ADDENDUM NO. 1

TO THE

DRAWINGS AND SPECIFICATIONS

FOR THE

2013 GREENWAYS IMPLEMENTATION PROJECT
PW2013-16 (PART A & B)

ISSUED FROM: CITY HALL AT THE SHOWERS BUILDING
Post Office Box 100
401 North Morton Street
Bloomington, Indiana 47404

ISSUE DATE: August 19th, 2013

BID DATE: August 21st, 2013

This Addendum No.1, to the drawings and specifications shall supplement, amend and become a part of the bidding documents, plans, and specifications. All bids and construction contracts shall be based on these modifications to the original contract documents.

ITEM NO. 1: Plan sheets

The project consist of the following plans and sheets;
01-Allen-Covenanter (15 pages + one page MOT plan),
02-Highland Hawthorne (10 pages),
03-7th-Longview (17 pages),
04-South Adams (6 pages),
05-Clifton-Union (10 pages),
12-E 3rd St (6 pages).
For a total of 65 sheets that shall be posted on the City of Bloomington, Bid/Quote Opportunities web portal.

ITEM NO. 2: Updated unit price list

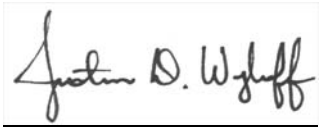
Bidders and contractors shall use the attached updated unit price list.

ITEM NO. 3: Adams St and Kirkwood, updated sheet 6 of 6

Addition of a concrete island with dimensions as shown on the attached revised sheet.

ITEM NO. 4: Green pavement markings.

All green pavement markings shall comply with MUTCD - Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes (1A-14). All green markings for bike boxes shall be PreMark® preformed thermoplastic or equivilant.

	CERTIFIED BY:  JUSTIN D. WYKOFF CITY OF BLOOMINGTON STATE OF INDIANA

Acknowledge receipt of the addendum by submitting a signed copy with your bid proposal.

RECEIVED BY: CONTRACTOR (FIRM AND ADDRESS)

_____

_____

_____

SIGNATURE: _____ **DATE:** _____

PRINTED NAME: _____

TITLE: _____

UNIT PRICE SHEET

FOR

PW 2013-16b, 2013 Greenways Implementation Project
For Additions/Deductions

PROVIDE PRICES FOR ALL CHECKED ITEMS

Item #	Description	Price Each	Unit
☒	Sign Removal (single post)		CYD
☒	Sign Relocation (single post)		SYD
☒	Green Paint (bike box)		SYD
☒	Line, Paint, Dotted (2' line, 6' gap), 6" wide		LFT
☒	Line, Thermoplastic, Broken, White, 6" wide		LFT
☒	Pavement Message Marking, Sharrow with Skips		EA
☒	Pavement Message Marking, Remove		EA
☒	Pavement Message Marking, Thermo. Bike Symbol		EA
☒	Pavement Line Removal		LFT
☒	Line, Paint, Solid White, 6" wide		LFT
☒	Line, Thermoplastic, Solid, White 6"		LFT
☒	Line, Thermoplastic, Solid, Yellow 4"		LFT
☒	Transverse Marking, Thermo. Stop Line, White 24"		LFT
☒	Snowplowable Raised Pavement Markers (remove)		EA
☒	Snowplowable Raised Pavement Markers		EA
☒	New Sign Installed with Square Post (2"x2"		SYS
☒	Transverse Marking, Thermo 24" Yield (sharkteeth)		SYS
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			
☐			

- **All prices shall reflect complete installation as shown and specified on the plans or stated in the specifications.**
- **Example: Sidewalk includes stone bedding, excavation; Asphalt Pathway includes stone, base, surface and backfill, excavation, etc.**

SPECIFICATION
COLORIZED COATINGS

1. **USE:** A durable, colorized, slip resistant and skid resistant coating suitable for delineating areas for preferential use, such as bike lanes, bus lanes and other vehicular or pedestrian traffic uses.

   1.1. Material must be specifically designed for application onto asphalt or non-bituminous concrete surfaces such as portland cement concrete. Material must have a balance of properties that will ensure adhesion and movement on a flexible pavement, while providing excellent durability and color stability. Key properties include wear and crack resistance, color retention, adhesion, minimal water absorption and increased friction properties.

   1.2. A Certificate of Analysis from an independent recognized testing laboratory confirming performance as outlined in section 1.1 shall be made available upon request.

   1.3. Color shall be a Light Green specifically formulated to provide the optimal balance of durability, color fastness and ideal conspicuity. The initial daytime chromaticity for the Light Green material shall fall within the box created by the following coordinates:

1		2		3		4	
x	y	x	y	x	y	x	y
0.230	0.754	0.266	0.500	0.367	0.350	0.444	0.555

2. **MATERIAL:** Must be composed of a two component, epoxy-modified, acrylic, waterborne coating specifically designed for application onto asphalt or non-bituminous concrete surfaces such as portland cement concrete, and is specially formulated to provide a safe, durable, long lasting color and texture to the pavement surface.

   2.1. Typical Physical Properties of coating material:

Table 1: Typical Physical Properties of coating		
Characteristic	Test Specification	Coating
solids by volume	ASTM D 2697	55%
solids by weight	ASTM D 2369	68.90%
Density	ASTM D 1475	13.34 lbs/gal (1.599 kg/l)

   2.2. Material must be environmentally safe and meet EPA requirements for Volatile Organic Compounds (VOC).

3. **APPLICATION:** The material shall be applied to the pavement surface using the method outlined in the product Application Instructions.

   3.1. The pavement surface shall be dry and free from all foreign matter.
   3.2. Additional layer of material may be used to provide additional thickness in high wear areas such as wheel paths and vehicle turning areas.

	THICKNESS (approx.)			
SPRAY PASSES	Wet		Dry	
	Mm	mil	mm	mil
3	0.65	25.7	0.36	14.1
4	0.87	34.3	0.48	18.9

   3.3. Each coating application shall be spray applied using the Rapid Sprayer II and broomed to work the material into the surface. Subsequent layers shall be sprayed and rolled, using a 1in. to 1.5 in. nap roller or sprayed and broomed.

   3.4. Each additional layer of coating material shall be the same color as the first and shall be allowed to dry completely before applying the next layer.

3.5. One container of coating will yield one layer covering approximately 700 square feet. See table below.

Layers	Approximate coverage per unit	Approximate coverage per layer	Recommendation
3	225 ft2 (20.9 m2)	675 ft2 (62.7 m2)	coating not subjected to vehicular traffic
4	175 ft2 (16.3 m2)	700 ft2 (65.1 m2)	coating subjected to vehicular traffic

3.6. Coating must be 100% dry before opening to traffic. Air temperature, relative humidity and time will affect dry time. Substrate temperature and ambient wind conditions can also affect dry times. Reference the table below for typical dry times.

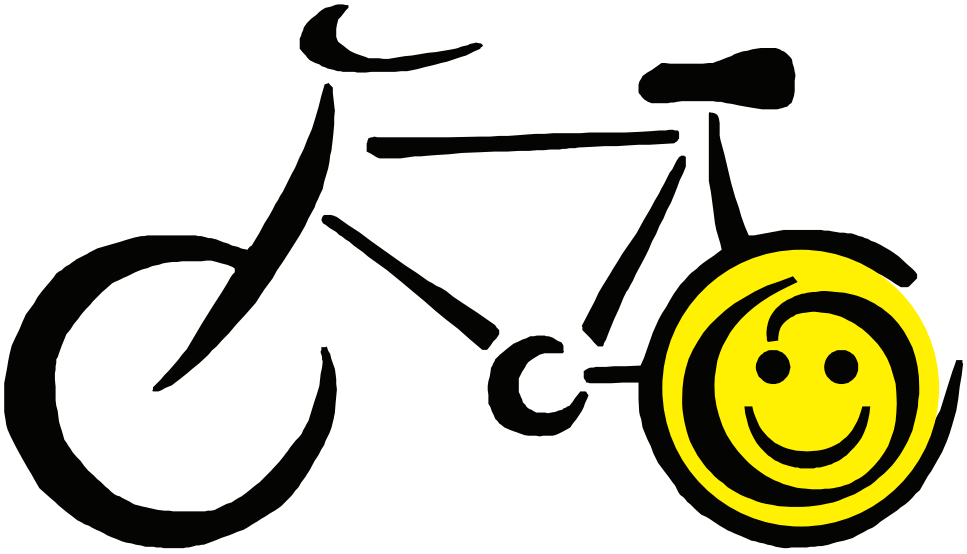
COATING DRY TIMES (TYPICAL)		
Air Temperature	Relative Humidity	Time to dry (approx.)
60°F (15°C)	80%	8 hours
81°F (27°C)	57%	4 hours
120°F (49°C)	5%	2 hours

4. PERFORMANCE PROPERTIES OF COATING

Characteristic	Test Specification	Coating	
Dry Time (to recoat)	ASTM D 5895 23°C; 37% RH	35 min	
Taber Wear Abrasion Dry H-10 wheel	ASTM D 4060 1 day cure	0.98 g/1000 cycles	
Taber Wear Abrasion Wet H-10 wheel	ASTM D 4060 7 days cure	3.4 g/1000 cycles	
Accelerated Weathering Environment	ASTM G 155 2,000 hrs (CIE Units)	ΔE=0.49 (brick color)	
Hydrophobicity Water Absorption	ASTM D 570	8.3% (9 days immersion)	
Shore Hardness	ASTM D 2240	63 Type D	
Mandrel Bend	ASTM D 522-93A	1/4 in @ 21° C	
Permeance	ASTM D 1653	3.45 g/m^2/hr (52 mils)	
VOC	EPA-24 ASTM D 3960-05	18.7 g/l	
Adhesion to Asphalt	ASTM D 4541	Substrate Failure	
Friction Wet	ASTM E 303 British Pendulum Tester	WP* coated	64
		WP* uncoated	57
		AC** coated	73
		AC** uncoated	60

*WP - test conducted on asphalt pavement in wheel path.
**AC - test conducted on asphalt pavement adjacent to curb.

5. TECHNICAL SERVICES: The successful bidder shall provide technical services as required.



Bike.
FRIENDLY

Share.
THE ROAD

Enjoy.
THE RIDE

Durable
pavement markings are
something to smile about.

Flint
TRADING INC.®

CATALOG OF PEDESTRIAN AND BIKE LANE MARKINGS

Preformed Thermoplastic Pavement Markings

Smile! **For the municipality** it saves money by stretching budget dollars related to maintenance costs...**for the applicator** it saves time and is easy to apply...**for the roadway user** it provides proper guidance for safer travel...**for the engineer and planner** it provides a benchmark for specifying materials with proven performance and value. **It** is a preformed thermoplastic pavement marking.

Visible pavement markings make a huge difference in the safety, purpose, and performance of pedestrian and bike lane marking programs. Pavement markings should not be an afterthought; rather, consideration for materials to use on your next pedestrian or bike lane project should be part of the action plan right upfront. Whether you're a member of a pedestrian and cyclist organization advocating for a safe place to walk, run, and ride or an individual responsible for specifying materials, designing, building or maintaining that safe place, Flint Trading is here to partner with you. Flint provides durable products that enhance the safety and guidance for an ever-growing roadmap of streets, trails, lanes, intersections, and boulevards. All shared roadway users need to clearly see and quickly acknowledge the defined areas of travel for motorists, pedestrians, cyclists, and transit users.

That's why we've created this catalog of pedestrian and bike lane markings and comparative information to help you choose the right symbols and materials that are built to last...*preformed thermoplastic*.

Flint's commitment to safety is reflected in the quality and durability of preformed thermoplastic pavement markings manufactured at our own ISO-certified facility in Thomasville, North Carolina. Flint also distributes specialized coatings for preferential colorized lanes that are gaining popularity in the United States.

PreMark® BY FLINT

RIDE-A-WAY BY FLINT




Flint Trading is a proud sponsor of the *Association of Pedestrian and Bicycle Professionals* Webinar Series for 2011. Visit www.apbp.org for more details and webinar schedule.

Preformed Thermoplastic **vs.** Other Marking Materials*

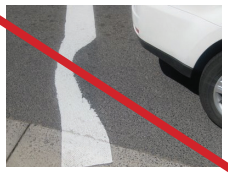
It just looks better and lasts longer.

- Durability - lasts 6 to 8 times longer than paint
- At-a-glance recognition of uniform markings along a specified bike route
- Crisp edges; consistent appearance
- Compliance with Federal and local regulations
- Apply any time of year; ready to apply material out of the box with a propane heat torch
- Retroreflective and anti-skid elements added at time of manufacturing to meet specifications and consistent quality control

Paint typically used with a stencil leaves a broken image and wears much quicker.

Cold plastic tape's bond performance is minimized especially in cold weather climates

Hot-applied thermoplastic often results in "alligator" cracks, roughness around the edge, and cumbersome using hand-liner with stencils for symbols and legends.



At near-intersection applications subjected to vehicular use, **cold plastic tape** tends to shear with heavy turning traffic.

**Minimum temperature restrictions for application in cold weather*

Life Cycle Performance and Savings with PreMark® Bike Lane Markings

EACH PHOTOGRAPH TAKEN AFTER ONE YEAR OF SERVICE

Preformed Thermo after one year

Preformed Thermoplastic
Block Contrast Marking
Applied cost approximately $375
(includes material and application)

Paint after one year

Waterborne Paint
Applied cost approximately $150
(includes material and application)

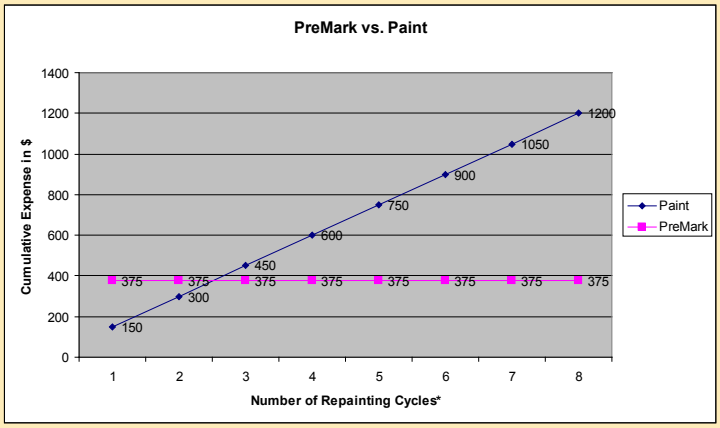
Cold Tape after one year

Cold Plastic Tape
Applied cost approximately $200
(includes material and application)

Three different pavement marking materials were applied along a bike route in Boston, MA at approximately the same time frame. The photographs shown above provide a visual comparison of performance and durability after one year of service.

The advantages of preformed thermoplastic are evident with the block contrast marking completely intact and easily identifiable. With an expected life cycle of 6 to 8 times longer than paint, preformed thermoplastic provides long-term savings but, most importantly, an extended service life and effective safety measure.

When costs for mobilization, lane closures, adminstrative costs, and application costs are factored in for each repainting cycle, the long-term savings and performance of using preformed thermoplastic proves to be the right choice.



** Based on applying a single bicycle symbol marking.*

PreMark® BY FLINT

Consider the advantages of using PreMark® preformed thermoplastic pavement markings:

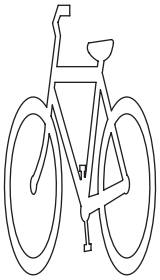
- Durable; lasts 6 to 8 times longer than paint
- Retroreflective with glass beads intermixed throughout the material; as the marking wears new beads are exposed
- ViziGrip® optimizes skid resistance and retroreflectivity
- 90-mil thicknesses for bike lane symbols minimizes "rumble" effect for the cyclist
- Sustainable product with a small environmental impact. Recycled materials make up 60% of the product and 29% of the components are rapidly renewable materials, primarily from pine trees. Other natural resources from cotton, sunflowers, and soya are also used in manufacturing.
- Indents in the surface of material are heating indicators that provide a visual cue during application that the material has reached a molten state indicating satisfactory adhesion and proper bead embedment.
- Manufactured in an ISO 9001:2008 facility for consistent thickness and composition as opposed to being blended on-site as with paint or hot-applied thermoplastic
- Formulated with highest quality resin, binder, glass beads, and pigment systems to provide optimal field performance; no "alligator" cracking as with hot-applied thermoplastic
- No minimum road or ambient temperature requirements for application. Preheating the road surface is not required.
- One year shelf life allows broader options for inventory management
- Modified easily in the field with razor knife or heavy duty scissors if required
- Easy to repair if road or utility maintenance requires a portion of the marking to be removed
- Material is pre-cut and ready to use out of the box. Simple application with propane heat torch; does not require major capital investments in equipment.

Regulatory Markings

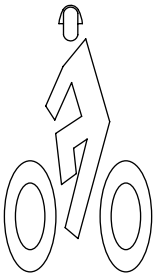
The Standard statement in Section 9C.02 *General Principles* of the 2009 Manual on Uniform Traffic Control Devices (MUTCD) states "markings used on bikeways shall be retroreflectorized." The Guidance statement reads,"...consideration should be given to selecting pavement marking materials that will minimize loss of traction for bicycles under wet conditions."

Standard FHWA Designs

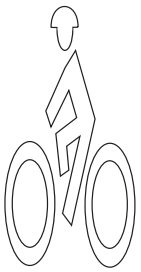
Bike lane symbols are available in 90-mil thicknesses.
When ordering bicycle symbols, please specify left- or right-facing.



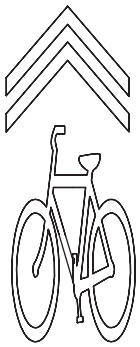
Bicycle Symbol
(3'4"w x 6'h)
Item 89230576HS



Bicycle Rider
(3'4"w x 6'6"h)
2004 SHS Book
Item 89230524HS



Bicycle Rider
(3'4"w x 6'h)
2009 MUTCD
Item PM602006



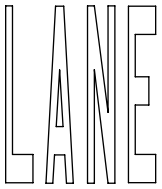
Shared Lane Symbol
(3'4"w x 9'4"h)
Item PM600833VG

Bicycle Loop Detector
(1'1"w x 3'7"h)
Item 89230577HS

Straight Arrow
(24"w x 6'h)
7" stroke
Item PM602005

Straight Arrow
(27.6"w x 6'h)
10" stroke
Item 89330268HS

BIKE Legend
(3'2"w x 4'h)
Item 89150248



LANE Legend
(3'6"w x 4'h)
Item 89150213

ONLY Legend
(3'1"w x 4'h)
Item 89150202

Block Contrast Markings

PreMark® Block Contrast Markings provide even greater visibility and durability for concrete and faded asphalt applications. They're convenient to use because the two colors of material are interconnected allowing the user to easily handle and position the marking.

- Black background in block format enhances visibility of the white symbols providing greater conspicuity.
- White symbols are ViziGrip which optimizes skid resistance and retroreflectivity. Black background is non-reflective, high skid-resistant.
- Chalk perimeter outline, apply PreMark® SP Sealer, position interconnected sheets of material, and heat.

Standard FHWA Designs

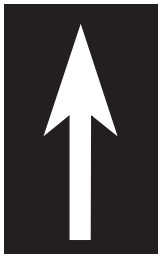
Block contrast markings available in 90-mil thickness. PreMark® SP Sealer required for application.

Bicycle Symbol
(4'w x 7'h)
PM600723

Bicycle Rider
(4'w x 7'h)
PM600847-BK

Bicycle Loop Detector
(4'w x 4'h)
PM600729-BK

Shared Lane
(4'w x 10'h)
PM600722



Straight Arrow
(4'w x 7'h)
PM600728-BK

Straight Arrow
(4'w x 7'h)
PM600724

BIKE Legend
(4'w x 5'h)
PM600732

LANE Legend
(4'w x 5'h)
PM600730

ONLY Legend
(4'w x 5'h)
PM600731

Bike Boxes and Bike Panels*

Bike Boxes and Bike Panels are made with durable PreMark® for use in high-traffic areas subjected to vehicular traffic. The two colors of material are interconnected allowing the user to easily handle and position the marking prior to heating.

- White symbols and light green background are standard using ViziGrip®. Light green portion also available in high-skid, non-beaded.
- Chalk perimeter outline, apply PreMark® SP Sealer, position interconnected sheets of material, and heat with propane heat torch or large infrared heater.
- Fill in sections around the panels with solid-colored sheets to complete the application area.

90 mil thickness

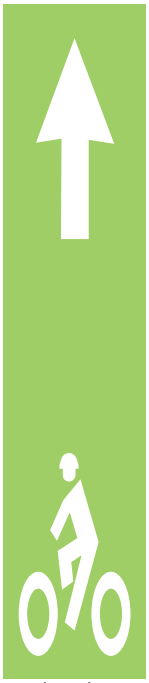
Bicycle Symbol
(4'w x 7'h)
PM600723-LG

Bicycle Rider
(4'w x 7'h)
PM600847

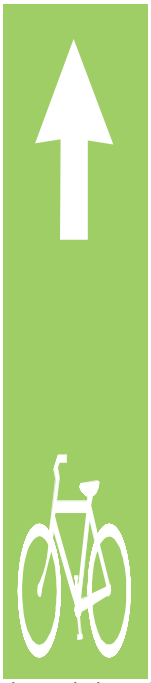
Straight Arrow
(4'w x 7'h)
PM600727LG

Bike Sharrow Panel
(4'w x 10'h)
PM6009564

Bicycle Loop Detector Panel
(4'w x 4'h)
PM600729-LG



Bicycle Rider Panel
(4' x 20')
PM600733



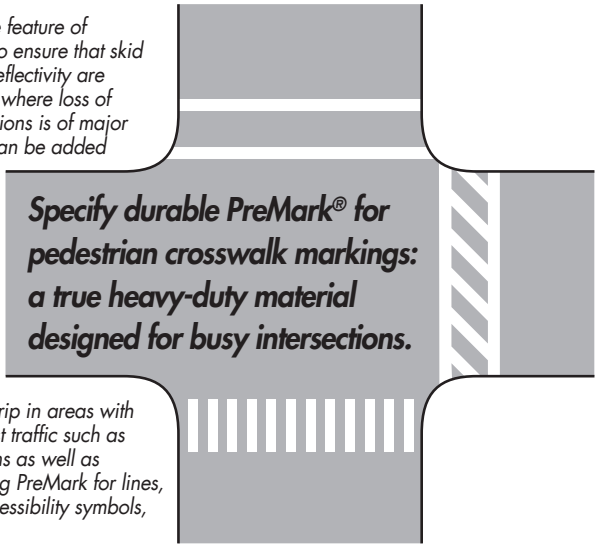
Bike Symbol Panel
(4' x 20')
PM600734

** FHWA approval required to experiment with colored bike lanes. See page 6 for details.*

PreMark® BY FLINT Pedestrian Markings

ViziGrip® is a unique feature of PreMark® designed to ensure that skid resistance and retroreflectivity are optimized especially where loss of traction in wet conditions is of major concern. ViziGrip® can be added to any of the lines, legends, arrows, and other designs in 90-mil and 125-mil thicknesses.

For enhanced skid/slip resistance, Flint Trading recommends using PreMark® with ViziGrip in areas with pedestrian and cyclist traffic such as crosswalks, bike paths as well as parking facilities using PreMark for lines, legends, arrows, accessibility symbols, and word legends.

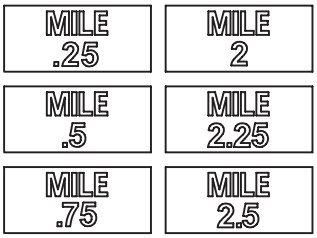


Specify durable PreMark® for pedestrian crosswalk markings: a true heavy-duty material designed for busy intersections.

Pedestrian Symbol
(27"w x 4'h)
Item 89230235
(4'2"w x 8'h)
Item 89230226HS

PED Legend
(5'4"w x 8'h)
Item 8130114
(2'8"w x 4'h)
Item 89150214HS

XING Legend
(6'4"w x 8'h)
Item 8130107
(3'2"w x 4'h)
Item 89150207HS



Trail Mileage Markers
Example shown here:
various sizes and shapes available.

Hiker Symbol
(4'h)
89230123

Are your pavement markings compliant with the FHWA standard symbols?

It is Flint Trading's recommendation to specifiers and buyers of pavement markings to select designs that are compliant with the FHWA standards as shown in the *Manual on Uniform Traffic Control Devices* (MUTCD) and/or the supplemental publication, *Standard Highway Signs and Markings*.

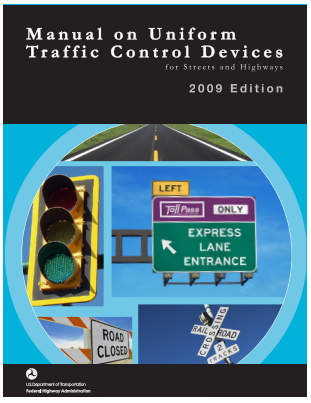
This catalog of pedestrian and bike lane markings from Flint includes bike lane symbols, arrows, and legends that are standard FHWA designs at the time of printing this publication. In the event new or different designs are released from the FHWA, Flint Trading will make those designs available in preformed thermoplastic.

Designs not currently included in the MUTCD or related FHWA publications are not considered traffic control devices. Procedures for experimentation using markings that are not adopted by these publications are provided by the FHWA.

The following excerpts are reprinted from the 2009 Edition of the Manual on Uniform Traffic Control Devices (MUTCD), Chapter 1A.General.

Section 1A.02 Principles of Traffic Control Devices
Support: This Manual contains the basic principles that govern the design and use of traffic control devices for all streets, highways, bikeways, and private roads open to public travel (see definition in Section 1A.13) regardless of type or class or the public agency, official, or owner having jurisdiction. This Manual's text specifies the restriction on the use of a device if it is intended for limited application or for a specific system. It is important that these principles be given primary consideration in the selection and application of each device.

Section 1A.07 Responsibility for Traffic Control Devices
Standard: The responsibility for the design, placement, operation, maintenance, and uniformity of traffic control devices shall rest with the public agency or the official having jurisdiction, or, in the case of private roads open to public travel, with the private owner or private official having jurisdiction. 23 CFR 655.603 adopts the MUTCD as the national standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel (see definition in Section 1A.13). When



...requests for any interpretation, permission to experiment, interim approval, or change shall be submitted electronically to the Federal Highway Administration (FHWA), Office of Transportation Operations, MUTCD team, at the following e-mail address:

MUTCDofficialrequest@dot.gov

a State or other Federal agency manual or supplement is required, that manual or supplement shall be in substantial conformance with the National MUTCD. 02 23 CFR 655.603 also states that traffic control devices on all streets, highways, bikeways, and private roads open to public travel in each State shall be in substantial conformance with standards issued or endorsed by the Federal Highway Administrator.

Section 1A.10 Interpretations, Experimentations, Changes, and Interim Approvals
Standard: 01 Design, application, and placement of traffic control devices other than those adopted in this Manual shall be prohibited unless the provisions of this Section are followed. Support: 02 Continuing advances in technology will produce changes in the highway, vehicle, and road user proficiency; therefore, portions of the system of traffic control devices in this Manual will require updating. In addition, unique situations often arise for device applications that might require interpretation or clarification of this Manual. It is important to have a procedure for recognizing these developments and for introducing new ideas and modifications into the system. Standard: 03 Except as provided in Paragraph 4, requests for any interpretation, permission to experiment, interim approval, or change shall be submitted electronically to the Federal Highway Administration (FHWA), Office of Transportation Operations, MUTCD team, at the following e-mail address: MUTCDofficialrequest@dot.gov.

To view and access the MUTCD in its entirety, visit **http://mutcd.fhwa.dot.gov/index.htm.**

Specialized Coatings for Colorized Preferential Lanes*

Enhance visibility and safety awareness for all shared roadway users...
pedestrians, cyclists, motorists, and transit users.

Ride-A-Way™ is an epoxy-modified, acrylic, waterborne coating specifically designed for the colorization of preferential lanes on streets and highways. It has a balance of properties to ensure adhesion while providing excellent durability and color stability. Skid resistant, environmentally safe, and available in four colors, Ride-A-Way™ coatings are easy to apply on asphalt and concrete pavement surfaces.

Now gaining greater momentum in North America, bike lanes and bus lanes are incorporated into state, regional, and local transportation plans due to the user demand for a balanced, multimodal transportation network that meets the needs of all roadway users with safety as the number one priority.

* *FHWA approval required to experiment with colored bike lanes. See page 6 for details.*

Benefits:

- Increases awareness of shared roadway use among motorists, pedestrians, cyclists, and transit users
- Enhances visibility of preferential lanes
- Provides clear delineation and traffic calming
- Promotes balanced multimodal transportation network

Performance-based features:

Durability: The epoxy-modified formula is specifically designed for long-term use even in harsh climates and wet conditions. Not suited for intersection use with heavy turning traffic and high ADT activity.

Flexibility: The formulation allows the coating to expand and contract at the same rate as the pavement to avoid cracking.

Friction: Slip and skid resistant aggregates provide greater traction for safe pedestrian and vehicle traffic. Due to the low viscosity of the coating, it has very good static and dynamic friction properties at high and low speeds.

Color Stability: Advanced acrylic polymer technology and superior pigments provide long-lasting color retention, especially against UV rays.

Chemical Resistance: Impervious to gas, oil, engine and de-icing agents that often come into contact with road surfaces.

Environmentally Friendly: Water-based, acrylic formulation contains no harsh solvents and can be recycled along with asphalt. Meets EPA requirements for VOCs.

Standard Pre-Mixed Colors:

Light Green	Purple	Blue	Red
RAW410001	RAW410003	RAW410004	RAW410002

Approximate coverage rates:
3 layers (no vehicle traffic) = 225 sq ft. per 5 gallon container
4 layers (with vehicle traffic) = 175 sq ft. per 5 gallon container

Coverage rate is affected by pavement porosity.

Flint TRADING INC.®




Traffic safety is not just the responsibility of the driver, pedestrian, cyclist or road worker. It is everyone's concern. While local municipalities, contractors and developers look to us for the industry's most advanced and reliable products and responsive service, our commitment goes far beyond that.

Flint Trading, Inc. ("Flint") is devoted to increasing road safety awareness and is very active in private and public committees and task forces called upon to set standards and implement policies that will provide better roadway safety. We are even more passionate where the interests of our customers are concerned. Employees of Flint are committed to providing exceptional service and value including:

- the industry's shortest delivery times
- real time answers to our customers' toughest questions
- in-house technical support
- free product demonstrations
- hands-on training in the field

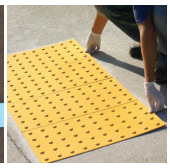
It's not just about providing pavement markings; it's about helping to provide guidance and safety for all shared roadway users. Our commitment is reflected in quality and customer satisfaction and has been for over 23 years as the world's leading manufacturer and supplier of preformed thermoplastic pavement markings. Headquartered in Thomasville, North Carolina, Flint manufactures a complete line of PreMark® preformed thermoplastic pavement markings at our ISO 9001:2008-certified manufacturing facility. Flint also manufactures and markets HotTape™ preformed thermoplastic pavement markings; TopMark® detectable warnings; TrafficPatterns® Decorative Crosswalks and Traffic Calming Surfaces; DecoMark® Custom Logos and Surface Signage; and AirMark® preformed thermoplastic pavement markings for airfields.

Flint is the exclusive distributor of Ride-A-Way™ specialized coatings for colorized preferential lanes.

Flint is also the exclusive distributor in the United States, Canada and Latin America for a variety of DELTA® instruments that are repeatable, reproducible and traceable to a national standard. DELTA instruments are designed with advanced optics to measure retroreflectivity for nighttime visibility as well as daytime visibility of pavement markings.

Finally, Flint also offers the Flint 2000EX and Magnum industrial propane heat torches, Bundy® and Super-Bundy® adhesives, Dura-Post® delineator posts, and a line of StreetHeat™ Infrared Heaters for the application of preformed thermoplastic pavement markings.





115 Todd Court • Thomasville, NC 27360 • Phone: (336) 475-6600 • Fax: (336) 475-7900

sales@flinttrading.com • www.flinttrading.com

RIDE-A-WAY™
by Ennis-Flint

SPECIALIZED COATINGS FOR COLORIZED PREFERENTIAL LANES

ENNIS-FLINT

A TRAFFIC SAFETY SOLUTIONS COMPANY

Bike Lanes | Bus Lanes | Roundabouts | Streetscapes

COATINGS FOR COLORIZED LANES

Enhance visibility and safety awareness for all shared roadway users... pedestrians, cyclists, motorists, and transit users.

BENEFITS:

- Increases awareness of shared roadway use among motorists, pedestrians, cyclists, and transit users
- Enhances visibility of preferential lanes
- Provides clear delineation and traffic calming
- Promotes balanced multimodal transportation network

PERFORMANCE-BASED FEATURES:

Durability: The epoxy-modified acrylic formulation is specifically designed for long-term use even in harsh climates and wet conditions.

Flexibility: The formulation allows the coating to expand and contract at the same rate as the pavement to avoid cracking.

Friction: Slip and skid resistant aggregates provide greater traction for safe pedestrian and vehicle traffic. Due to the low viscosity of the coating, it has very good static and dynamic friction properties at high and low speeds.

Color Stability: Advanced acrylic polymer technology and superior pigments provide long-lasting color retention, especially against UV rays.

Chemical Resistance: Impervious to gas, oil, engine and de-icing agents that often come into contact with road surfaces.

Environmentally Friendly: Water-based, acrylic formulation contains no harsh solvents and can be recycled along with asphalt. Meets EPA requirements for VOCs.

APPLICATION OVERVIEW

Refer to the complete set of Ride-A-Way™ Application Instructions for detailed instructions for proper application of coatings. These are available at ***www.ennisflint.com****.*

Substrate and ambient air temperature must be 50°F and rising.

Surface Prep: The surface should be completely dry, clean and free of debris, water, and contaminants.

Masking: Use duct tape with plastic or paper to protect areas from overspray as needed.

Mixing:
Combine Parts A, B and colorant in accordance with the application instructions. Mix thoroughly and strain before applying the coating with the Rapid Sprayer II.

Spraying: Apply coating using a circular movement according to the application instructions.

Brooming: Evenly distribute with brooming motions according to application instructions to ensure complete coverage into the surface.

For optimal performance, Ride-A-Way coatings are applied in layers--a spray pass that is allowed to dry before the next pass is applied. Once dry to the touch, the next pass can be sprayed using the same procedure.

Approximate coverage rates:
3 layers (no vehicle traffic) = 225 sq ft. per 5 gallon container
4 layers (with vehicle traffic) = 175 sq ft. per 5 gallon container

Standard Colors: *Colors shown are approximate.*

EF Bike Lane Green | Purple | Blue | Red | Terracotta

Ennis-Flint 115 Todd Court Thomasville, NC 27360 • 336.475.6600 • www.ennisflint.com

The Dependable Duo for Colored Bike Lanes

PreMark® and Ride-A-Way™ provides pavement marking solutions to maximize performance and value for the various segments of a bicycle facility network. While both types of materials offer durability, flexibility, skid resistance, and color stability along with ease of application, consideration for optimal use should be based upon the scope of the product and the specific project requiring enhanced, colored lane delineation and awareness of conflict points.

PreMark® by Ennis-Flint

Heavy-duty for intersections, bike boxes, and conflict points with vehicle cross-over traffic

PreMark® is a durable preformed thermoplastic marking material engineered for use in high-traffic areas subjected to vehicular traffic and lasts 6 to 8 times longer than paint. The material is pre-cut and ready to use out of the box for simple application with a propane heat torch.






Interconnected panels are easy to handle and position. White symbols are retroreflective; green background is not retroreflective

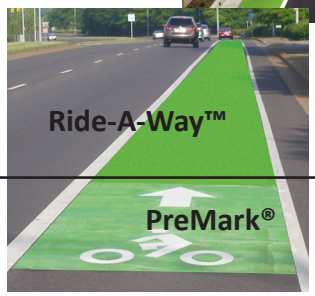
PreMark® Preformed Thermoplastic: **PMSK**
90-mils ; aggregate drop-on and intermix; no beads
Intersections; bike boxes; bike panels; traffic conflict points
Solid Sheets: $6.77/sq ft (incl. required 2-part sealer) **Interconnected Symbol Panels:** $9.25/sq ft (incl. req. 2-part sealer)
Standard equipment: Propane Heat Torch $990

RIDE-A-WAY™ by Ennis-Flint

Economical, engineered for continuous long lane applications with minimal vehicle traffic

Ride-A-Way™ is an epoxy-modified water-based acrylic coating specifically designed for long-term use in long-lane applications. Application is simple by building the thickness through spraying and brooming in layers using the Rapid Sprayer spray system and specialized brushes.



Note: PreMark® white symbols cannot be applied on top of Ride-A-Way™.

However, a PreMark® Bike Panel integrates easily at specified intervals while maintaining pleasing color consistency.

Ride-A-Way™ Epoxy-modified, water-based acrylic coating
20-mils; Apply 4 layers with traffic; 3 layers without traffic
Long lanes (non-intersections) with minimal vehicle traffic
$0.87-$1.11/sq ft (base & colorant) 175 sq ft@4 layers / 225 sq ft@3 layers
Standard equipment: Rapid Sprayer/Brushes approx. $3,500

EF Bike Lane Green

Enhance visibility and safety awareness for all shared roadway users.

ENNIS-FLINT
A Traffic Safety Solutions Company

115 Todd Court Thomasville, NC 27360 • 336.475.6600 • www.ennisflint.com

APPLICATION INSTRUCTIONS

For PreMark® Preformed Thermoplastic Pavement Markings requiring PreMark® SP Sealer

First-time applicators should contact Flint Trading, Inc. for product support and on-site training.

SURFACE APPLICATION, GENERAL REQUIREMENTS:

Equipment:
- Flint 2000EX™ propane heat torch, with regulator and 25 ft. of hose
- 300/600 ml sealer dispensing gun
- Gas Powered Blower or Broom
- Adequate Supply of Propane
- Crayon, Chalk Sticks and Chalk Snap Line
- Tape Measure
- Utility Knife, Putty Knife
- Hammer and Chisel
- Water sprayer (Optional)

Moisture: Pavement must be dry prior to applying the PreMark® SP Sealer.

Surface: PreMark® can be applied on asphalt, or non-bituminous portland cement concrete surfaces. Surface must be free of dirt, dust, deicing agents, chemicals and significant oily substances. Concrete surfaces must have surface porosity. To test for porosity sprinkle a few drops of water on to the surface. If the concrete does not readily absorb the water, the surface is not sufficiently porous and you should contact your Flint Trading representative for additional instructions on how to prepare the surface.

Material: Keep PreMark® dry at all times. Avoid extreme storage temperatures. Store indoors at temperatures between 35° F. and 90° F. Packages should be stored flat and stacked a maximum of 25 high. PreMark® should be handled with care in temperatures below 50° F, as material will be less flexible in colder weather. Shelf life is 12 months. Prior to starting the application, place all tools and materials where they are going to be needed in the application process.

Sealer: **PreMark® SP Sealer is required for all PreMark® multi-color markings larger than 16 sq. ft. such as interstate and state route shields made with interconnected color segments.** PreMark® SP Sealer is a 2 part sealer that is supplied in a 300/600 ml cartridge at a ratio of 2 parts A to 1 part B. A kit consists of 2 each of the 300/600 ml cartridge and will cover approximately 90 sq. ft. Shelf life for PreMark® SP Sealer is 12 months.

Temperature: Ambient and pavement temperature must be 45° F and rising.

SAFETY PRECAUTIONS:

Read the enclosed Material Safety Data Sheet prior to application. The sealer is for outdoor use only. Protective clothing consisting of leather work shoes, long pants, gloves and either safety goggles or a face shield, and a safety vest should be worn while applying PreMark®. Always wear nitrile gloves (supplied), or other non-absorbent gloves, when working with the PreMark® SP Sealer. Always point the tip of the cartridge in a direction where an accidental discharge will not contact personnel at the site. In the event of accidental skin contact with the sealer wash contaminated skin with soap and water and remove contaminated clothes immediately. Seek medical attention if irritation persists. In the event of accidental

sealer contact with the eyes, immediately flush eyes with plenty of water for at least 15 minutes; remove contact lenses; call a physician. Destroy any contaminated leather.

Do not discard cartridges with unused sealer. Any unused sealer can be discharged through the mixing nozzle onto the aluminum tray provided. Cured sealer can safely be disposed of. **Dispose of all materials in accordance with all applicable federal, state and local laws and regulations.**

Do not let mixed sealer puddle as intense heat will develop during curing. Avoid all contact with the hot PreMark® material and Flint 2000 EX® heat torch flame. If you do get some molten material on your skin, flush the area immediately with plenty of water and then seek medical attention. Do not attempt to pull the molten material off of your skin.

INSTRUCTIONS FOR APPLICATION

1. Clean intended application area thoroughly. All loose particles, sand, dust, etc. must be removed. *See Figure 1*. Utilize a power blower or compressed air if available, otherwise sweep thoroughly.

2. Mark the area to receive the PreMark® using a chalk line, chalk or crayon. *See Figure 2*. When tracing always handle the material with care. The PreMark® may consist of a pattern of interconnected individual pieces of preformed thermoplastic material. If that is the case, do not lift an entire pattern segment (usually 2 ft. x 3 ft.) by holding on to a small individual piece of the pattern only. The material should be handled on the plastic sheet it is packed with until it is close to its final position. *See Figure 3*. Once the marking has been traced, or the area chalked, remove the marking from the pavement.

3. Ensure that no moisture is present prior to applying the PreMark® SP Sealer onto the pavement surface. Surface moisture is not often visible so you should assume that some moisture is present. Remove moisture by drying the application area with a propane fueled torch such as the Flint 2000EX™ or Magnum Heat Torch. *See Figure 4*.

4. Remove the contents of the sealer kit from the shipping carton. Install the sealer cartridges into the sealer gun. Point the gun upwards (nose up), and remove the nose plug. See Figure 5. With the gun still pointing upwards, mount the mixing nozzle and ensure that it is properly secured to the sealer cartridge. See Figure 6. Point the gun downward and squeeze the handle gently until the sealer is approximately 2 in. from the tip of the mixing nozzle. If circumstances do not permit the mixed sealer to be used within 10 minutes remove the mixing nozzle and insert a new nose plug.

5. The amount of sealer in one 300/600 ml cartridge will be sufficient for applying 45 sq. ft. of PreMark® material. **Note: It is critical that the sealer does not cure up before the PreMark® material has been applied and heated, therefore do not apply sealer to an area larger than what can be heated in 20 minutes.** Holding the tip of the nozzle above the application area, squeeze out an appropriate amount of sealer. *See Figure 7*. Using the roller provided spread out the applied sealer over the selected application area. *See Figure 8*. Do not apply sealer outside the chalk line. The sealer should appear as a light coat of paint, leaving a shiny surface. **Do not wait for the sealer to cure up before applying the PreMark® material.**

6. Cold temperature considerations: PreMark® SP Sealer may dispense more slowly in temperatures around 45º F. When working in these temperatures we suggest the PreMark® SP Sealer be kept close to room temperature whenever possible.

7. Apply the PreMark® material with exposed bead side up immediately after the sealer has been applied, following handling procedure described in Step 2 above. Position material so that edges of adjacent sheets fit snugly together and that the pattern of the marking aligns properly from sheet to sheet. *See Figure 9*.

There should be no gaps between the adjoining segments. You may overlap the edges slightly. Check to ensure that proper layout and alignment is obtained before heating the material. Heating should begin immediately after proper layout has been confirmed.

8. Prepare to heat the PreMark® by positioning yourself with the wind at your back as you face the marking. This will allow the wind to move the heat over the unheated portion of the material while at the same time keeping the heat away from your feet. Regularly spaced heating indicators, indents, have been manufactured into the top surface of the PreMark® material. The closing of these indents will provide a visual cue during application that the material has reached a molten state and proper bead embedment has been achieved. The PreMark® material must be heated to its melting temperature to achieve a bond with the pavement. **Insufficient heat will result in inadequate bonding and failure.**

9. Immediately after positioning the PreMark® begin heating the material by moving the flame from your Flint 2000EX™ torch in a sweeping motion, approximately 2 feet wide. Heat slowly, but steadily keeping the nozzle of the torch about 4 to 8 inches above the material. *See Figure 10*. **Caution: Maintain a minimum distance of 4 inches between the torch nozzle and the material.** Any closer will cause superficial scorching of the material without adequate melting throughout.

10. Continue to heat the PreMark® until the heat indicators, indents, close. At this point stop the heating process. Overheating the material will sink the top coating of beads into the PreMark® material and the resulting marking will be less retroreflective initially. When applying multiple sections of PreMark®, such as an interstate shield, leave the 8 in. closest to the continuation edge unheated. Do not expose areas with sealer (and no PreMark® material) to the flame of the torch as this will cause the sealer to cure prematurely.

11. Inspect the recently applied PreMark® to ensure that complete bonding has occurred over the entire area. After the material has cooled to near ambient temperature use a putty knife or chisel and attempt to remove a portion of the PreMark® material along an edge. Edges should be rounded and thoroughly bonded. If properly installed, the material should pull away from itself, leaving a residual film on the surface. If the material does not pull away from the surface without any material remaining on the substrate, reposition the material and reheat that portion of the marking. Once the bond has been verified, use the PreMark® Sealer to re- bond the piece of material you sampled back onto the surface. Note: while trying to lift the recently applied material off of the surface adequate bonding has occurred if the PreMark® material separates and part of it remains stuck to the pavement. Depending upon the condition of the surface, some asphalt or concrete may also be pulled up on the underside of the PreMark® material. When applied correctly the PreMark® should appear as one continuous marking. All seams should be closed. There should be no gaps between adjacent colors, and no gaps between adjacent segments. Do not begin applying the next row of PreMark® material until a sufficient bond has been established. While material can be reheated to achieve adequate bond at the time of installation, attempts to reheat material the following day will be unsuccessful.

12. PreMark® is formulated with surface applied and intermixed glass beads to provide both high initial retroreflectivity and better visibility throughout its service life. PreMark® can be supplied without pre-applied surface beads. When this happens beads must be applied to the surface during application while the material is in the molten state to provide adequate initial retroreflectivity. This is also a very important step in obtaining the required skid resistance.

13. Repeat steps 1 through 12 until the PreMark® material has been applied to the entire application area.

NOTES:

- Closed heat indicators, indents, act as a post-application visual cue that the application procedures have been followed.
- If the next PreMark® application does not take place within 10 minutes of the last use of the sealer, remove the mixing nozzle and insert a new nose plug. This should be done with the cartridge pointing downwards to remove the mixing nozzle and then immediately place the cartridge in an upright position and insert the nose plug while observing all safety instructions mentioned above. Secure the nose plug to the cartridge using the cap or retaining nut provided.
- PreMark® is compatible with asphalt and concrete surfaces and can be applied on special surfaces, i.e., bricks and cobble stones.
- PreMark® will cool and set rapidly within minutes of application. Set time can be accelerated with a spray of cool water.
- If PreMark® is applied over joints (saw cut control joints, isolation/expansion joints, cold/ construction joints), make a deep score in the material once it has set up but not entirely cooled down.
- Oil impervious PreMark® can be applied immediately after completion of daily paving operations. PreMark® can be applied to concrete a soon as it has set up (green concrete).
- You can "cut and paste" with PreMark®. Use a knife to score the material and carefully break it along the score. In warm weather you can use scissors.
- Do not allow 2 pieces of PreMark® to remain in direct contact with each other, as they will bond together especially in hot weather. Use the plastic separation sheets to avoid this situation.
- Do not throw or drop PreMark® in lower temperatures, as it will be less flexible in colder weather
- Dispose of all materials in accordance with all applicable federal, state and local laws and regulations.

Figure 1:
Clean Surface

Figure 2:
Mark Area

Figure 3:
Handling Material

Figure 4:
Remove Moisture

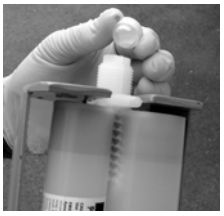


Figure 5:
Remove nose plug

Figure 6:
Attach Nozzle

Figure 7:
Apply Sealer

Figure 8:
Roll Sealer

Figure 9:
Layout Material

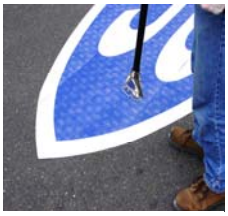


Figure 10:
Heat Material

PreMark® has a patented visible indent system, US Pat 5,861,206

FLINT TRADING, INC.

Address: 115 Todd Court, Thomasville, NC 27360 Phone: (336) 475-6600 Fax: (336) 475-7900
sales@flinttrading.com www.flinttrading.com

SPECIFICATION
PREFORMED THERMOPLASTIC PAVEMENT MARKINGS

1. **USE:** A durable, high skid resistant, retroreflective pavement marking material suitable for use as interstate shields, route shields, block contrast, bike path, roadway, intersection, airport, commercial or private pavement delineation and markings.

    1.1. The markings must be a resilient white, yellow or other color preformed thermoplastic product, the surface of which must contain glass beads and abrasives in an alternating pattern. Block contrast markings must have contrasting background of black, non-retroreflective performed thermoplastic. The markings must be resistant to the detrimental effects of motor fuels, lubricants, hydraulic fluids etc. Lines, legends and symbols are capable of being affixed to bituminous and/or portland cement concrete pavements by the use of the normal heat of a propane torch.

    1.2. The markings must be capable of conforming to pavement contours, breaks and faults through the action of traffic at normal pavement temperatures. The markings shall have resealing characteristics, such that it is capable of fusing with itself.

    1.3. The markings shall not have minimum ambient and road temperature requirements for application, storage, or handling.

    1.4. The individual pieces in each material segment (typically 24 in. by 36 in.) must be factory assembled with a compatible material and interconnected so that in the field it is not necessary to assemble the individual pieces within a material segment.

    1.5. The material must be able to be applied to asphalt and concrete surfaces without preheating the application surface to a specific temperature. The material must be capable of being affixed to green concrete (concrete that has set but not appreciably hardened). The material shall not require the portland cement concrete application areas to be cured or dried out. The material must be capable of being affixed to bituminous and/or portland cement concrete pavements by the use of the heat of a propane torch, infrared heater, or blue-flame heater.

2. **MANUFACTURING CONTROL AND ISO CERTIFICATION:** The manufacturer must be ISO 9001:2008 certified and provide proof of current certification. The scope of the certification shall include manufacture of reflective highway markings.

3. **MATERIAL:** Must be composed of an ester modified rosin resistant to degradation by motor fuels, lubricants etc. in conjunction with aggregates, pigments, binders, abrasives, and glass beads which have been factory produced as a finished product, and meets the requirements of the current edition of the Manual on Uniform Traffic Control Devices for Streets and Highways. The thermoplastic material conforms to AASHTO designation M249, with the exception of the relevant differences due to the material being supplied in a preformed state, and potentially being of a color different from white or yellow.

    3.1. Graded Glass Beads:

        3.1.1. The non-black sections of the markings must contain a minimum of thirty percent (30%) intermixed graded glass beads by weight. The intermixed beads shall be clear and transparent. Not more than twenty percent (20%) consists of irregular fused spheroids, or silica. The index of refraction shall not be less than 1.50.

        3.1.2. The material must have factory applied coated surface beads and abrasives in addition to the intermixed beads at a rate of 1/2 lb. (± 20%) per 11 sq. ft. The surface beads and abrasives must be applied in an alternating arrangement across the surface of the material so that the surface is covered in what is best described as a “checkerboard” pattern of glass beads and abrasive materials. The abrasive material must have a minimum hardness of 7 (Mohs scale). These factory applied coated surface beads shall have the following specifications:

            1) Minimum 80% rounds
            2) Minimum refractive index of 1.5

Size Gradation			
US Mesh	um	Retained, %	Passing, %
12	1700	0 - 2%	98 - 100%
14	1400	0 - 6%	94 - 100%
16	1180	1 - 21%	79 – 99%
18	1000	28 - 62%	38 - 72%
20	850	62 - 71%	29 – 38%
30	600	67 - 77%	23 - 33%
50	300	86 - 95%	5 – 14%
80	200	97-100%	0 - 3%

3.2. Pigments:

3.2.1. White: The material shall be manufactured with sufficient titanium dioxide pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected.

3.2.2. Red, Blue, and Yellow: The material shall be manufactured with sufficient pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected. The yellow pigments must be organic and must be heavy-metal free.

3.2.3. Black: The material shall be manufactured without intermixed glass beads and without factory-applied surface beads. The material shall be manufactured with abrasives to provide skid resistance.

3.2.4. Other Colors: The pigments must be heavy-metal free.

3.3. Heating indicators: The top surface of the material (same side as the factory applied surface beads) shall have regularly spaced indents. These indents shall act as a visual cue during application that the material has reached a molten state so satisfactory adhesion and proper bead embedment has been achieved and a post-application visual cue that the installation procedures have been followed.

3.4. Skid Resistance: The surface of the preformed retroreflective marking materials, wherein every other shaped portion contains glass beads, or abrasives with a minimum hardness of 7 (Mohs scale), shall upon application provide a minimum skid resistance value of 60 BPN when tested according to ASTM: E 303.

3.5. Thickness: The material must be supplied at a minimum thickness of 90 mils (2.29 mm) or 125 mils (3.15 mm).

3.6. Retroreflectivity: The preformed retroreflective marking materials upon application shall exhibit adequate and uniform nighttime retroreflectivity. The marking materials shall have the following retroreflectivity as measured using a Delta LTL 2000 or LTL-X Retroreflectometer:

White preformed reflective marking materials–minimum of 275 $mcd \cdot m^{-2} \cdot lx^{-1}$

Note: Initial retroreflection and skid resistance are affected by the amount of heat applied during installation. When ambient temperatures are such that greater amounts of heat are required for proper installation, initial retroreflection and skid resistance levels may be affected.

3.7. Environmental Resistance: The material must be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to oil and gasoline.

3.8. Abrasives: The abrasives and surface beads must be applied in an alternating arrangement across the surface of the material so that the surface is covered in what is best described as a “checkerboard” pattern of glass beads and abrasive materials. The abrasive material must have a minimum hardness of 7 (Mohs scale).

3.9. Interconnected: The material must consist of interconnected individual pieces of preformed thermoplastic pavement material, which through a variety of colors and patterns, make up the desired design. The individual pieces in each material segment (typically 24 in. by 36 in.) must be factory assembled with a compatible material and interconnected so that in the field it is not necessary to assemble the individual pieces within a material segment.

4. **APPLICATION:**

4.1. Asphalt: The materials shall be applied using the propane torch or an infrared/radiant heater method recommended by the manufacturer. The material must be able to be applied without minimum requirements for ambient and road temperatures and without any preheating of the pavement to a specific temperature. A sealer specified by the manufacturer must be applied to the substrate prior to material application to assure proper adhesion. The material must be able to be applied without the use of a thermometer. The pavement shall be clean, dry and free of debris. Supplier must enclose application instructions with each box/package.

4.2. Portland Cement Concrete: The same application procedure shall be used as described under Section 4.1.

5. **PACKAGING:** The preformed thermoplastic markings shall be placed in protective plastic film with cardboard stiffeners where necessary to prevent damage in transit. Legends and symbols must also be supplied in flat pieces. The cartons in which packed shall be non-returnable and shall not exceed 40" in length and 25" in width, and be labeled for ease of identification. The weight of the individual carton must not exceed seventy (70) pounds. A protective film around the box must be applied in order to protect the material from rain or premature aging.

6. **TECHNICAL SERVICES:** The successful bidder shall provide technical services as required.

7. **PERFORMANCE:** The preformed thermoplastic markings shall meet state specifications and be approved for use by the appropriate state agency.