31/25

Please see authorized signatures displayed on the next page

Each signatory below represents that the person has the requisite authority to enter into this Contract. The parties sign and cause this Contract to be executed.

State of Maine - Department of Administrative and Financial Services

DocuSigned by:
David Morris 8/25/2023
2A644AF5681F482...

Signature Date

David Morris, Acting Chief Procurement Officer

Vulcan Inc

DocuSigned by:
David B. Beviacqua 8/25/2023
A063B744615146E...

Signature Date

David B Beviacqua, VP & General Manager

State of Maine – Department of Administrative and Financial Services
Division of Procurement Services
111 Sewall Street, 9 State House Station
Augusta, Maine 04333-0009
Tel. (207) 624-7340

Contract Number
MA 210811*009

EXTENSION OF MASTER AGREEMENT CONTRACT

Commodity Item: Signs, Traffic, Warning & Regulatory

Contractor: Vulcan Inc

Mater Agreement Competitive Bid RFQ: 17A 210616-273

Contract Period Extended Through: August 31, 2025

Extended Contract Pricing: Extended at current prices

Dollar value the vendor has recorded that State of Maine has spent on commodities and/or services covered by this contract over the last twelve months: \$ 0

Agreement to extend Master Agreement 18P – 2108110000000000009 authorized by:

State of Maine – Department of Administrative and Financial Services

DocuSigned by:
David Morris
2A644AF5681F482...

David Morris, Acting Chief Procurement Officer
and
Vulcan Inc

Date 8/25/2023

DocuSigned by:
David B. Beviacqua
A063B744615146E...

David B. Beviacqua, VP & General Manager

Date 8/25/2023

RIDERS

<input checked="" type="checkbox"/>	The following riders are hereby incorporated into this Contract and made part of it by reference: (check all that apply)
<input checked="" type="checkbox"/>	Rider A – MA User Information, MA Requirements and/or Specifications
<input checked="" type="checkbox"/>	Rider B – Terms and Conditions
<input type="checkbox"/>	Rider C - Exceptions
<input checked="" type="checkbox"/>	Bid Cover Page and Debarment Form – Appendix A from RFQ
<input checked="" type="checkbox"/>	Municipality Political Subdivision and School District Participation Certification – Appendix D from RFQ

RIDER A
MA User Information, MA Requirements and/or Specifications
MA 210811-009

Commodity: Signs, Traffic, Warning & Regulatory

Master Agreement Competitive Bid RFQ: 17A 210616-273

Contract Period: Through August 31, 2023. The State of Maine with vendor approval can opt to issue up to one (1) two (2) year and one (1) one (1) year extensions.

First extension through August 31, 2025

Vendor Contact Person: The vendor contact person will help consumers place orders, inquire about orders that have not been delivered, all shipping issues, quality issues and any issues pertaining to the Master Agreement (MA) contract. All orders not submitted through a Delivery Order will be sent through the vendor contact person. The vendor contact person for this MA is:

Name: Kim Green **Tel:** 800-633-6845 **Email:** kgreen@vulcaninc.com

Prices: Prices are with shipping terms of “Free on Board (FOB) – Destination”. The State intends for this to mean that all goods shall be priced to include shipping charges, if any, to the State’s desired location. The “FOB – Destination” shipping term is also intended to mean that the State shall not bear any responsibility for the goods in question until the State takes possession of them at the destination point of delivery.

Price and Rate Guarantee Period: All quoted prices and rates must be guaranteed for and must remain firm for minimally one year of the initial contract period. Any approved price or rate adjustments must be held firm for minimally one year or the remainder of the contract period. Price adjustment requests must be made by the selected vendor(s) at least sixty (60) days prior to the effective date. Requests for price adjustments must include sufficient documentation from the manufacture supporting the request. The price adjustment will not go into effect until the contract amendment has been fully approved by the State of Maine.

Quantities: It is understood and agreed that the MA will cover the actual quantities required by the State over the length of the contract.

Ordering Procedures: Delivery Orders (DO) will be created in AdvantageME for all orders over \$5000.00. If a DO is used, the DO will be emailed to the email address referenced on the MA as a .pdf file. Orders less than \$5000.00 can be placed using a State of Maine issued P-Card (credit card).

Delivery: The vendor is responsible for the delivery of material in first class condition at the point of delivery, and in accordance with good commercial practice.

**SPECIFICATIONS
TRAFFIC SIGNS, WARNING & REGULATORY
(Revised October 25, 2016)**

Traffic signs shall have high intensity prismatic retroreflective Type IV sheeting.

Fluorescent yellow-green (FYG) signs will be used for SCHOOL CROSSING, SCHOOL BUS STOP AHEAD, PEDESTRIAN, and supplemental AHEAD and DIAGONAL ARROWS for these signs.

Reflective Sheeting: The reflective sheeting shall consist of a retro-reflective lens system having smooth outer surface. The sheeting shall have a pre-coated adhesive on the backside protected by an easily removable liner and be applied to the aluminum plank in accordance with the current recommendations of the sheeting Manufacturer. The surface of all completed sign panels shall be flat and free of defects.

The reflective sheeting and its components shall conform with the “2011 FHWA Retroreflective Sheeting Identification Guide” with the “Brand Name” identified as “High Intensity Prismatic”. High intensity prismatic reflective sheeting shall meet the reflective requirements for Type IV sheeting as shown on the 2011 Guide. All fluorescent yellow-green (FYG) sheeting shall be diamond grade Type VIII or IX.

Sign Legends for text or symbols or numbers:

The design of upper and lower case letters, numerals and symbols, and the arrangement and spacing of texts shall be in conformance with the MUTCD and Standard Highway Signs manual. The text for regulatory and warning signs shall be composed of: high intensity prismatic, retroreflective sheeting letters, numerals, symbols and borders; or by applying transparent ink to the reflective sheeting background where the silk screen process is used; or black vinyl 3M Scotchcal Non Reflective Film Series 7725, or its equivalent, shall be used directly on the prismatic sheeting.

Sign legends and background sheeting shall be from the same sheeting manufacturer.

Warranty on sheeting and legend materials:

Supplier will 1) replace or repair any sign that fails due to workmanship or material defects within 5 years from the date of delivery, and 2) replace or repair any sign that fails to exhibit retroreflective values not meeting the 2009 Edition of the MUTCD requirements (Table 2A-3) during the 96 month time frame from delivery.

Aluminum Sheeting:

All blanks shall be made of 5052-H38 or 6061-T6 aluminum. The vendor shall guarantee the material to be free of buckles, warp, dents, cockles, burrs, and defects resulting from fabrication.

- (a) Degreasing - Required on sheet aluminum by either of the following methods:
 - 1. Vapor Degreasing shall be by total immersion of the plank in a saturated vapor of trichloroethylene or perchloroethylene. Trademark printing shall be removed with lacquer thinner or controlled alkaline cleaning system.
 - 2. Alkaline Degreasing - Planks shall be immersed in a tank containing alkaline solution, controlled and titrated to the solution manufacturer’s specification. Immersion time shall depend upon the amount of soil present and the gauge of the metal.
- (b) Etching

1. Alkaline Etch - The pre-cleaned aluminum surface shall be well etched in an alkaline etching material that is controlled by titration, use time, temperature and concentration specified by the solution manufacturer and rinsed thoroughly. Smut shall be removed with an acidic, chromium compound type solution as specified by the solution manufacturer and then thoroughly rinsed.
 2. Alodine 500 or 1,200 is acceptable.
- (c) Drying
1. Material may be air dried or oven dried. Metal shall not be handled except by device or clean gloves between all cleaning and etching operations and the application of Reflective Sheeting. There shall be no opportunity for metal to come in contact with grease, oils, or other contaminants prior to application of to packaging and shipping
- (d) Fabrication
- All fabrication, including shearing, cutting and punching of holes shall be completed prior to metal degreasing. Fabrication of all metal parts shall be accomplished in a uniform and workman like manner. The surface of all sign panels shall be flat. The minimum sheet thickness shall be 2.00 mm [0.08 inches] for signs of an area of 1.1 m² [12 ft²] or less and shall be 3.18mm [0.125 inches] for signs over 1.0 m² [12 ft²] unless otherwise specified.
- (e) Chromate Treatment
- Treatment shall be in accordance with ASTM B449 Class I.

Assembly Hardware:

Nuts, bolts, and washers for assembling metal signs components shall be stainless steel, ASTM F 593, alloy group 1. All nuts shall be of the self locking type. Aluminum signs mounted on U-channel posts shall be attached with stainless steel ASTM F 593, alloy group 1, [5/16 by 2 ½ inch] bolts and washers, and an approved washer will be used on the face of signs.

U-Channel Posts:

Except as otherwise authorized, U-Channel posts for secondary road regulatory and warning assembly signs shall be fabricated of steel. Steel shall consist of re-rolled rail steel or an equivalent steel. Steel shall conform to the mechanical requirements of ASTM Specification A-99-81, Grade 60 (hot rolled carbon steel bars and shapes re-rolled from rail steel). Steel shall conform to the chemical requirements of ASTM Specification A-1-76 (Carbon steel tee rails) for rails having normal weights of 91 pounds or heavier per yard. These chemical requirements include the following limitations:

1. Carbon 0.67-0.89 percent
2. Manganese 0.70-1.00 percent
3. Silicon 0.10-0.25 percent

Posts shall be furnished in weights of 2.0 pounds per foot and be a length of 8 feet with 3.5' stubs. Weight per foot to be before punching and beveling. All posts to be punched full length, 3/8" holes, one inch on center. All posts to be furnished with one end beveled. Posts to be furnished with weather resistant baked on green enamel finish. All punching/shearing/beveling to be completed prior to application of finish.

Lap Splice Devices:

Lap splice, such as Marion steel's system and other equivalent devices shall be capable of supporting all design loads and shall conform in all aspects to the requirements of the FHWA and AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals."

Any lap splice or its equivalent that requires the use of tools other than simple mechanic's tools, for the replacement of parts after having been struck or require the replacement of all the sign support itself in order to be restored to service after having been struck, will NOT be allowed.

Delivery of hardware:

Before delivery of the lap splices and assembly hardware, we will supply the individual municipal request forms so the vendor can sort and box these items and have them marked and ready for delivery to each town.



Transportation Safety Division

3M™ High Intensity Prismatic Reflective Sheeting Series 3930

Product Bulletin Series 3930
May 2018

Replaces Product Bulletin 3930 Dated January 2013

1 Description

High Intensity Prismatic Reflective Sheeting Series 3930 (“Sheeting”) is a non-metalized microprismatic lens reflective sheeting designed for use in the production of durable reflective traffic control signs, work zone devices, and delineators that are exposed vertically in service (“Signs”). Applied to properly prepared Sign substrates, 3M Series 3930 prismatic Sheeting provides long-term reflectivity and durability.

Series 3930 Sheeting is available in the following colors.

Table 1. Product Codes by Color

Color	Product Code
White	3930
Yellow	3931
Red	3932
Orange	3934
Blue	3935
Green	3937
Brown	3939

2 Specifications

2.1 Daytime Color (x, y, Y)

The chromaticity coordinates and total luminance factors of the retroreflective Sheeting conform to the limits presented in Table 2.

Table 2. Daytime Color Specification Limits^a

Color	1		2		3		4		Reflectance Limit (Y)	
	x	y	x	y	x	y	x	y	Minimum	Maximum
White	0.303	0.300	0.368	0.366	0.340	0.393	0.274	0.329	27	
Yellow	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	15	45
Red	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346	2.5	15
Orange	0.558	0.352	0.636	0.364	0.570	0.429	0.506	0.404	10	30
Blue	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	1	10
Green	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	3	12
Brown	0.430	0.340	0.610	0.390	0.550	0.450	0.430	0.390	1	9

a. The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System.

2.2 Color Test - Ordinary Colored Sheeting

Conformance to standard chromaticity (x, y) and luminance factor (Y%) requirements shall be determined instrumentally, in accordance with ASTM E1164, on Sheeting applied to smooth test panels cut from aluminum alloy 6061-T6 or 5052-H38. Chromaticity and luminance factor values shall be determined using a HunterLab ColorFlex 45/0 spectrophotometer.¹ Calculations shall be performed using CIE Illuminant D65 and the 2° standard observer.

2.3 Coefficient of Retroreflection (R_A)

The values shown in Table 3 are minimum coefficients of retroreflection, expressed in candelas per lux per square meter (cd/lux/m²).

Table 3. Minimum Coefficient of Retroreflection R_A for New Sheeting (cd/lux/m²)

Entrance Angle ^a	Sheeting Color	Observation Angle ^b	
		0.2°	0.5°
-4°	White	560	200
	Yellow	420	150
	Red	84	30
	Orange	210	75
	Blue	30	13
	Green	56	21
	Brown	18	7.5
-30°	White	280	100
	Yellow	210	75
	Red	42	15
	Orange	105	37
	Blue	14	6
	Green	28	10
	Brown	8.5	3.5

a. Entrance Angle – The angle from the illumination axis to the retroreflector axis. The retroreflector axis is an axis perpendicular to the retroreflective surface.

b. Observation Angle – The angle between the illumination axis and the observation axis.

1. The instrumentally determined color values of retroreflective sheeting can vary significantly depending on the make and model of colorimetric spectrophotometer used, as well as the color and retroreflective optics of the sheeting (David M. Burns and Timothy J. Donahue, Measurement Issues in the Color Specification of Fluorescent Retroreflective Materials for High Visibility Traffic Signing and Personal Safety Applications, Proceedings of SPIE: Fourth Oxford Conference on Spectroscopy, 4826, pp. 39-49, 2003). For the purposes of this document, the HunterLab ColorFlex 45/0 spectrophotometer shall be the referee instrument.

2.4 Test for Coefficient of Retroreflection

Conformance to coefficient of retroreflection requirements shall be determined instrumentally, in accordance with ASTM E-810 “Test Method for Coefficient of Retroreflection of Retroreflective Sheeting.” Per ASTM E-810, the values presented in Table 3 are averages of R_A values obtained at 0° and 90° rotations.

2.5 Entrance Angularity Performance and Orientation

3M High Intensity Prismatic Reflective Sheeting Series 3930 has been designed to be an effective wide angle reflective sheeting regardless of its orientation on the substrate or the ultimate orientation of the Sign after installation. However, because the efficiency of light return from cube corner reflectors is not equal at all application orientations, which is especially apparent at larger entrance angles, it is possible to get the widest entrance angle light return from a particular orientation. When high entrance angle ($>50^\circ$) performance is required for a given Sign (e.g. “keep right” symbols), it can be obtained easily by properly orientating the Sheeting on the completed Sign. In such situations, the completed Sign should have the Sheeting positioned at the 0° orientation (downweb direction perpendicular to the road). When the flat side of the diamond (direction of diamond chain links) is vertical in the completed Sign, Sheeting is said to be at a 0° orientation. When the “primary groove line” (or, flat side of the diamond shape) is horizontal on the completed Sign, the Sheeting is said to be at a 90° orientation. See Figure 1 for details.

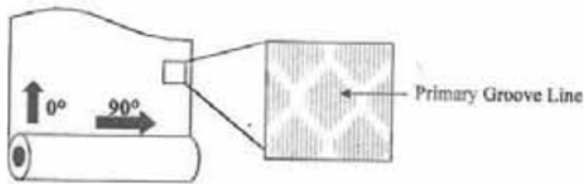


Figure 1. Primary groove lines used to define Sheeting orientation.

Unless Sign location and/or position calls for extra-wide entrance angularity performance or a specific installation direction is required in a customer specification, Signs and applied copy (letters, arrows, borders, and shields) can be fabricated and installed using the application orientation that most efficiently utilizes the reflective Sheeting.

Note: For multi-panel Signs, it is recommended that all background panels be sheeted such that the Sheeting direction is the same for all panels.

2.6 Printed Colors and Overlay Films

When processed according to 3M recommendations, the coefficient of retroreflection of a screen-printed transparent color on white Sheeting shall be not less than 70% of the R_A value of the corresponding colored Sheeting presented in Table 3. White Sheeting covered with 3M ElectroCut™ Film Series 1170, when processed according to 3M recommendations, shall have a coefficient of retroreflection of not less than 100% of the value of the corresponding colored Sheeting, as presented in Table 3. The chromaticities and luminances of printed colors and overlay films shall conform to the specifications presented in Table 2.

3 Physical Properties

3.1 Fabrication Lines

The manufacture of prismatic Sheeting results in lines being present in the product, as shown in Figure 2. In prismatic Sheeting, these lines are slightly thicker than the seal pattern legs. Fabrication lines are noticeable in shop light but are not observable on the road, either in daylight or at night, under typical use conditions.

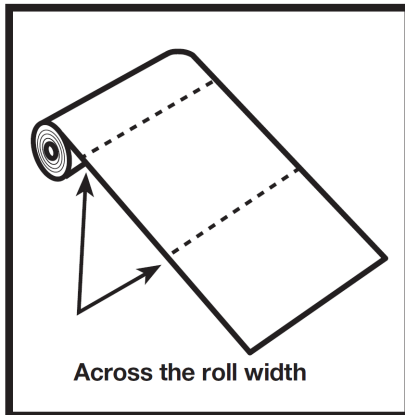


Figure 2. Fabrication lines.

3.2 Adhesive

Series 3930 Sheeting has a pressure-sensitive adhesive that is recommended for application at temperatures of 65°F (18°C) and higher.

4 Sign Fabrication Methods

4.1 Application

Series 3930 Sheeting should be applied to Sign substrates at temperatures of 65°F (18°C) and higher using any of the following methods:

Mechanical squeeze roll applicator – refer to [3M Information Folder 1.4](#). Applications to extrusions that are edge wrapped require sufficient softening of the Sheeting. This can be accomplished by directing additional heat to the “next to last” edge roller. This practice may increase productivity and minimize cracking.

Hand squeeze roll applicator – refer to [3M Information Folder 1.6](#).

Background or complete Sign applications of Series 3930 Sheeting must be performed with a roll laminator, either mechanical or hand driven.

4.2 Hand Application

Hand application is recommended for legend and copy only. Refer to [3M Information Folder 1.5](#) for more details.

Hand applications will show some visual irregularities which may be objectionable to aesthetically critical customers. These irregularities are more noticeable on darker colors. To obtain a uniform close-up appearance, a roll laminator must be used.

All direct applied copy and border **MUST** be cut and squeegeed at all metal joints.

4.3 Splices

Series 3930 Sheeting must be butt spliced when more than one piece of Sheeting is used on a single piece of substrate. Sheeting pieces should not touch one another. This is to prevent the buckling that can occur as Sheeting expands under extreme temperature and humidity conditions.

4.4 Double Faced Signs

The Sheeting on the bottom side of a double faced Sign can be damaged if rolled through a squeeze roll applicator with an unprotected steel bottom roller. The use of a semi-soft flat sheet between the steel roller and the applied Sign face will provide protection from damage. A material such as a rubber mat, tag board, or cardboard is recommended.

5 Substrates

For traffic Sign use, the substrates that have been found to be most reliable and durable are properly prepared aluminum sheets and extrusions. **Users are urged to carefully evaluate adhesion and Sign durability properties of all other substrates.** Other substrates suitable for secure and durable applications of Series 3930 Sheeting have the following characteristics:

- Clean
- Smooth
- Flat
- Rigid
- Dimensionally stable
- Weather resistant
- Non-porous
- High surface energy (pass water break test)

Refer to [3M Information Folder 1.7](#) for surface preparation recommendations. Substrates with low surface energies may require additional preparation steps, such as flame treatment, mechanical abrasion, or use of adhesion promoters prior to Sheeting application. Guide Sign extrusions may be edge wrapped. Flat panels and unwrapped extrusions must be carefully trimmed so that Sheeting sections on adjacent panels do not touch on assembled Signs.

High intensity prismatic Sheeting has been designed primarily for application to flat substrates. Any application to a substrate with a radius of curvature of less than five inches should also be supported by rivets or bolts. Plastic substrates are not recommended where cold shock performance is required. **Sign failures caused by substrate failures or improper surface preparations are not the responsibility of 3M.**

6 Imaging

High intensity prismatic Sheeting may be processed into traffic Signs using any of the imaging methods described below. 3M assumes no responsibility for the failures of Sign face legends or backgrounds that have been processed with non-3M process colors or with matched component imaging materials other than those listed below.

6.1 Digital Imaging

3M High Intensity Prismatic Reflective Sheeting Series 3930 is compatible with the HP Latex 360/365 printers in combination with HP 831/HP 871 Latex inks. This compatibility is backed with a 3M MCS™ Warranty and 3M MCS Warranty for Traffic when the printing guidelines in [3M Information Folder 1.18](#) are followed and 3M ElectroCut™ Film 1170C Clear is applied over the finished graphics. See the “Limited Warranty” section of this document for more information on the MCS Warranties.

6.2 Screen Processing

Series 3930 Sheeting may be screen processed into traffic Signs using 3M Process Colors Series 880I or Series 880N before or after being mounted onto a substrate. Series 880I and 880N process colors can be screened at temperatures of 60-100°F (16-38°C) and at relative humidities of 20-50%. A P.E. 157 screen mesh with a fill pass is recommended. Refer to [3M Information Folder 1.8](#) for details. Clear coating is neither required nor recommended. Use of process color series other than 880I or 880N is not recommended.

6.3 3M ElectroCut™ Film

3M ElectroCut Film Series 1170 may be used on Series 3930 prismatic Sheeting to provide transparent colored background copy for traffic control Signs. Refer to [3M Product Bulletin 1170](#) for fabrication procedures.

6.4 Applied Cut-Out Copy

Series 3930 Sheeting cut-out copy may be applied to Sheeting backgrounds to create Sign legends. Such cut-out copy may be applied directly to the background Sheeting or in a demountable form. Direct applied copy must be cut at all panel seams and carefully trimmed back so that the Sheeting sections of adjacent panels do not touch one another on assembled Signs. Refer to [3M Information Folder 1.10](#) for more information.

7 Cutting

Series 3930 Sheeting may be cut into letters and shapes with heights of at least 3 inches and stroke widths of at least ½ inch. Smaller sizes are not recommended. Sealing the cut edges of Series 3930 Sheeting is not required.

7.1 Plotter Cutting

Programmable knife cut (electronic cutting):

- 1 Flat bed plotters can be used to either die cut or kiss cut Series 3930 Sheeting and offer the most consistent and reliable performances.
- 2 Friction fed plotters can be used to kiss cut only. This is achieved using 600 grams of down force and a 60° cutting blade. Additional drive wheels may be needed to improve tracking. Alternatively, Series 3930 Sheeting can be cut from the liner side. To do so, the blade force and knife depth must be set to score, but not cut through, the topfilm. After scoring, break apart individual copy or apply premask to retain spacing.

7.2 Other Cutting Methods

Series 3930 Sheeting may be hand cut or die cut one sheet at a time, and band sawed or guillotined in stacks. Cutting equipment such as guillotines and metal shears, which place pressure plates on the Sheeting when cutting, may damage the optics. Padding the pressure plate and easing it down onto the sheets being cut will significantly reduce damage. Maximum stack height for cutting Series 3930 Sheeting is 1 ½ inches, or 50 sheets. Cutting procedure details can be found in [3M Information Folder 1.10](#).

8 Installation

Nylon washers are required when twist style fasteners are used to mount Signs.

9 Shelf-Life, Storage, and Packaging

Series 3930 Sheeting should be stored in a cool, dry area, preferably at 65-75°F (18-24°C) and 30-50% relative humidity, and applied within two years of date of manufacture. Rolls should be stored horizontally in their shipping cartons. Partially used rolls should be returned to their shipping cartons or suspended horizontally from rods or pipes through their cores. Unprocessed sheets should be stored flat. Finished Signs and applied blanks should be stored on edge.

Screen processed Signs must be protected with SCW 568 slipsheet paper. Place the glossy side of the slipsheet against the Sign face and pad the face with closed cell packaging foam. Double faced Signs must have the glossy side of a piece of slipsheeting against each face of the Sign.

Unmounted screened faces must be stored flat and interleaved with SCW 568 slipsheeting, glossy side against the Sign face.

Avoid banding, crating, or stacking Signs. Package for shipment in accordance with commercially accepted standards to prevent movement and chafing. Store Sign packages indoors on edges.

Panels and finished Signs must remain dry during shipment and storage. If packaged Signs become wet, unpack immediately and allow Signs to dry. Refer to [3M Information Folder 1.11](#) for instructions on packing for storage and shipment.

10 Cleaning

Signs that require cleaning should be flushed with water, then washed with a detergent solution and soft bristle brush or sponge. Avoid pressure that may damage Sign faces. Flush with water following washing. Do not use solvents to clean Signs.

11 Durability

The durabilities of Series 3930 Sheeting and finished Signs made using 3M Matched Component materials will depend upon substrate selection and preparation, compliance with recommended application procedures, geographic area, exposure conditions, and maintenance practices. Maximum durability of Series 3930 Sheeting can be expected in applications subject to vertical exposures on stationary objects, when processed and applied to aluminum substrates prepared according to the recommendations provided in [3M Information Folder 1.7](#). The user must determine the suitability of any nonmetallic Sign backing for its intended use. **Sign failures caused by substrate failures or improper surface preparations are not the responsibility of 3M.** Application to unprimed, excessively rough or non-weather-resistant surfaces, or exposure to severe or unusual conditions can shorten the performance lifetime of Series 3930 Sheeting. 3M process colors and ElectroCut™ Film, when used according to 3M recommendations, are generally expected to produce Signs with performances comparable to those of their colored reflective Sheeting components. Custom colors, certain lighter colors, heavily toned colors, and blends containing yellow or gold may have reduced durabilities. Atmospheric conditions in certain geographic areas may result in reduced durability.

Periodic Sign inspection and regular Sign replacement are strongly recommended in order to help Sign owners establish their own effective service life expectations, beyond the warranty period.

12 Health and Safety Information

Read all health hazard, precautionary, and first aid statements found in the Safety Data Sheets (SDS), Article Information Sheets, and products labels of any materials for important health, safety, and environmental information prior to handling or use. To obtain SDSs and Article Information Sheets for 3M products, go to 3M.com/SDS, contact 3M by mail, or for urgent requests call 1-800-364-3577.

13 Warranty Information

13.1 3M Basic Product Warranty and Limited Remedy

3M High Intensity Prismatic Reflective Sheeting Series 3930 (“Product”) is warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this Product Bulletin. If Series 3930 Sheeting is proven not to have met the Basic Warranty on its shipment date, then a buyer’s exclusive remedy, and 3M’s sole obligation, at 3M’s option, will be refund or replacement of the Sheeting.

13.2 General Warranty Terms

- 3M makes the Additional Warranty (as defined below) as to any traffic control and guidance Sign in the United States and Canada made with 3M High Intensity Prismatic Reflective Sheeting Series 3930 and the Matched Component materials listed in Table 4, below. Any Additional Warranty is contingent on all components involved in the Additional Warranty being stored, applied, installed, and used only as 3M recommends in its Product Bulletins and Other Product Information.
- The Basic Warranty and any applicable Additional Warranty are collectively referred to as the “3M Warranty.”
- A Sign’s failure to meet the 3M Warranty must be solely the result of the Product or the matched component materials’ design or manufacturing defects. 3M has no obligation under the 3M Warranty if a Sign failure is caused by (a) outside causes including improper fabrication, handling, packing, storing, shipping, maintenance, or installation; (b) use of any material or product not recommended by 3M in this product bulletin, in the 3M information folders and product bulletins listed in Section 15, or in applicable 3M Technical Memorandums; (c) use of application equipment not recommended by 3M; (d) failure of Sign substrate; (e) loss of adhesion due to incompatible or improperly prepared substrate; (f) exposure to chemicals, abrasion, or other mechanical damage; (g) snow burial or any other Sign burial; (h) collisions, vandalism, or malicious mischief; or (i) an act of God.

- 3M reserves the right to determine method of replacement.
- Any replacement Product or Sign restoration will carry the unexpired warranty of the Product it replaces.
- Claims made under this warranty will be honored only if (a) the Sign was dated at the time of fabrication (“Fabrication Date”) using a permanent method (sticker, marker, metal stamp, etc.), (b) 3M is notified in writing of the claim within thirty days of discovery, (c) 3M is provided with the information reasonably required to validate the claim, and (d) 3M is permitted to verify the cause of the failure.
- 3M is not responsible for any additional warranties that the Sign Manufacturer offers to its customers beyond the 3M Warranty.

Table 4. Matched Component Materials

Matched Components	
Process Colors	Series 880I Series 880N
ElectroCut™ Film	Series 1170
Premium Protective Overlay Film	Series 1160

13.3 Additional Warranty and Limited Remedy

The Additional Warranty for a Sign made with the Product is that the Sign will: (a) remain effective for its intended use when viewed from a moving vehicle under normal day and night driving conditions by a driver with normal vision and (b) after cleaning, will meet the minimum coefficient of retroreflection value stated in Table 5 for the applicable Warranty Period, as measured from the Sign’s Fabrication Date.

Table 5. Minimum Percent of Initial R_A (See Table 3) Retained for Applicable Warranty Period for White, Yellow, Red, Green, Blue, and Brown Sheeting

Warranty Period	Minimum Percentage R_A Retained
1-7 Years	80%
8-10 Years	70%

- If any Sign made with the Product is proven not to have met the Additional Warranty, then a buyer’s **exclusive remedy**, and 3M’s sole obligation, at 3M’s option is:
- If this occurs within seven years of the Fabrication Date, then 3M will, at its expense, restore the Sign’s surface to its **original effectiveness**; or
- If this occurs during the remainder of the Additional Warranty Period, then 3M will furnish only the necessary Product and matched component materials quantities to restore the Sign’s surface to its original effectiveness.

13.4 Additional Warranty & Limited Remedy for 3934 Orange Product

The Additional Warranty for a Sign made with 3934 orange Sheeting (Orange Product) is that the Sign will: (a) remain effective for its intended use when viewed from a moving vehicle under normal day and night driving conditions by a driver with normal vision; (b) after cleaning, will retain the coefficient of retroreflection stated in Table 6 for three years, as measured from Fabrication Date; and (c) after cleaning, the Product will maintain daytime luminance equal to or greater than the minimum value specified in Table 2.

Table 6. Minimum Coefficient of Retroreflection for 3934 Orange Sheeting Product ($cd/lux/m^2$) (0.2° observation angle and -4° entrance angle)

Warranty Period	Minimum R_A
3 Years	80

If any Sign made with the Orange Product is proven not to have met the Additional Warranty, then a buyer’s **exclusive remedy**, and 3M’s sole obligation, at 3M’s option, is that 3M will provide pro-rated replacement of the 3M materials.

Refer to 3M Information Folders and Product Bulletins for detailed information about recommended application procedures and equipment.

13.5 Disclaimer

THE 3M WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM, OR USAGE OF TRADE.

13.6 Limitation of Liability

Except for the limited remedy stated above, and except where prohibited by law, 3M will not be liable for any loss or damage arising from the Signs or any 3M product, whether direct, indirect, special, incidental, or consequential damages (including but not limited to lost profits, business, or revenue in any way), regardless of the legal theory asserted including warranty, contract, negligence, or strict liability.

14 Other Product Information

Always confirm that you have the most current version of the applicable product bulletin, information folder, or other product information from 3M's Website at <http://www.mmm.com/roadsafety>.

15 Literature References

3M IF 1.4	Instructions for Interstate Squeeze Roll Applicator
3M IF 1.5	Hand Application Instructions
3M IF 1.6	Hand Squeeze Roll Applicator
3M IF 1.7	Sign Base Surface Preparation
3M IF 1.8	Process Colors Series 880 and 900 Instructions for Use
3M IF 1.10	Cutting, Premasking, and Prespacing
3M IF 1.11	Sign Maintenance Management
3M IF 1.18	Digital Imaging with HP Latex 360/365 Printers on 3M™ Reflective Sheeting Series 4000 and 3930
3M IF 3.5	Digital Imaging with HP Latex 360/365/370/375 Printer on 3M™ Reflective Sheeting Series 4000 and 3930 for Rigid Temporary Traffic Control Signing Applications
3M PB 880I	3M™ Process Color Series 880I
3M PB 880N	3M™ Process Color Series 880N
3M PB 1160	Premium Protective Overlay Film
3M PB 1170	3M™ ElectroCut™ Film Series 1170

ASTM Test Methods are available from ASTM International, West Conshohocken, PA.

For Information or Assistance

Call: 1-800-553-1380

In Canada Call:

1-800-3M HELPS (1-800-364-3577)

Internet:

<http://www.3M.com/roadsafety>

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3M assumes no responsibility for any injury, loss, or damage arising out of the use of a product that is not of our manufacture. Where reference is made in literature to a commercially available product, made by another manufacturer, it shall be the user's responsibility to ascertain the precautionary measures for its use outlined by the manufacturer.



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Diamond Grade™ VIP Reflective Sheeting

Visual Impact Performance (VIP) Series 3990

Product Bulletin 3990

August 2005

Replaces PB 3990 dated May 2004

Description

3M™ Diamond Grade™ VIP Reflective Sheeting is a wide angle prismatic lens reflective sheeting designed for the production of durable traffic control signs and delineators that are exposed vertically in service. This sheeting is designed to provide higher sign brightness than sheetings that use glass bead lenses. It is intended to also provide high sign brightness in the legibility distance where other sheetings do not. This feature is shown by the values at 1.0° observation angle in Table B which represents these viewing geometries. VIP sheeting also provides brightness at high entrance angles shown by the values at 40° in Table B. Applied to properly prepared sign backings, VIP sheeting will provide long term service.

<u>Color</u>	<u>Product Code</u>
White	3990
Yellow	3991
Red	3992
Blue	3995
Green	3997

Photometrics

Daytime Color (x,y,Y)

The chromaticity coordinates and total luminance factor of the retroreflective sheeting conform to Table A.

Color Test

Conformance to color requirements shall be determined by instrumental method in accordance with ASTM E-1164 on sheeting applied to aluminum test panels. The values shall be determined on a HunterLab Labscan 6000 0/45 spectrophotometer with option CMR 559 or equivalent. Computations shall be done in accordance with E-308 for the 2° observer.

Coefficients of Retroreflection (R_A)

The values in Table B are minimum coefficients of retroreflection expressed in candelas per lux per square meter (cd/lux/m²).

Test for Coefficients of Retroreflection

Conformance to coefficient of retroreflection requirements shall be determined by instrumental method in accordance with ASTM E-810 "Test Method for Coefficient of Retroreflection of

Table A - Color Specification Limits* and Reference Standards

Color	x		y		x		y		Daytime Luminance Limit (Y%)	
	x	y	x	y	x	y	x	y	Min.	Max.
White	.305	.305	.355	.355	.335	.375	.285	.325	40	-
Yellow	.487	.423	.545	.454	.465	.534	.427	.483	24	45
Red	.690	.310	.595	.315	.569	.341	.655	.345	3	15
Blue	.078	.171	.150	.220	.210	.160	.137	.038	1	10
Green	.030	.398	.166	.364	.286	.446	.201	.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 illumination Source D65.

Retroreflective Sheeting” and per E-810 the values of 0° and 90° rotation are averaged to determine the R_A in Table B.

Table B - Minimum Coefficient of Retroreflection R_A for new sheeting (cd/lux/m²)

-4° Entrance Angle²			
	Observation Angle ¹		
	0.2°	0.5°	1.0°
White	380	275	80
Yellow	300	220	60
Red	98	70	20
Green	45	32	9.0
Blue	22	17	4.5

30° Entrance Angle²			
	Observation Angle ¹		
	0.2°	0.5°	1.0°
White	225	135	45
Yellow	180	100	35
Red	65	32	11
Green	28	16	6.0
Blue	14	8.0	3.0

40° Entrance Angle²			
	Observation Angle ¹		
	0.2°	0.5°	1.0°
White	90	35	10
Yellow	70	27	8.8
Red	26	10	3.0
Green	9.8	3.5	1.6
Blue	4.5	1.5	0.8

¹Observation (Divergence) Angle - The angle between the illumination axis and the observation axis.

²Entrance (Incidence) Angle - The angle from the illumination axis to the retroreflector axis. The retroreflector axis is an axis perpendicular to the retroreflective surface.

Screenprinted Colors and Overlay Films

For screenprinted transparent color areas on white sheeting, or white sheeting covered with 3M™ ElectroCut™ Film Series 1170 when processed according to 3M recommendations, the coefficients of retroreflection shall not be less than 70% the value for corresponding color in Table B.

Orientation

3M™ Diamond Grade™ VIP Reflective Sheeting is designed to be an effective wide angle reflective sheeting regardless of its orientation on the substrate or ultimate orientation after installation. However, because the efficiency of light return from cube corner reflectors is not equal at all rotation angles, it is possible to get the widest entrance angle light return when the sheeting is oriented in a particular way.

When extra wide entrance angle performance is important for a given sign type or situation, you may elect to make the signs with a specific orientation. However, unless the location and/or position calls for extra-wide entrance angularity performance signs can be manufactured and installed using the orientation that most efficiently utilizes the reflective sheeting.

For purposes of test measurement of the sheeting, it is important for the material to have a datum mark (the orientation arrows) so that the sample can be properly oriented in the test machinery. In those situations where extra wide entrance angle performance is required, this arrow can be used to assure the preferred orientation.

NOTE: In cases where letters and numbers are placed on the same sign, it is recommended they be placed with identical orientation.

Interlocking Diamond Seal Pattern

This pattern is unique to 3M wide angle prismatic retroreflective sheetings.

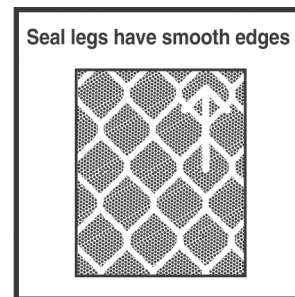


Figure 1 - Sheeting is positioned at a 0° angle.

Datum Marks (Arrows)

Series 3990 sheeting is made with small arrows in the surface repeated three times across a 36 inch roll and at 12 inch intervals (Figure 2) down the roll. These arrows which point down the length of the roll serve as reference marks for photometric testing. The arrows are also used as visual aids to sheeting orientation when fabricating signs for special high entrance angle situations. The arrow differentiates VIP sheeting from other Diamond Grade sheetings.

Tooling Lines

The manufacturing of a prismatic sheeting results in tooling lines being present in the product. In 3M™ Diamond Grade™ VIP Reflective Sheeting, these lines are slightly thicker than the seal pattern legs. Tooling lines are noticeable in shop light but are not observable on the road either in daylight or at night under typical use conditions (Figure 2).

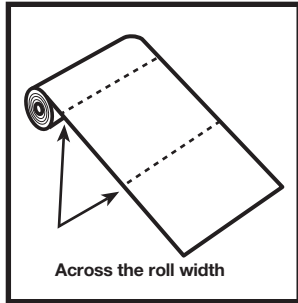


Figure 2 - Tooling Lines

Adhesive

Series 3990 sheeting has a pressure-sensitive adhesive that is recommended for room temperature application. Room temperature application is defined as 65°F (18°C) or higher.

Test Methods of Adhesive and Film Standard Test Panels

Unless otherwise specified herein, sheeting shall be applied to test panels in accordance with ASTM D4956 - 01, section 7.2 and test conditions shall conform to ASTM D4956 section 7.1.

Properties

Standard Conditioning - all mounted and unmounted test specimens shall be conditioned for 24 hours at 73°F ± 2°F (23°C ± 1°C) and 50% ± 4% relative humidity before testing.

1. Adhesive

The retroreflective sheeting shall comply with the liner removal and adhesion requirements contained in ASTM D4956 sections 7.10 and 7.5 respectively.

2. Impact Resistance

Test Method - Apply sheeting to a standard panel 3 x 6 inch (7.6x15.2cm) and condition. Subject sheeting to a 50 inch pounds (5.7Nm) impact in accordance with ASTM D-2794.

Requirement - No separation from panel or cracking outside immediate impact area.

3. Shrinkage

The retroreflective sheeting shall comply with the shrinkage requirements contained in ASTM D4956 sections 7.10 and 7.5 respectively.

4. Flexibility

Test Method - Following conditioning of 1 x 6 inch sample, remove liner and dust adhesive with talc. At standard conditions, bend in one second around 1/8 inch (3.2mm) mandrel with adhesive side facing mandrel.

Requirement - No cracking, peeling or delamination.

5. Gloss

Test Method - Test in accordance with ASTM D523 using an 85° glossmeter.

Requirement - Rating not less than 40.

Sign Fabrication Methods

Application

Diamond Grade VIP sheeting series 3990 incorporates a pressure-sensitive adhesive and should be applied to the sign substrate at room temperature (65°F/18°C) or higher by any of the following methods:

Mechanical squeeze roll applicator - IF 1.4³

Application to extrusions require heat directed at the next-to-last edge roller. Cracking may occur if the top film is not sufficiently softened.

Hand squeeze roll applicator - IF 1.6

³Note - never direct the Calrod™ heater at the sheeting during application. If the heater is needed to warm to the minimum application temperature of 65°F, direct it at the substrate only.

Hand Application

Hand application is recommended for legend and copy only. Application of Diamond Grade sheeting for complete signs or backgrounds must be done with a roll laminator, either mechanical or hand. See Information Folder 1.5 for more details.

Hand applications will show some visual irregularities which are objectionable to aesthetically critical customers. These are more noticeable on darker colors. To obtain a close-up uniform appearance, a roll laminator must be used.

All direct applied copy and border MUST be cut at all metal joints and squeegeed at the joint.

Splices

Series 3990 sheeting should be butt spliced when more than one piece of sheeting is used on one piece of substrate. The sheeting pieces should not touch each other at the splice and a gap of up to 1/16 inch is acceptable. This is to prevent buckling as the sheeting expands in extreme temperature and humidity exposure.

If the visual appearance of the splice is important or a slight gap is undesirable, the following procedures must be followed:

1. Overlap the sheeting at least one inch, with or without the liner attached.
2. Using a straight edge and a sharp utility knife, cut through both layers of reflective sheeting.
3. Peel back and remove cut remnants. If liner was left on, remove and roll down remaining sheeting.
4. Seal edge with thinned 3M™ 880I Process Color Clear using a fine artist paint brush.

Double Faced Signs - Series 3990 sheeting on the first side must be protected from damage from the steel bottom roll of squeeze roll applicators with FR-2 sponge rubber and SCW 568.

Substrates

For traffic sign use, product application is limited to properly prepared aluminum (see Information Folder 1.7). Extrusions are to be wrapped, and flat panel signs are to be carefully trimmed so that sheeting from adjacent panels do not touch on the assembled signs. Users are urged to carefully evaluate all other substrates for adhesion and sign durability. 3M™ Diamond Grade™ VIP Reflective Sheeting is designed primarily for application to flat substrates. Any use that requires a radius of curvature of less than five inches should also be supported by rivets or bolts. Plastic substrates are not recommended where cold shock performance is essential. Sign failures caused by the substrate or improper surface preparation are not the responsibility of 3M.

Screen Processing

Series 3990 sheeting may be screen processed into traffic signs before or after mounting on a sign substrate, using 3M Process Colors Series 880I (see Product Bulletin 880I). Series 880 process colors can be screen processed at 60-100°F (16-38°C) at relative humidity of 20-50%. A PE 157 screen mesh with a fill pass is recommended. See Information Folder 1.8 for details. Use of other process colors series is not recommended.

3M assumes no responsibility for failure of sign face legends or backgrounds that have been processed with non-3M process colors or 3M process colors other than those listed above.

Care should be taken to avoid flexing Series 3990 sheeting before and especially after screening to eliminate the possibility of cracking from improper handling techniques.

Cutting and Matching

The sheeting may be hand cut or die cut one sheet at a time, and band sawed or guillotined in stacks. Series 3990 sheeting can be hand cut from either side with a razor blade or other sharp hand tool. Like all reflective sheetings, when two or more pieces are used side by side on a sign, they must be matched to assure uniform day color and night appearance.

Cutting equipment such as guillotines and metal shears which have pressure plates on the sheeting when cutting may damage the optics. Padding the pressure plate and easing it down onto the sheets being cut will significantly reduce damage. Maximum stack height for cutting Series 3990 sheeting is 1-1/2 inch or 50 sheets. Details on cutting can be found in Information Folder 1.10. Edge sealing VIP sheeting is generally not required. Following extended exposure, airborne dust particles may become trapped within the row of cut cells along the sheeting edge. This should have no adverse effect on sign performance. If the user chooses to edge seal, series 880I toner should be used.

Health and Safety Information

Read all health hazard, precautionary and first aid statements found in the Material Safety Data Sheet and/or product label of chemicals prior to handling or use.

General Performance Considerations

The durability of Diamond Grade VIP Reflective Sheeting Series 3990 will depend upon substrate selection and preparation, compliance with recommended application procedures, geographic area, exposure conditions, and maintenance.

Maximum durability of Series 3990 sheeting can be expected in applications subject to vertical exposure on stationary objects when processed and applied to properly prepared aluminum according to 3M recommendations provided in Information Folder 1.7 on Sign Substrate Surface Preparation.

The user must determine the suitability of any nonmetallic sign backing for its intended use. Applications to unprimed, excessively rough or non-weather-resistant surfaces, or exposure to severe or unusual conditions can shorten the performance of such applications.

Signs in mountainous areas that are covered by snow for prolonged periods may also have reduced durability.

3M process colors, when used according to 3M recommendations, are generally expected to provide performance comparable to colored reflective sheeting, except for certain lighter colors, such as yellow, gold, or heavily toned colors or blends containing yellow or gold, whose durability depends on how much of each color is used. Dilution of color and atmospheric conditions in certain geographic areas may result in reduced durability.

3M™ Scotchcal™ Film 3655 Black, Scotchcal™ film 7720-12, 3M™ Controltac™ Film 180-12 Black, and 3M™ ElectroCut™ Film Series 1170 can be expected to perform satisfactorily for the life of the sign when direct applied to series 3990 sheeting, except where shortened durability is stated in the literature.

Cleaning

Signs that require cleaning should be flushed with water, then washed with a detergent solution and bristle brush or sponge. Avoid pressure that may damage the sign face. Flush with water following washing. Do not use solvents to clean signs. See Information Folder 1.10.

Storage and Packaging

3M™ Diamond Grade™ VIP Reflective Sheeting should be stored in a cool, dry area, preferably at 65-75°F (18-24°C) and 30-50% relative humidity and should be applied within one year of purchase.

Rolls should be stored horizontally in the shipping carton. Partially used rolls should be returned to the shipping carton or suspended horizontally from a rod or pipe through the core. Unprocessed sheets should be stored flat. Finished signs and applied blanks should be stored on edge.

Screen processed signs must be protected with SCW 568 slipsheet paper. Place the glossy side of the slipsheeting against the sign face and pad the face with closed cell packaging foam. Double faced signs must have the glossy side of the slipsheet against each face of the sign.

Unmounted screened faces must be stored flat and interleaved with SCW 568 slipsheet, glossy side against the sign face. Packages of finished sign faces must include sufficient nylon washers for mounting.

Avoid banding, crating, or stacking signs. Package for shipment in accordance with commercially accepted standards to prevent movement and chafing. Store sign packages indoors on edges. Panels or finished signs must remain dry during shipment and storage. If packaged signs become wet, unpack immediately and allow signs to dry. See Information Folder 1.11 for instructions on packing for storage and shipment.

Installation

Nylon washers are recommended between the heads of all twist fasteners (such as screw heads, bolts, or nuts) and the sheeting to protect the sheeting from the twisting action of the bolt heads.

Warranty

3M warrants that 3M™ Diamond Grade™ VIP Reflective Sheeting to be sold by 3M to be used as components for traffic control and guidance signs in the United States and Canada will remain effective for its intended use and meet the stated minimum values for coefficient of retroreflection for twelve years, subject to the following provisions in Table C.

Table C – Percentage of Table B Initial R_A Minimums Guaranteed Over 12 Year Warranty Period (Colors: white, yellow, red, green and blue)

Warranty Period	Minimum Percentage R_A Retained
1-7 Years	80%
8-12 Years	70%

- R_A percentage retained above apply to all entrance and observation angles presented in Table B, and shall be measured per ASTM E 810.

- All measurements shall be made after cleaning according to 3M recommendations.

If a 3M Diamond Grade VIP sign surface is processed and applied to sign blank materials in accordance with all 3M application and fabrication procedures provided in 3M's product bulletins, information folders, and technical memos (that will be furnished to the agency upon request), including the exclusive use of 3M matched component systems, process colors, clear coatings, electronic cuttable films, protective overlay films, and recommended applications equipment; and

If the sign deteriorates 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 by a driver with normal vision, or 2) the coefficient of retroreflection after cleaning is less than the minimums specified in Table C, 3M's sole responsibility and purchaser's and user's exclusive remedy shall be:

If the failure occurs within the first 7 years from the date of fabrication, 3M will, at its expense, restore the sign surface to its original effectiveness.

If the failure occurs within the 8th through the 12th year from the date of fabrication, 3M will furnish the necessary amount of 3M Diamond Grade VIP sheeting to restore the sign surface to its original effectiveness.

Conditions

Such failure must be solely the result of design or manufacturing defects in the 3M™ Diamond Grade™ VIP Reflective Sheeting and not of outside causes such as: improper fabrication, handling, maintenance or installation; use of process colors, thinners, coatings, or overlay films and sheetings not made by 3M; use of application equipment not recommended by 3M; failure of sign substrate; exposure to chemicals, abrasion and other mechanical damage from fasteners used to mount the sign; sign burial; collisions, vandalism or malicious mischief.

3M reserves the right to determine the method of replacement.

Replacement sheeting will carry the unexpired warranty of the sheeting it replaces.

Claims made under this warranty will be honored only if the signs have been dated at the time of sheeting application, which constitutes the start of the warranty period.

Claims made under this warranty will be honored only if 3M is notified of a failure within a reasonable time, reasonable information requested by 3M is provided, and 3M is permitted to verify the cause of the failure.

Limitation of Liability and Remedies

3M's liability under this warranty is limited to replacement or allowance as stated herein, and 3M assumes no liability for incidental or consequential damages such as lost profits, business or revenue in any way related to the product regardless of the legal theory on which the claim is based. THIS WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE.

Literature Reference

- IF 1.3 Instructions for Squeeze Roll Applicator
- IF 1.5 Hand Application Instructions
- IF 1.6 Instructions for Hand Squeeze Roll Applicator
- IF 1.7 Sign Base Materials
- IF 1.8 Color Application Instructions
- IF 1.10 Cutting, Matching, Premasking, and Prespacing Instructions
- IF 1.11 Storage Maintenance, and Removal Instructions
- PB 880I 3M™ Process Color

ASTM Test Methods are available from ASTM International, West Conshohocken, PA

FOR INFORMATION OR ASSISTANCE

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Important Notice

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, special or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith.

Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.

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LAP-SPLICE™

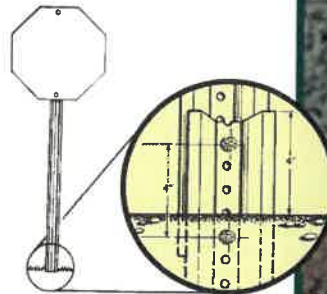
LAP-SPLICE™ THE RIB-BAK BREAKAWAY SYSTEM MADE EASY.

The simplest and easiest to use breakaway system. The LAP-SPLICE is a ground-mounted, bolted-based breakaway system for any size SP-80 RIB-BAK U-channel. And it costs remarkably less than competitive breakaway systems.

Designed for Safety and Economy

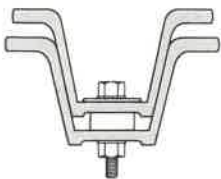
The system utilizes a short RIB-BAK base or ground post, so it can easily and quickly be driven into even the hardest clay soils from ground level with manual or power tools, in just minutes. Nesting and bolting the top post to the bottom post takes just minutes, too – so installation crews spend less time by the side of the road, reducing their exposure to traffic-related injury.

The economy of the LAP-SPLICE system is by design. Just two special bolts and a bar spacer (with threaded holes) are needed to join the top post to the base post.



BAR SPACER SIZE CHART

Post Size (lbs./ft.)	Bar Color	Bar Size
2 & 2.5	Silver	3/8" x 3/4" x 5"
3 & 4	Gold	1/2" x 3/4" x 5"



The LAP-SPLICE system securely nests RIB-BAK U-channel together, forming a union as strong as the posts themselves.



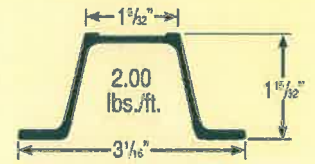
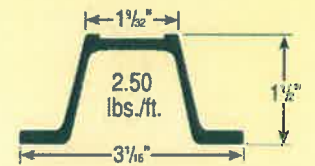
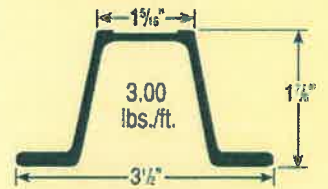
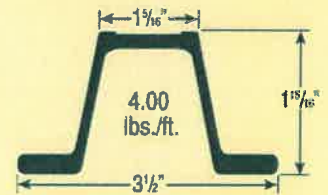
Comparing Signposts

	RIB-BAK® U-Channel	Other U-Channels
Ingredients	U.S. new-billet steel	Foreign or domestic rail steel
Steel Properties	Consistent and strong	Inconsistent and weak – 25% less yield strength
Supports Signage on Back of Post	Yes	No – signs wobble on a rounded surface
Yield Strength	80-100 KSI	60-80 KSI
ASTM A499 Requirements	Exceeds	Meets
Post Needed to Support 30" Stop Sign in 70 m.p.h. Winds, 7' Clear Height	2 lb. Signpost	2.5 lb. Signpost



NOTE:
 3 lbs./ft. x 3 supports –
 and all 4 lbs./ft. supports –
 must use breakaway hardware
 to comply with FHWA
 breakaway requirements.

Multiple Sizes



POWDER-SHELL™



Electrostatically charged powder adheres to the RIB-BAK U-channel posts.

POWDER COATING AT THE PRICE OF PAINT.

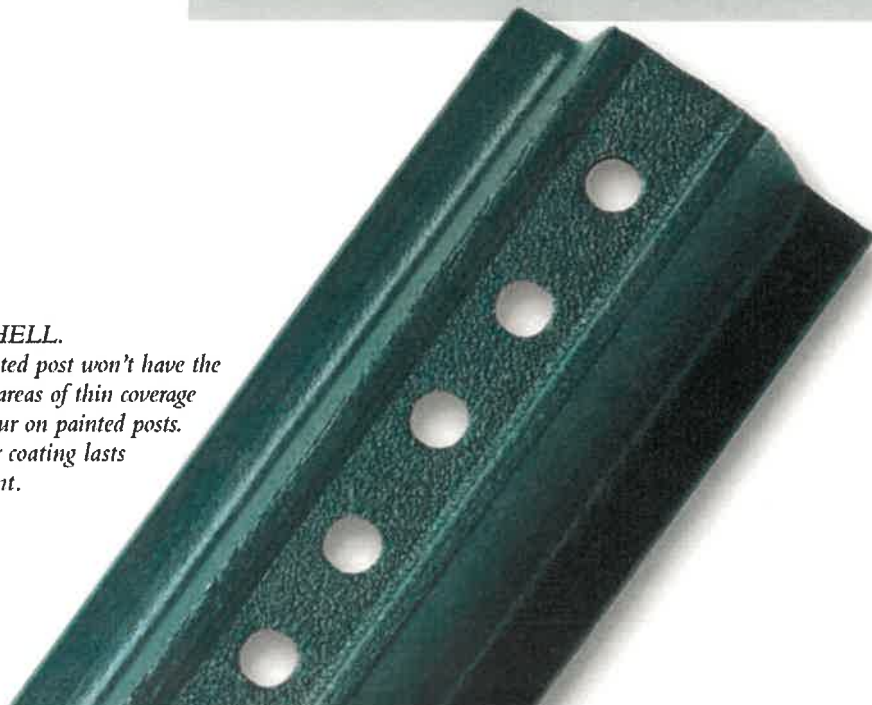
Only Nucor Steel Marion, Inc. gives you the superior rust-resistant protection, durability and appearance of powder coating – at the price of paint. Called POWDER-SHELL™, it's available for all sizes of RIB-BAK in green, black, yellow, white, orange and brown (other colors by request). For the ultimate protection against the elements, RIB-BAK posts are also available in hot-dipped galvanized (ASTM A123).

NUCOR STEEL POWDER-SHELL™

Production Description.....	Smooth Polyester Powder Coat
Product Characteristics	
Specific Gravity.....	1.54 +/- .05
Storage Temperature.....	< 80° F
Particle Distribution.....	+44 Microns (325 Mesh) 28-34%
Film Thickness.....	1.8 to 2.5 mils
Cure Schedule.....	10 minutes @ 400° F
Gloss.....	ASTM D523 75-85%
Pencil Hardness.....	ASTM D3363 H-2H
Flexibility.....	ASTM D522 1/8 inch
Adhesion.....	ASTM D3359 5B
Direct Impact.....	ASTM D2794 160 in/lbs @ 2.0 mils
Reverse Impact.....	ASTM D2794 160 in/lbs @ 2.0 mils

POWDER-SHELL.

Our powder coated post won't have the missed spots or areas of thin coverage that so often occur on painted posts. Plus, the powder coating lasts longer than paint.



**RIDER B
TERMS AND CONDITIONS**

- 1. DEFINITIONS:** The following definitions are applicable to these standard terms and conditions:
 - a. The term “Buyer” or “State” shall refer to the Government of the State of Maine or a person representing the Government of the State of Maine.
 - b. The term “Department” or “DAFS” shall refer to the State of Maine Department of Administrative and Financial Services.
 - c. The term “Bureau” or “BGS” shall refer to the State of Maine Bureau of General Services.
 - d. The term “Division” shall refer to the State of Maine Division of Purchases.
 - e. The term “Contractor”, “Vendor”, or “Provider” shall refer to the organization that is providing goods and/or services through the contract to which these standard terms and conditions have been attached and incorporated.
 - f. The term “Contract” or “Agreement” shall refer to the contract document to which these standard terms and conditions apply, taking the format of a Buyer Purchase Order (BPO) or Master Agreement (MA) or other contractual document that is mutually agreed upon between the State and the Contractor.

- 2. WARRANTY:** The Contractor warrants the following:
 - a. That all goods and services to be supplied by it under this Contract are fit and sufficient for the purpose intended, and
 - b. That all goods and services covered by this Contract will conform to the specifications, drawing samples, symbols or other description specified by the Division, and
 - c. That such articles are merchantable, good quality, and free from defects whether patent or latent in material and workmanship, and
 - d. That all workmanship, materials, and articles to be provided are of the best grade and quality, and
 - e. That it has good and clear title to all articles to be supplied by it and the same are free and clear from all liens, encumbrances and security interest.

Neither the final certificate of payment nor any provision herein, nor partial nor entire use of the articles provided shall constitute an acceptance of work not done in accordance with this agreement or relieve the Contractor liability in respect of any warranties or responsibility for faulty material or workmanship. The Contractor shall remedy any defects in the work and pay any damage to other work resulting therefrom, which shall appear within one year from the date of final acceptance of the work provided hereunder. The Division of Purchases shall give written notice of observed defects with reasonable promptness.

3. TAXES: Contractor agrees that, unless otherwise indicated in the order, the prices herein do not include federal, state, or local sales or use tax from which an exemption is available for purposes of this order. Contractor agrees to accept and use tax exemption certificates when supplied by the Division as applicable. In case it shall ever be determined that any tax included in the prices herein was not required to be paid by Contractor, Contractor agrees to notify the Division and to make prompt application for the refund thereof, to take all proper steps to procure the same and when received to pay the same to the Division.

4. PACKING AND SHIPMENT: Deliveries shall be made as specified without charge for boxing, carting, or storage, unless otherwise specified. Articles shall be suitably packed to secure lowest transportation cost and to conform to the requirements of common carriers and any applicable specifications. Order numbers and symbols must be plainly marked on all invoices,

packages, bills of lading, and shipping orders. Bill of lading should accompany each invoice. Count or weight shall be final and conclusive on shipments not accompanied by packing lists.

5. DELIVERY: Delivery should be strictly in accordance with delivery schedule. If Contractor's deliveries fail to meet such schedule, the Division, without limiting its other remedies, may direct expedited routing and the difference between the expedited routing and the order routing costs shall be paid by the Contractor. Articles fabricated beyond the Division's releases are at Contractor's risk. Contractor shall not make material commitments or production arrangements in excess of the amount or in advance of the time necessary to meet delivery schedule, and, unless otherwise specified herein, no deliveries shall be made in advance of the Division's delivery schedule. Neither party shall be liable for excess costs of deliveries or defaults due to the causes beyond its control and without its fault or negligence, provided, however, that when the Contractor has reason to believe that the deliveries will not be made as scheduled, written notice setting forth the cause of the anticipated delay will be given immediately to the Division. If the Contractor's delay or default is caused by the delay or default of a subcontractor, such delay or default shall be excusable only if it arose out of causes beyond the control of both Contractor and subcontractor and without fault of negligence or either of them and the articles or services to be furnished were not obtainable from other sources in sufficient time to permit Contractor to meet the required delivery schedule.

6. FORCE MAJEURE: The State may, at its discretion, excuse the performance of an obligation by a party under this Agreement in the event that performance of that obligation by that party is prevented by an act of God, act of war, riot, fire, explosion, flood or other catastrophe, sabotage, severe shortage of fuel, power or raw materials, change in law, court order, national defense requirement, or strike or labor dispute, provided that any such event and the delay caused thereby is beyond the control of, and could not reasonably be avoided by, that party. The State may, at its discretion, extend the time period for performance of the obligation excused under this section by the period of the excused delay together with a reasonable period to reinstate compliance with the terms of this Agreement.

7. INSPECTION: All articles and work will be subject to final inspection and approval after delivery, notwithstanding prior payment, it being expressly agreed that payment will not constitute final acceptance. The Division of Purchases, at its option, may either reject any article or work not in conformity with the requirements and terms of this order, or re-work the same at Contractor's expense. The Division may reject the entire shipment where it consists of a quantity of similar articles and sample inspection discloses that ten (10%) percent of the articles inspected are defective, unless Contractor agrees to reimburse the Division for the cost of a complete inspection of the articles included in such shipment. Rejected material may be returned at Contractor's risk and expense at the full invoice price plus applicable incoming transportation charges, if any. No replacement of defective articles of work shall be made unless specified by the Division.

8. INVOICE: The original and duplicate invoices covering each and every shipment made against this order showing Contract number, Vendor number, and other essential particulars, must be forwarded promptly to the ordering agency concerned by the Vendor to whom the order is issued. Delays in receiving invoice and also errors and omissions on statements will be considered just cause for withholding settlement without losing discount privileges. All accounts are to be carried in the name of the agency or institution receiving the goods, and not in the name of the Division of Purchases.

9. ALTERATIONS: The Division reserves the right to increase or decrease all or any portion of the work and the articles required by the bidding documents or this agreement, or to eliminate

all or any portion of such work or articles or to change delivery date hereon without invalidating this Agreement. All such alterations shall be in writing. If any such alterations are made, the contract amount or amounts shall be adjusted accordingly. In no event shall Contractor fail or refuse to continue the performance of the work in providing of articles under this Agreement because of the inability of the parties to agree on an adjustment or adjustments.

10. TERMINATION: The Division may terminate the whole or any part of this Agreement in any one of the following circumstances:

- a. The Contractor fails to make delivery of articles, or to perform services within the time or times specified herein, or
- b. If Contractor fails to deliver specified materials or services, or
- c. If Contractor fails to perform any of the provisions of this Agreement, or
- d. If Contractor so fails to make progress as to endanger the performance of this Agreement in accordance with its terms, or
- e. If Contractor is adjudged bankrupt, or if it makes a general assignment for the benefit of its creditors or if a receiver is appointed because of its insolvency, or
- f. Whenever for any reason the State shall determine that such termination is in the best interest of the State to do so.

In the event that the Division terminates this Agreement in whole or in part, pursuant to this paragraph with the exception of 8(f), the Division may procure (articles and services similar to those so terminated) upon such terms and in such manner as the Division deems appropriate, and Contractor shall be liable to the Division for any excess cost of such similar articles or services.

11. NON-APPROPRIATION: Notwithstanding any other provision of this Agreement, if the State does not receive sufficient funds to fund this Agreement and other obligations of the State, if funds are de-appropriated, or if the State does not receive legal authority to expend funds from the Maine State Legislature or Maine courts, then the State is not obligated to make payment under this Agreement.

12. COMPLIANCE WITH APPLICABLE LAWS: Contractor agrees that, in the performance hereof, it will comply with applicable laws, including, but not limited to statutes, rules, regulations or orders of the United States Government or of any state or political subdivision(s) thereof, and the same shall be deemed incorporated herein by reference. Awarding agency requirements and regulations pertaining to copyrights and rights in data. Access by the grantee, the subgrantee, the Federal grantor agency, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers and records of the Contractor which are directly pertinent to that specific contract for the purpose of making audit, examination, excerpts, and transcriptions. Retention of all required records for three years after grantees or subgrantees make final payments and all other pending matters are closed. Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h), section 508 of the Clean Water Act, (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15). (Contracts, subcontracts, and subgrants of amounts in excess of \$100,000). Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with Energy Policy and Conservation Act (Pub. L. 94-163, 89 Stat. 871).

13. INTERPRETATION: This Agreement shall be governed by the laws of the State of Maine as to interpretation and performance.

14. DISPUTES: The Division will decide any and all questions which may arise as to the quality and acceptability of articles provided and installation of such articles, and as to the manner of performance and rate of progress under this Contract. The Division will decide all questions, which may arise as to the interpretation of the terms of this Agreement and the fulfillment of this Agreement on the part of the Contractor.

15. ASSIGNMENT: None of the sums due or to become due nor any of the work to be performed under this order shall be assigned nor shall Contractor subcontract for completed or substantially completed articles called for by this order without the Division's prior written consent. No subcontract or transfer of agreement shall in any case release the Contractor of its obligations and liabilities under this Agreement.

16. STATE HELD HARMLESS: The Contractor agrees to indemnify, defend, and save harmless the State, its officers, agents, and employees from any and all claims and losses accruing or resulting to any and all contractors, subcontractors, material men, laborers and other persons, firm or corporation furnishing or supplying work, services, articles, or supplies in connection with the performance of this Agreement, and from any and all claims and losses accruing or resulting to any person, firm or corporation who may be injured or damaged by the Contractor in the performance of this Agreement.

17. SOLICITATION: The Contractor warrants that it has not employed or written any company or person, other than a bona fide employee working solely for the Contractor to solicit or secure this Agreement, and it has not paid, or agreed to pay any company, or person, other than a bona fide employee working solely for the Contractor any fee, commission, percentage, brokerage fee, gifts, or any other consideration, contingent upon, or resulting from the award for making this Agreement. For breach or violation of this warranty, the Division shall have the absolute right to annul this agreement or, in its discretion, to deduct from the Agreement price or consideration, or otherwise recover the full amount of such fee, commission, percentage, brokerage fee, gifts, or contingent fee.

18. WAIVER: The failure of the Division to insist, in any one or more instances, upon the performance of any of the terms, covenants, or conditions of this order or to exercise any right hereunder, shall not be construed as a waiver or relinquishment of the future performance of any such term, covenant, or condition or the future exercise of such right, but the obligation of Contractor with respect to such future performance shall continue in full force and effect.

19. MATERIAL SAFETY: All manufacturers, importers, suppliers, or distributors of hazardous chemicals doing business in this State must provide a copy of the current Material Safety Data Sheet (MSDS) for any hazardous chemical to their direct purchasers of that chemical.

20. COMPETITION: By accepting this Contract, Contractor agrees that no collusion or other restraint of free competitive bidding, either directly or indirectly, has occurred in connection with this award by the Division of Purchases.

21. INTEGRATION: All terms of this Contract are to be interpreted in such a way as to be consistent at all times with this Standard Terms and Conditions document, and this document shall take precedence over any other terms, conditions, or provisions incorporated into the Contract.

Appendix A


**STATE OF MAINE
DEPARTMENT OF ADMINISTRATIVE AND FINANCIAL SERVICES
DIVISION OF PROCUREMENT SERVICES**

BID COVER PAGE and DEBARMENT FORM

Bidder's Organization Name: Vulcan Inc., dba Vulcan Signs		
Chief Executive - Name/Title: David B. Beviacqua		
Tel: 800-633-6845	Fax: 251-943-1544	E-mail: vulcan3@vulcaninc.com
Headquarters Street Address: 408 East Berry Avenue		
Headquarters City/State/Zip: Foley, AL 36535		
<i>(provide information requested below if different from above)</i>		
Lead Point of Contact for Bid - Name/Title: Wendy Jantz		
Tel: 800-633-6845	Fax: 251-943-1544	E-mail: vulcan3@vulcaninc.com
Street Address: PO BOX 1850		
City/State/Zip: Foley, AL 36536		

By signing below Bidder affirms:

- Their bid complies with all requirements of this RFQ;
- This bid and the pricing structure contained herein will remain firm for a period of 180 days from the date and time of the bid opening;
- That no personnel currently employed by the Department or any other State agency participated, either directly or indirectly, in any activities relating to the preparation of the Bidder's proposal;
- That no attempt has been made or will be made by the Bidder to induce any other person or firm to submit or not to submit a proposal; and
- The undersigned is authorized to enter into contractual obligations on behalf of the above-named organization.

Name: David B. Beviacqua	Title: VP & General Manager
To have your bid accepted, this Appendix MUST have an actual wet signature or utilize DocuSign or Adobe Sign forms of electronic signature.	
Authorized Signature: 	Date: 6/29/2021


Debarment, Performance, and Non-Collusion Certification

By signing this document, I certify to the best of my knowledge and belief that the aforementioned organization, its principals, and any subcontractors named in this proposal:

- a. *Are not presently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from bidding or working on contracts issued by any governmental agency.*
- b. *Have not within three years of submitting the proposal for this contract been convicted of or had a civil judgment rendered against them for:*
 - i. *fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government transaction or contract.*
 - ii. *violating Federal or State antitrust statutes or committing embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;*
 - iii. *are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and*
 - iv. *have not within a three (3) year period preceding this proposal had one or more federal, state or local government transactions terminated for cause or default.*
- c. *Have not entered into a prior understanding, agreement, or connection with any corporation, firm, or person submitting a response for the same materials, supplies, equipment, or services and this proposal is in all respects fair and without collusion or fraud. The above mentioned entities understand and agree that collusive bidding is a violation of state and federal law and can result in fines, prison sentences, and civil damage awards.*

- **Failure to provide this certification may result in the disqualification of the Bidder’s proposal, at the discretion of the Department.**

To the best of my knowledge all information provided in the enclosed proposal, both programmatic and financial, is complete and accurate at the time of submission.

Name: David B. Beviacqua	Title: VP & General Manager
To have your bid accepted, this Appendix MUST have an actual wet signature or utilize Docu Sign or Adobe Sign forms of electronic signature.	
Authorized Signature: 	Date: 6/29/2021

Appendix D

**STATE OF MAINE
DEPARTMENT OF ADMINISTRATIVE AND FINANCIAL SERVICES
DIVISION OF PROCUREMENT SERVICES**

**MUNICIPALITY POLITICAL SUBDIVISION and SCHOOL DISTRICT PARTICIPATION
CERTIFICATION**

**RFQ # 17A 210616-273
Signs, Traffic, Warning & Regulatory**

The Division of Procurement Services is committed to providing purchasing opportunities for **municipalities, political subdivisions and school districts** in Maine by allowing them access, through our vendors, to our contract pricing. A bidder's willingness to extend contract pricing to these entities will be taken into consideration in making awards.

Orders from Municipality, Political Subdivisions and School Districts (Appendix D): If the bidder elects to permit Municipality, Political Subdivisions and School Districts to utilize the resulting Master Agreement Contract, The State of Maine will not be responsible for any order placed by these groups. All orders will originate from these groups and they will be liable for all payments.

Will you accept orders from political subdivisions and school districts in Maine at the prices quoted?

Yes

Yes, with conditions as follows: 500 pound minimum on signs and 1000 pound minimum on posts. Posts must be bought in bundles of 50.

No

Name of Company:

Vulcan Inc., dba Vulcan Signs

Address:

PO BOX 1850 Foley, AL 36536

Name & Title: David B. Beviacqua - VP & General Manager

Signature:

Date: 6/29/2021