

SAMPLE SPECIFICATION

Section 02760 Paving Specialties
**Inlaid Pre-Formed Thermoplastic
Decorative High Traffic Pavement Surfacing System**

1.0 GENERAL

1.1 Summary

This specification is for pre-formed, reflectorized thermoplastic pavement marking material, which will adhere to asphalt concrete pavements by means of heat fusion.

The surface of the asphalt concrete pavement is heated and an imprinting template is pressed into the heated surface and removed.

Individual pre-formed pieces of thermoplastic are placed into the imprinted asphalt and fit together with tolerances of no more than 20 mils (20 thousands of an inch) then heated to adhere to the asphalt substrate.

This material is designed for urban traffic volumes with severe wear. It will not deteriorate due to exposure to sunlight, oil, gasoline, water, and salt or pavement oil content.

1.2 Related Sections

Section 1.0 General
Section 2.0 Materials and Performance
Section 3.0 Delivery Storage and Handling
Section 4.0 Surface Preparation
Section 5.0 Application
Section 6.0 Thermoplastic thickness
Section 7.0 Applicator Training
Section 8.0 Samples and Mockups
Section 9.0 Field Quality Control

2.0 Materials and Performance

2.1 Composition, Handling and Performance Characteristics

Materials:

The pre-formed thermoplastic material shall have a minimum of 30% uniformly distributed glass beads throughout the entire material. The exposed layer of glass beads shall provide immediate retro-reflectivity without additional glass beads being added on the material during application.

The pre-formed material shall conform to the pavement contours. The marking shall have resealing characteristics and be capable of fusing to itself and previously applied like materials.

The pre-formed materials shall upon application exhibit uniform adequate nighttime reflectivity. Using a LTL 2000 Reflectometer with a 30 meter geometry, the pre-fitted thermoplastic material shall be capable to exceed a retro reflectivity value of 375 millicandelas for the color white. Custom color reflectivity will vary with darker colors producing significantly fewer millicandelas.

Skid Resistance:

The surface of the pre-formed thermoplastic material shall provide a minimum skid resistance value of 45 BPN when tested according to ASTM: E 303-74

Thickness:

The minimum average thickness of the pre-formed thermoplastic material shall be 0.090 inch (90 mils)

3.0 Delivery, Storage and Handling

3.1 Packaging and Labeling

All ThermoPrint products shall be packed in standard closed containers. Each container of separately packaged component shall be clearly and durably labeled to indicate the date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name or formula specification number together with special instructions.

Pre-formed ThermoPrint material shall be useable for at least one year after the date of receipt when stored in accordance with manufacture's recommendations.

3.2 Delivery, Storage and Handling

ThermoPrint products shall be delivered to the site in sealed containers that plainly show the designated name, batch number, color, date of manufacturer, and name of the manufacturer.

Store the material on site in enclosures, out of direct sunlight in a warm, ventilated and dry area at room temperature. Care shall be taken in handling of ThermoPrint containers to prevent puncture, inappropriate opening or other action, which may lead to product contamination. No materials that are past the coating manufacturer's recommended shelf life shall be used without the approval of the coating manufacturer.

4.0 **Surface Preparation**

4.1 Cleaning

Broom using mechanical brooming device, or stiff bristle hand broom. Scrape and blow fine sand and debris off of surface. Pressure washing may be necessary to remove bonded debris. Use a non-solvent based degreaser to remove stains. Spray degreaser on stained area and let stand for 15 minutes. Using a stiff broom or brush, agitate the stained area to remove stain and rinse with water. Repeat this procedure on severe stains. Thoroughly rinse the area and let dry for 24 hours.

4.2 Repair Damaged Asphalt

Damaged and cracked asphalt shall be repaired by heating damaged area until the asphalt cement is in a liquid state (ensuring asphalt does not exceed 375° F), turning over and mixing in new fresh asphalt if necessary to ensure repair is level with adjacent area. Infrared type heating mechanisms are the recommended heating tool for this procedure.

4.3 Preparation of New Asphalt

Pre-formed thermoplastic shall be capable of being applied on the day the surface is paved without being adversely affected by the fresh pavement oil content.

Asphalt mix design shall be specified by a qualified Pavement Engineer and shall be designed for the purpose of the application.

5.0 Application

5.1 Environmental Conditions

Surfaces should be dry for at least 24 hours prior to applying pre-formed inlaid thermoplastic. 40°F is the recommended minimum air and surface temperature. The surface must be dry prior to application.

5.2 Imprinting the Asphalt Surface

The asphalt must be slowly heated to a maximum temperature of 325°F (163°C) to a depth of no less than 1" ensuring not to burn the asphalt cement.

An infrared heating apparatus is recommended for this heating process. Cycling of heat over the target area ensures heat penetration without overheating.

Once the surface has reached the recommended temperature the imprinting templates shall be placed onto the surface and pressed into the heated asphalt surface using a vibratory plate compactor.

The imprinting stencil shall be compacted to a full depth to allow the pre-formed thermoplastic pieces to remain below the surface of the asphalt when installed. The depth of this stencil shall be no greater than ¼".

5.3 Prior to application the pre-formed thermoplastic material shall remain flexible at temperatures above 50°F (10°C). Individual pre-formed pieces of thermoplastic are placed into the imprinted asphalt and fit together with tolerances of no more than 20 mils (20 thousands of an inch) then heated to adhere to the substrate.

An infrared heating apparatus is the recommended heating source. Propane heating torches may be used provided the recommended maximum heating temperature is not exceeded. Cycling of the heat source over the thermoplastic ensures a slow even heat.

Heat the pre-formed thermoplastic until it starts to flow. Do not heat the thermoplastic until it starts to burn and discolor. Do not heat pre-formed thermoplastic over 325°F (163°C)

Use an infrared thermometer to measure the surface temperature.

Allow the pre-formed thermoplastic surface temperature to cool to that of the adjacent road surface prior to opening to traffic.

6.0 Pre-formed Thermoplastic Thickness

6.1 The pre-formed thermoplastic material shall be no less than 90 mils (0.090 inch)

7.0 Applicator Training

7.1 The Applicator shall be approved by the manufacture for the application being applied. The Applicator shall have lead personnel on the project that have been trained by manufacturer within the past 12 months of starting the project. At least one of these trained personnel shall be on site at all times during the application

8.0 Samples and Mockups

Samples shall be provided to the owner (or owners representative) for approval prior to tender closing.

Samples shall display the following:

1. Pattern
2. Color (pre-formed thermoplastic)
3. Thickness (pre-formed thermoplastic)
4. Variations of the above if requested

Samples and mockups to be applied to and presented on 24" x 24" x ¼" hardboard panels unless otherwise requested.

Approval of color and pattern to be provided in writing to the bidding contractor no less than 7 days prior to bid closing.

Approved samples and mockups to be held by owner for future onsite verification.

9.0 Field Quality Control

9.1 The contractor for work under this section shall maintain a quality control program specifically to verify compliance with this specification. A daily log shall be kept to record actions in the field.

- 9.2 This log shall include the following information;
1. Surface preparation start date and time
 2. Photos of surface prior to start of preparation
 3. Close up photos of crack repair (before and after)
 4. Ambient temperature start and end of each day
 5. Relative humidity start and end of each day
 6. Substrate surface temperature start and end of each day
 7. Photos of surface after imprinting
 8. Photos of thermoplastic heat set in place